SNAP LAKE MINE

Community Engagement Plan and Implementation Update

September 2012-September 2013

12/15/2013

Prepared by:

De Beers Canada Inc.

Suite 300, 5120 49th Street

Yellowknife, NT X1A 1P8

Prepared for:

Mackenzie Valley Land and Water Board

7th Floor, 4922 48th Street

Yellowknife, NT X1A 2P6

Plain Language Summary

De Beers Canada Inc.'s (De Beers') Snap Lake diamond mine is located in the Snap Lake property approximately 220 km Northeast of Yellowknife. The site is remote with year round access available by aircraft from Yellowknife. A 35 kilometer winter access road also connects the site to kilometer 222 of the Tibbitt-Contwoyto winter road. Mining operations began in 2008 to access kimberlite deposits under Snap Lake.

This Community Engagement Plan and Implementation Update (Plan) is part of the ongoing life-of-mine engagement. It is a follow-up to the Community Engagement Report submitted with the Snap Lake Mine 2011 Water Licence Renewal Application dated June, 2011 and it represents De Beers' ongoing engagement activities regarding the Snap Lake Mine since receipt of the Water Licence on June 14, 2012. This updated information regarding De Beers' community engagement in this Plan covers the period between September 2012 and September 2013. Engagement activities during the period between submission of 2011 Water Licence Renewal Application and receipt of the Water Licence were, for the most part, led by the MVLWB.

The ***MVLWB Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits*****,** issued on June 1, 2013 have been reviewed and this engagement report aims to meet or exceed the guidelines where possible while also complying with De Beers' policies for working with Aboriginal communities and Sustainable Development Policy.

Since receipt of the 2012 water licence MV2011L2-0004, De Beers has undertaken key engagement activities, which are detailed in this Plan. The primary focus of engaging Aboriginal Parties has been in the development of the Aquatic Effects Monitoring Program (AEMP), Interim Closure and Reclamation Plan (ICRP), and Effluent Quality Criteria (EQC). De Beers conducted the following key engagement activities which are detailed in this report:

- Snap Lake Fish Tasting (September 2012);
- AEMP and Traditional Knowledge (TK) Workshop (September 2012);
- Community sessions on closure and reclamation (January – February 2013);
- Closure Options and Research Workshop (March 2013);
- Site Freshet and Water Management Site Visits (May – June 2013);
- Community Workshops (May – June 2013);
- Summer Site Visits (July – August 2013); and
- Snap Lake Fish Tasting (September 2013).

In addition, De Beers supported two MVLWB AEMP Workshops in January and May 2013.

De Beers provided capacity funding for Aboriginal Parties to enable active participation and involvement of community Elders or experts in both the spring community workshops and summer site visits.

Tables outlining when and where the community workshops and site visits took place are shown below.

Table 1: De Beers Public and Community Visits (Spring 2013)

Date	Location	Aboriginal Group	Number of Delegates
May 24, 2013	Fort Resolution	Deninu Kué First Nation (DKFN)	27
May 25, 2013	NSMA office in Yellowknife	North Slave Métis Alliance (NSMA)	13
May 27, 2013	Lutsel K'e	Lutsel K'e Dene First Nation (LKDFN)	32
May 29, 2013	N'Dilo	Yellowknives Dene First Nation (YKDFN)	7
June 3, 2013	Wekweeti	Tlicho Government	4
June 4, 2013	Gameti	Tlicho Government	25
June 5, 2013	Whati	Tlicho Government	45
June 6, 2013	Behchoko	Tlicho Government	80
June 12, 2013	Hay River	Northwest Territory Métis Nation (NWTMN)	19

Table 2: Spring Freshet Visits to Snap Lake Mine

Date	Aboriginal Group	Number of Delegates
May 21, 2013	YKDFN	4
June 20, 2013	LKDFN	10

Table 3: Summer Site Visits to Snap Lake Mine

Date	Aboriginal Group	Number of Delegates
July 23, 2013	NWTMN	9
July 24, 2013	DKFN	7
July 27, 2013	NSMA	10
July 30, 2013	YKDFN	10
August 29, 2013	Tlicho Government	8

The community workshops not only presented opportunities for Aboriginal Parties to provide input on De Beers' AEMP and ICRP. Because De Beers receives a number of inquiries from community members regarding opportunities for employment, training, scholarship programs and business opportunities when visiting a community for the purpose of environmental discussions, information regarding these topics was also planned for and presentations regarding these topics included in the spring community workshop discussions.

The site visits held during spring freshet and summer enabled more detailed engagement on water system enhancements and a firsthand opportunity for community visitors to see and discuss the infrastructure and system enhancements De Beers has made to its water management systems at Snap Lake. The community workshops, site visits as well as the AEMP Workshop held in September 2012 also provided opportunities for Aboriginal Parties to recommend how TK could inform the project as well as De Beers' AEMP and ICRP.

Future life-of-mine engagement will continue to be guided by De Beers' policies as well as applicable regulatory guidelines. In general, life-of-mine engagement will include community sessions, site visits, and fish tastings on an annual basis with additional meetings scheduled as necessary.

De Beers has forwarded a copy of this record of engagement to all six Aboriginal Parties, offering an opportunity for them to meet further with De Beers to ensure continuing dialogue regarding the Project. The life of mine future engagement is outlined in more detail in Section 4 of this Plan.

De Beers acknowledges that the contribution of neighbouring communities to our management planning is very important to the success of the Snap Lake Mine and to the relationship between De Beers and the Aboriginal Parties. We thank the Aboriginal Parties for making leaders, staff and community members available to engage in discussion with us about the Snap Lake Mine.

Table of Contents

Table of Contents iv

1 Introduction 1

2 General Engagement Activities 1

2.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 2012 .. 1

2.2 Interim Closure and Reclamation Plan Meetings and Workshops 2

2.3 Community Workshops 3

2.4 Site Visits & Workshops 5

2.5 Fish Tasting Events 7

2.5.1 Fish Tasting - September 2012 7

2.5.2 Fish Tasting - September 2013 8

2.6 MVLWB Engagement 9

2.6.1 AEMP Workshop January 24, 2013 9

2.6.2 AEMP Workshop May 29, 2013 10

2.7 Let's Talk Newsletters 12

2.8 Public Communications 12

2.9 Communications Logs 13

3 Community Specific Engagement Activities 13

3.1 Deninu Kué First Nation (DKFN) 13

3.1.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 19, 2012 13

3.1.2 Mine Closure and Reclamation Meeting, February 25, 2013 13

3.1.3 Closure Options and Research Workshop, March 13, 2013 15

3.1.4 Community Workshop, May 24, 2013 15

3.1.5 Summer Community Site Visit, July 24, 2013 16

3.2 Lutsel K'e Dene First Nation (LKDFN) 18

3.2.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 19, 2012 18

3.2.2 Mine Closure and Reclamation Meeting, February 26, 2013 19

3.2.3 Closure Options and Research Workshop, March 13, 2013 21

3.2.4 Community Workshop, May 27, 2013 22

3.2.5 Community Site Visit for Spring Freshet, June 20, 2013 26
3.2.6 Summer Site Visit – Missed Opportunity 28
3.3 North Slave Métis Alliance (NSMA) 29
3.3.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 19, 2012 29
3.3.2 Meeting, February 27, 2013 29
3.3.3 Mine Closure and Reclamation Meeting, February 28, 2013 30
3.3.4 Closure Options and Research Workshop, March 13, 2013 31
3.3.5 NSMA Workshop, May 25, 2013 32
3.3.6 Summer Community Site Visit, July 27, 2013 33
3.4 Northwest Territory Métis Nation (NWTMN) 36
3.4.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 19, 2012 36
3.4.2 NWTMN Workshop, June 12, 2013 37
3.4.3 Summer Community Site Visit, July 23, 2013 39
3.5 Tlicho Government 42
3.5.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 19, 2012 42
3.5.2 Mine Closure and Reclamation Meeting, January 22, 2013 42
3.5.3 KBWG Update Meeting, April 3, 2013 43
3.5.4 Community Workshops 44
3.5.5 Summer Site Visit, August 29, 2013 49
3.6 Yellowknives Dene First Nation 52
3.6.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 19, 2012 52
3.6.2 Closure Options and Research Workshop, March 13, 2013 52
3.6.3 Meeting, March 20, 2013 53
3.6.4 Community Site Visit for Spring Freshet, May 21, 2013 53
3.6.5 Community Workshop, May 29, 2013 55
3.6.6 Summer Site Visit, July 30, 2013 56
4 Life of Mine Engagement 61
5 ACKNOWLEDGEMENTS AND CLOSING REMARKS 61

List of Appendices

Appendix A. Acronyms

Appendix B. Communication Logs

Appendix C. Aquatic Effects Monitoring Program and Traditional Knowledge Workshop Presentation, September, 2012

Appendix D. Interim Closure and Reclamation Plan Meeting Presentation and Posters

Appendix E. Closure Options and Research Workshop Presentation, March 13, 2013

Appendix F. Community Workshop Presentations

a. Community Update
b. Human Resource Initiatives
c. Business Opportunities
d. Permitting and Environment
e. Aquatic Effects Monitoring Program
f. Closure and Reclamation
g. Closure and Reclamation Demonstration

Appendix G. Objectives of Site Visit and Overview of Day Presentation

Appendix H. Aquatic Effects Monitoring Plan Workshop Presentation, January 24, 2013

Appendix I. Let's Talk Newsletters

1 Introduction

De Beers Canada Inc. (De Beers) has prepared this Community Engagement Plan and Implementation Update for submission to the Mackenzie Valley Land and Water Board (MVLWB) and for Aboriginal Parties interested and potentially affected by the Snap Lake Mine's operations. The Aboriginal Parties engaged in discussion about the Snap Lake Mine with De Beers include the Deninu Kué First Nation (DKFN), the Lutsel K'e Dene First Nation (LKDFN), the North Slave Métis Alliance (NSMA), Northwest Territory Métis Nation (NWTMN), Tlicho Government (Tlicho), and the Yellowknives Dene First Nation (YKDFN).

This Community Engagement Plan and Implementation Update (Plan) is part of the ongoing life of mine engagement. It is a follow-up to the Community Engagement Report submitted with the Snap Lake Mine 2011 Water Licence Renewal Application dated June, 2011 and it represents De Beers' ongoing engagement activities regarding the Snap Lake Mine since receipt of the Water Licence on June 14, 2012. This updated information regarding De Beers' community engagement in this Plan covers the period between September 2012 and September 2013. Engagement activities during the period between submission of 2011 Water Licence Renewal Application and receipt of the Water Licence were, for the most part, led by the MVLWB.

The ***MVLWB Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits*****,** issued on June 1, 2013 have been reviewed and this engagement report aims to meet or exceed the guidelines where possible while also complying with De Beers' policies for working with Aboriginal communities and Sustainable Development Policy.

2 General Engagement Activities

2.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 2012

De Beers hosted a one-day Workshop in Yellowknife on September 19, 2012 at the Yellowknife Inn to discuss the incorporation of Traditional Knowledge (TK) into the Snap Lake Aquatics Effects Monitoring Program (AEMP). De Beers first contacted leaders and representatives of the Aboriginal Parties with an invitation for attendance by a staff member and two (2) Elders. De Beers also offered to cover attendee expenses and to provide capacity funding to enable the involvement of community experts.

The purpose of the Workshop was:

1. To understand how communities view their information currently being incorporated into aquatic monitoring and to collect feedback on the best ways to incorporate TK into the AEMP moving forward;
2. Review what has been done previously: methods and results of the five (5) components of the AEMP and the fish tasting; and (3) receive feedback from participants.

The agenda included the following items:

- Opening Prayer;
- Presentation by De Beers on AEMP design update including Snap Lake ecosystem, aquatic food web, current AEMP, study area and reference lakes, water quality monitoring objectives, water quality sample collection, sediment quality monitoring objectives, sediment sample collection, benthos sample collection, and plankton monitoring objectives and sample collection;
- Open discussion;
- Presentation by Golder Associates Ltd. (De Beers consultant) on fish monitoring objectives and fish studies;
- Open discussion;
- Aboriginal TK expert break out session to discuss consultation process with De Beers;
- Group review of results of break out session;
- Wrap-up; and
- Closing Prayer.

Approximately thirty three (33) people attended the Workshop including nineteen (19) Aboriginal representatives from DKFN, LKDFN, NWTMN, NSMA, Tlicho, and YKDFN; four (4) interpreter translators; two (2) Snap Lake Environmental Monitoring Agency (SLEMA) representatives; four (4) De Beers representatives; and four (4) De Beers consultants from Golder Associates Ltd.

The concerns raised by community members and the responses provided by De Beers are outlined further in this report in each specific community section.

The presentation given at this Workshop is included in Appendix C of this report

2.2 Interim Closure and Reclamation Plan Meetings and Workshops

In February 2013 De Beers planned a Closure Options and Research Workshop with Aboriginal Parties as well as offered separate meetings with each of the Aboriginal Parties separately in advance of the Workshop to familiarize staff with the regulatory requirements as well as to brief them on the Snap Lake Interim Closure and Reclamation Plan. De Beers contacted leaders and representatives of the communities in early February offering to host half day meetings in their community with Lands and Environment staff to brief community staff on the Snap Lake Interim Closure and Reclamation Plan (ICRP) in advance of the Closure Options and Research Workshop. De Beers' meeting invitations were accepted by DKFN, LKDFN, NSMA, and Tlicho. For the YKDFN the invitation was accepted, but consisted of a general discussion on site activities in lieu of a formal closure discussion.

Each meeting required between a half to a full day and involved a powerpoint presentation (see Appendix D) by De Beers and ARKTIS Solutions Incorporated (ARKTIS, De Beers consultant) on the closure and reclamation planning for the Snap Lake Mine including an introduction to De Beers and the Snap Lake Mine, overview of closure planning, progression of closure and reclamation plan, a history of engagement, current Interim Closure and Reclamation Plan

revision, mine components and closure objectives, closure criteria, options and research, and moving forward. The presentation was followed by a general discussion. The concerns raised by community members and the responses provided by De Beers are outlined further in this report within each specific community section.

On February 14, 2013 De Beers provided notice to the MVLWB that it would be hosting a Closure Options and Research Workshop on March 13, 2013 at the Tree of Peace Center in Yellowknife, NWT, to encourage dialogue between Aboriginal Parties, regulators and De Beers prior to De Beers' submission of a revised ICRP. De Beers covered the cost of travel, meals and accommodation expenses for the participation of the Aboriginal Parties' representatives that were from outside of Yellowknife

The agenda for the Workshop included the following items:

- Opening Prayer
- Introductions
- Presentation – Introduction
- Presentation – Closure Options followed by discussion
- Presentation – Reclamation Research followed by discussion
- Next steps moving forward in the ICRP revision process
- Wrap-up.

Approximately fourteen (14) people attended the Workshop including: four (4) Aboriginal representatives from DKFN, LKDFN, YKDFN, and NSMA; three (3) federal government representatives from Aboriginal Affairs and Northern Development Canada (AANDC), Environment Canada (EC), and Department of Fisheries and Oceans (DFO); two (2) representatives of SLEMA; one (1) representative of MVLWB; two (2) De Beers representatives; and two (2) De Beers consultants from ARKTIS Solutions Incorporated.

The concerns raised by community members and the responses provided by De Beers are outlined further in this report in each specific community section.

The presentation given at the Workshop is included in Appendix D of this report.

2.3 Community Workshops

De Beers sent written requests on April 15, 2013 to the Aboriginal Parties requesting an opportunity to hold public meetings in their communities, to discuss both the Snap Lake Mine and the Gahcho Kué Mine. These workshops were open to all members of the communities and capacity funding was provided by De Beers to enable active participation and involvement of Elders and youth as they have expertise, important knowledge and unique perspectives to share. De Beers also confirmed it would fund the costs associated with meeting expense (e.g. hall rental, sound system, interpreters, and refreshments). These letters were followed up with telephone calls to confirm dates available during May or June 2013 with the following Aboriginal Parties:

- DKFN (Fort Resolution)
- NSMA (Yellowknife)
- LKDFN (Lutsel K'e)
- YKDFN (N'Dilo)
- Tlicho Government (Wekweeti, Gameti, Whati, Behchoko); and
- NWTMN (Hay River)

The details and logistics of the community workshops were then coordinated and confirmed with the appropriate community representatives. The dates for the community workshops and the number of community participants attending these workshops are noted in the table below.

Table 1: De Beers Public and Community Visits (Spring 2013)

Date	Location	Aboriginal Group	Number of Delegates
May 24, 2013	Fort Resolution	Deninu Kué First Nation (DKFN)	27
May 25, 2013	NSMA office in Yellowknife	North Slave Métis Alliance (NSMA)	13
May 27, 2013	Lutsel K'e	Lutsel K'e Dene First Nation (LKDFN)	32
May 29, 2013	N'Dilo	Yellowknives Dene First Nation (YKDFN)	7
June 3, 2013	Wekweeti	Tlicho Government	4
June 4, 2013	Gameti	Tlicho Government	25
June 5, 2013	Whati	Tlicho Government	45
June 6, 2013	Behchoko	Tlicho Government	80
June 12, 2013	Hay River	Northwest Territory Métis Nation (NWTMN)	19

De Beers representatives from four departments attended each community meeting to allow for open conversations on a broad range of both Snap Lake and Gahcho Kué Mine topics, including socio-economic, business, human resources and environment of the Snap Lake Mine and Gahcho Kué mines. Specifically De Beers' representation included at least one delegate

from Human Resources, Business Development, Community Relations, and Environment and Permitting.

Topics that De Beers planned to address with each community included:

- Human Resource initiatives for NWT Resident and Aboriginal employment and training;
- Business Opportunities;
- Environment and Permitting Overview;
- Closure and Reclamation Plan (CRP); and
- Aquatic Effects and Monitoring Program (AEMP).

The selected methods of engagement for the Workshops included a combination of presentations, demonstrations, and open discussions. During environmental topics De Beers used interactive tools such as maps and monitoring equipment.

The agenda for each community workshop required approximately one full day. Each workshop agenda was tailored to the community's interest but generally included an opening prayer, introductions, community update, powerpoint presentations on topics of interest followed by open discussions, closure and reclamation demonstrations, AEMP demonstrations, and closing remarks. The format of each community meeting varied based on the interest and attendance at each community meeting. Where public meeting attendance was low, those meetings were presented in an "open house" format with De Beers' representatives individually engaging with each participant based on participant interest. This was the case in Wekweeti, where due to low attendance De Beers decided to forego the formal agenda and provided an interactive engagement approach instead. In the community of Lutsel K'e, the community was not able to complete all activities planned by de Beers within the scheduled day, so De Beers agreed to return to Lutsel K'e a second day to complete the workshop at the community's request.

The presentations given at these Workshops are included in Appendix F of this report.

2.4 Site Visits & Workshops

De Beers hosted delegates from each of the Aboriginal Parties at the Snap Lake Mine during either spring freshet or in the summer of 2013. The spring freshet site visits were hosted for the Yellowknives Dene First Nation and Lutsel K'e Dene First Nation at the request of both First Nations. These spring freshet visits provided additional opportunities for De Beers to address their questions and concerns regarding water management processes and water management infrastructure improvements at the Snap Lake Mine.

Summer site workshops were arranged by first contacting community leaders and lands and environment staff representatives to outline the company's proposed 2013 community engagement plans, in which the spring community meetings and the subsequent summer site visits were offered. Following the completion of the spring community meetings, the details and logistics of the site workshops were then coordinated and confirmed with the appropriate community representatives.

The purpose of the summer site workshops were to: follow-up with community engagement after the spring community workshops; build understanding regarding water management on surface and the water management system enhancements made since 2011; and to inform communities about De Beers' water licence amendment requests to the MVLWB. In addition, the site workshops provided another opportunity to discuss interim closure and reclamation planning and other concerns as they arose.

Input provided by community members during the site workshops is taken into consideration in designing monitoring plans including any recommendations on how Traditional Knowledge can inform and improve plans. As such, De Beers provided capacity funding to Aboriginal groups to enable active participation and involvement of community Elders and other experts with important knowledge to share.

The selected methods of engagement for the site workshops included a combination of presentations, open discussions, bus and walking tours, demonstrations, and one-on-one conversations with De Beers environment and permitting staff who are responsible for monitoring and implementation of environmental programs. Operational staff was also involved in hosting the visits, enabling direct access for the community visitors to speak directly to those responsible for site based infrastructure, systems and processes.

The agenda for each site visit required one full day and generally included the following:

- Opening prayer
- Introductions
- "Objectives of Site Visit and Overview of the Day" powerpoint presentation (see Appendix G)
- Open discussion
- Site surface tour including water management structures, north pile, waste management area, and water management pond as well as other site features
- Tour of Water Treatment Plant
- Opportunity to Pay the Land
- Tour of Environmental Lab and Main Building
- Closing remarks
- Closing prayer

During the summer site visits, round-table discussions centered on fuel storage, water management, wildlife management and waste management, including waste backhauls and incinerator operation. In response to concerns, De Beers opened further discussion regarding its specific mitigation measures. De Beers described site infrastructure changes such as level loggers, pumps, instrumentation, and freshet monitoring to mitigate water management issues.

In response to wildlife and waste management concerns, De Beers described how snow fencing prevents waste dispersal at the landfill as well as methods employed on site to deter wildlife from the area. De Beers also provided information regarding the types of wildlife seen on and around the mine site and discussed the frequency of these sightings. The

design, construction and function of the North Pile was described and community discussion focused on the North Pile slope, the test plots and design considerations for the cover and as well as how the design will mimic eskers and the surrounding landscape.

De Beers described the site fuel storage areas noting that fuel tanks are either double walled or contained within a bermed area providing 110% of the capacity of the tank. Regulatory inspection and certification of the fuel tanks was also discussed. De Beers showed which waste in the secured waste management area was backhauled and pointed out its new incinerators capable of meeting air quality emission standards and regulations. De Beers explained how incinerator emissions are tested as well as the importance of incinerator operator training to ensure that emission standards are met.

Of note, discussion occurred throughout community engagement activities regarding the role of the Snap Lake Environmental Monitoring Agency (SLEMA) in informing Aboriginal Parties about Snap Lake processes. De Beers clarified how information flows, how members are appointed to SLEMA, as well as the function and objectives of the agency.

The concerns raised by community members and the responses provided by De Beers are outlined further in this report in each specific community section.

Copies of De Beers' Let's Talk Newsletter entitled "An opportunity to discuss water management at the Snap Lake Mine", dated summer 2013 were also made available to participants. This newsletter is described in more detail in Appendix I of this report.

The concerns raised by community members and the responses provided by De Beers are outlined further in this report in each specific community section.

2.5 Fish Tasting Events

During the environmental assessment of the Snap Lake Mine De Beers committed to hold an annual fish tasting event at the mine. The fish tasting provides an opportunity for Elders to share traditional knowledge as part of the Aquatic Effects Monitoring Program (AEMP). Each year since 2005 De Beers has brought Elders from affected communities to site to catch, examine, cook and taste fish from Snap Lake. Elders use their expertise and knowledge to examine the fish. Fillets of fish are boiled in water then eaten without the addition of salt, pepper, oil, or butter, to allow Elders to fully taste the flavour of the fish. Elders' comments are documented on site and then reported in an annual publication, which is submitted in the Annual AEMP report in April.

2.5.1 Fish Tasting - September 2012

On July 26th, 2012 De Beers contacted community leaders with a request for their assistance in selecting two (2) Elders from their community to participate in De Beers' annual fish tasting event. For consistency purposes De Beers suggested that it would be preferable to select at least one Elder who attended the fish tasting event in previous years. In addition, to ensure future consistency, De Beers also suggested that the community consider that the second Elder

be someone who has not previously participated. In its correspondence, De Beers offered daily honorariums, meal per diems, and travel for participants.

On September 12-13, 2012 De Beers held its annual Snap Lake Mine Fish Tasting event with Elders from LKDFN, YKDFN, Tlicho Government and the NSMA including the following individuals:

- Nick Football, Tlicho Elder (fisher)
- Joe Catholique, LKDFN Elder
- John Catholique, LKDFN Elder
- Archie Catholique, LKDFN (Interpreter)
- Hugh McSwain, NSMA Elder
- Wayne Langenhan, NSMA Elder
- Mike Francis, YKDFN Elder (fisher)
- Philip Liske, YKDFN Elder
- Lena Drygeese, YKDFN Interpreter
- Dave White, Snap Lake Environmental Monitoring Agency, Executive Director
- Zhong Liu, SLEMA Environmental Analyst

The first day, September 12, 2012, only involved fishers to assist in catching the fish prior to the event. The second day, September 13, 2012, involved all participants, and fish were retrieved from nets, filleted, cooked and tasted.

Two fish were caught and each Elder provided individual observations and comments on fish health, texture and taste. In conclusion, all Elders and interpreters rated the fish Good or Very Good in all three categories.

The final report was submitted to the MVLWB on March 31, 2013 as part of the annual Aquatic Effects Monitoring Program (AEMP) report.

2.5.2 Fish Tasting - September 2013

In July 2013 the same process as outlined in Section 2.5.1 was used to invite community leaders to select two (2) Elders from their community to participate in De Beers' annual fish tasting event. De Beers extended an invitation in 2013 to both the DKFN and NWTMN to participate.

The annual Snap Lake Mine Fish Tasting event was held on September 11th and 12th with Elders from DKFN, LKDFN, NSMA, NWTMN, Tlicho Government, and YKDFN, as well as De Beers' biologist including the following individuals:

- James Balsillie, DKFN
- Robert Beaulieu, DKFN
- Ernest Boucher, LKDFN (fisher)
- Madelaine Drybone, LKDFN
- Wayne Langenhan, NSMA (fisher)
- Angus Beaulieu, NWTMN
- Eddie Fabien, NWTMN
- Nick Football, Tlicho
- Michel Louis Rabesca, Tlicho
- Mike Francis, YKDFN
- George Tatsiechele, YKDFN

- Bertha Catholique, LKDFN Interpreter
- Berna Martin, YKDFN Interpreter
- Paul Vecsei, Biologist, Golder Associates

The first day, September 11, 2013, only involved fishers Wayne Langenhan and Ernest Boucher to assist in catching the fish prior to the event. The second day, September 12, 2013, involved all participants, and fish were retrieved from nets, filleted, cooked and tasted.

Observations by De Beers' environmental technician and the biologist from Golder Associates who participated were that the fish tasting event was successful in terms of the number of fish captured, the contribution of the elders to the examination of the fish and the fact that most participants commented that the fish taste was either 'Very Good' or 'Outstanding'. Detailed results of the fish tasting will be reported in the annual AEMP report submitted to the MVLWB on May 1, 2014.

2.6 MVLWB Engagement

De Beers has maintained engagement activities regarding its AEMP with Aboriginal Parties and regulators through the MVLWB including two (2) Workshops described in the following sub-sections.

2.6.1 AEMP Workshop January 24, 2013

MVLWB held a De Beers Snap Lake AEMP Workshop on January 24, 2013 in Yellowknife, NWT. The agenda for the Workshop required one full day and included the following items:

- Introduction;
- De Beers presentation - Overview of Study Design and Re-evaluation, followed by discussion;
- De Beers presentation - Water Quality and Sediment, followed by discussion;
- De Beers presentation - Plankton and Benthos, followed by discussion;
- De Beers presentation - Fish Health and Fish Community;
- De Beers presentation - Weight of Evidence;
- De Beers presentation - Adaptive Management Framework; and
- Wrap-up.

Three representatives from De Beers and five representatives from De Beers' environmental consultant, Golder Associates, participated in the workshop. The following individuals participated, representing the Aboriginal Parties, SLEMA and regulators:

- Zhong Liu, SLEMA
- Dave White, SLEMA
- Mike Tollis, LKDFN
- Todd Slack, YKDFN
- Eric Binion, NSMA
- Patrick Kramers, AANDC
- Anne Wilson, EC
- Stephanie Poole, Akaticho IMA (By phone)
- Maggie Squires, Independent Consultant

- Barry Zadylik- Independent Consultant
- Kathy Racher- MVLWB
- Marc Casas- MVLWB
- Lorraine Sawdon, DFO
- Bruce Hanna, DFO
- Lana Miller, University of New Brunswick

During the Water Quality discussion YKDFN's representative noted that YKDFN Elders were expressing concern regarding potential impacts to lakes along the winter road. The SLEMA consultant was concerned with dust caused by the winter road. De Beers responded that it does dust monitoring and has agreed to a targeted winter road study to confirm that there are no issues with dust effects from the road on fish and other organisms that live in the lakes. YKDFN also asked questions about how the additional water from underground affected the original water quality predictions and models.

During the Weight of Evidence discussion, YKDFN's representative commented that given the value of the land and water, acceptable aquatic biota monitoring results are insufficient. YKDFN further commented that increasing complexity decreases community involvement noting that De Beers committed to plain language summary by component. The YKDFN representative also expressed concern about taking fish out of the lake noting that if fish were good they should be given to the communities.

During the Adaptive Management Framework discussion, YKDFN commented on the importance and absence of discussion of rate of change noting that trends in drinking water were not considered. YKDFN also commented on the limited capacity of communities and SLEMA to justify the ecological significance of an issue and recommended an opportunity to discuss minimums of real actions, rather than hypothetical actions to establish minimum requirements. De Beers responded that water quality including aesthetic objectives is built into the response framework. The fresh water intake for site is located within Snap Lake so including aesthetic guidelines is important. After the January meeting a second response framework meeting was held to discuss weight of evidence and the response framework so that it was clear and well understood by all parties.

The presentations given at this Workshop are included in Appendix H of this report.

2.6.2 AEMP Workshop May 29, 2013

MVLWB held a De Beers Snap Lake AEMP Response Framework Workshop on May 29, 2013 in Yellowknife, NWT. The main objectives of the Workshop were to: (1) solicit feedback and input from fisheries experts on fish monitoring (i.e. fish health and fish abundance); and (2) solicit input on the development of action levels as they relate to the implementation of adaptive management within the AEMP at Snap Lake mine.

The agenda for the Workshop required one full day and included the following items:

- Introduction;

- Snap Lake Site Update;
- Snap Lake AEMP Response Framework;
- Safe Drinking Water, Fish Present and Safe to Eat;
- Weight of Evidence; and
- Path Forward.

Two representatives from De Beers and five of its environmental consultant Golder Associates participated in the workshop. The following individuals participated, representing the Aboriginal Parties, SLEMA and regulators:

- Zhong Liu, SLEMA
- Dave White, SLEMA
- Eric Binion, NSMA
- Todd Slack, YKDFN
- Paul Green, AANDC
- Paul Unka, NWTMN
- Anne Wilson, EC PHONE
- Stephanie Poole, Akaitcho IMA
- Maggie Squires, Independent Consultant
- Kathy Racher, MVLWB
- Marc Casa, MVLWB
- Brent Wheeler, Wek'eezhii Land and Water Board
- Lorraine Sawdon, GNWT
- Bruce Hanna, DFO
- Hilary Machtans, Golder Associates

During the AEMP Response Framework discussion YKDFN recommended changing the wording of “evaluate if the mine is the cause” to “evaluate whether the mine is directly or indirectly the cause” to which there was a consensus agreement.

During the Safe Drinking Water discussion, YKDFN noted on behalf of its Elders that the 75% triggers are too far towards the “no go” zone and would prefer a more cautionary approach noting that mine workers drink from the lake. In response, parties conceded that water must be drinkable during operations and through closure. De Beers agreed that response thresholds must be conservative, in response they explained that the low action level is set to commence studies to determine whether the change is mine related, and whether it is of concern to the aquatic environment. It was decided at that point that the “No go” values would be included in a separate table so as to not confuse these values with the acceptable rate of change. YKDFN also recommended that the mine take action ahead of exceedances. De Beers responded that this is the intent of the low action level and the Board requirement for notification and follow up studies.

2.7 Let’s Talk Newsletters

De Beers published two (2) Let’s Talk newsletters during the period of this report. The first publication entitled “An opportunity to update plans for Closure and Reclamation of the Snap Lake Mine”, dated February 2013 provided a summary of De Beers’ activities to be undertaken in 2013 to update its Interim Closure and Reclamation Plan, including an introduction, the ongoing process, community involvement, and a description of specific closure plans for the North Pile, underground mine, and infrastructure. This publication was distributed via email to land and environment staff as well as provided during the meetings.

The second publication entitled “An opportunity to discuss water management at the Snap Lake Mine”, dated Summer 2013 provided information for the summer site visits including a message from the Mine General Manager, surface tour map with description of site features, terminology and definitions, fast facts, and a feedback form. This publication was made available during the site visits to participants.

Copies of these publications are included in Appendix I of this report.

2.8 Public Communications

In addition to maintaining engagement with Aboriginal Parties and regulatory agencies, De Beers has been open to communicating with any party that shows interest in the Snap Lake Mine. Regular updates regarding its activities are posted to its website, however general enquiries have been primarily related to job opportunities or business opportunities.

2.9 Communications Logs

A record of De Beers' communication with Aboriginal groups is contained in logs located in Appendix B.

3 Community Specific Engagement Activities

3.1 Deninu Kué First Nation (DKFN)

3.1.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 19, 2012

On August 29, 2012 De Beers invited DKFN to a one (1) day Workshop in Yellowknife on September 19, 2012 to discuss the incorporation of Traditional Knowledge (TK) into the Snap Lake Aquatic Effects Monitoring Program (AEMP). DKFN confirmed its attendance and the names of its delegates on September 6, 2013. The Workshop was attended by two (2) DKFN members including Patrick Simon (Resource Management Manager) and Robert Sayine (Councillor and Elder).

During the Workshop DKFN asked about community involvement and recommended smaller community meetings or workshops to review the reports before meeting in larger forums such as this Workshop. DKFN further recommended two (2) to three (3) day workshops within each community for each report to prepare for meetings with industry. De Beers responded that it meets with communities regularly noting that it holds annual update meetings and that the company's approach and financial assistance enables communities to send representatives to its technical meetings. DKFN also commented on the need for funding for community monitoring. De Beers responded that it has discussed methods of incorporating Traditional Knowledge (TK) into its monitoring programs during previous meetings with DKFN and explained that De Beers does hire community assistants in its monitoring programs. In response to a DKFN technical question regarding the effect of climate change on water temperature, Golder Associates Ltd. responded on behalf of De Beers noting that De Beers has collected ten (10) years of baseline information that will help identify future trends due to climate change, and that this science based information could compliment changes observed through TK.

For more information about this Workshop see section 2.1 of this report.

3.1.2 Mine Closure and Reclamation Meeting, February 25, 2013

On February 13, 2013, De Beers expressed interest in hosting a half day meeting in the community with DKFN Lands and Environment staff to discuss closure and reclamation planning for the Snap Lake mine. De Beers noted that the meeting was intended to brief community staff on the Snap Lake Interim Closure and Reclamation Plan (ICRP) in advance of the Closure Options and Research Workshop scheduled on March 13, 2013 as well as to provide an opportunity for DKFN to comment on De Beers' 2013 engagement plans. On February 14, 2013 DKFN confirmed their attendance and both parties confirmed the date of the meeting for February 25, 2013. De Beers and DKFN continued to correspond over the days

leading up to the meeting to agree on the logistics and details of the budget for holding the meeting.

The meeting began with an Opening Prayer followed by a presentation (see Appendix D) by De Beers and ARKTIS Solutions Incorporated (ARKTIS, De Beers' consultant) on the closure and reclamation planning for the Snap Lake mine and then questions and responses. The remainder of the meeting involved a discussion regarding the proposed community engagement schedule for 2013.

During the meeting DKFN asked various questions regarding the timeline for closure activity, waste material remaining on site following closure, monitoring, water management and runoff from the North Pile, cover material for the North Pile, revegetation of the North Pile, caribou passage after closure, site contamination, DKFN participation in monitoring activities, fish tasting, and the stability of the underground mine and paste backfill. All questions were answered by De Beers/ ARKTIS and no further comments or concerns were expressed. DKFN also suggested that their aquatic biologist be one of their representatives to attend the March 13, 2013 Closure Options and Research Workshop. This recommendation was acknowledged by De Beers.

During the discussion on De Beers' 2013 community engagement schedule, DKFN asked whether DKFN would be invited to participate in site visits and how often the site visits would occur. De Beers confirmed that DKFN would be invited, and that typically site visits occur in summer however site visits can also be planned when there are changes in site operations or contemplated changes as part of the water license renewal process.

In response to concerns from DKFN regarding the availability of jobs for community members, De Beers indicated that job opportunities are sent by its Human Resources department to the Band office, and agreed to re-confirm with its Human Resources Department that the DKFN Band office in Fort Resolution is included in the list of communities notified about employment opportunities.

The meeting was held in Fort Resolution and was attended by nine (9) representatives of DKFN as well as DKFN Youth participants from the local high school, three (3) representatives of De Beers, and two (2) representatives of ARKTIS including the following individuals:

- Darren Raymond (De Beers)
- Alexandra Hood (De Beers)
- Tom Bradbury (De Beers)
- Jamie VanGulk (ARKTIS)
- Reid Smith (ARKTIS)
- Gregory Balsillie (DKFN)
- Carol Collins (DKFN)
- Dave Pierrot (DKFN)
- Jerry Sanderson (DKFN)
- Rosy Bjornson (DKFN)
- Frank Lafferty (DKFN)
- Stanley Beck (DKFN)
- Eddie Lafferty (DKFN)
- Patrick Simon (DKFN)

3.1.3 Closure Options and Research Workshop, March 13, 2013

On February 14, 2013, De Beers invited DKFN to participate in the Closure Options and Research Workshop, to take place on March 13, 2013. DKFN confirmed its participation. One (1) member of the DKFN, Patrick Simon, attended the Workshop. No questions or comments from DKFN were recorded. See section 3.2.3 for additional details about the Workshop.

3.1.4 Community Workshop, May 24, 2013

On April 15, 2013, De Beers emailed a letter to Chief Louis Balsillie, DKFN; Patrick Simon, Manager Lands & Environment, DKFN; and Rosy Bjornson, Resource Management Coordinator, DKFN, describing De Beers' proposed 2013 Community Engagement. The letter outlined that in building upon the 2012 community engagement opportunities, De Beers would like to continue the conversation on both the engagement plans for the Snap Lake Mine and the Gahcho Kué Project. The letter noted that during the 2012 engagement activities, De Beers received a number of inquiries from community members regarding opportunities for employment, training, scholarship programs and business opportunities with the company as well as regarding environmental and permitting/regulatory matters. In addition, De Beers offered to provide capacity funding to enable active participation and involvement of community elders or experts. De Beers encouraged the participation of elders and youth as they have expertise, important knowledge and unique perspectives to share.

De Beers proposed a May 2013 Update Workshop to be held in Fort Resolution the week of May 21 to 30, 2013. De Beers proposed to provide a general update in the morning on employment and business opportunities, scholarships and training opportunities. The afternoon session would address environment topics by both the Snap Lake Mine and Gahcho Kué Environment staff with a specific focus on AEMP and Closure and Reclamation Plans (CRPs). Community input received at these meetings would be taken into consideration as De Beers continually refines the AEMP and CRP.

On May 24, 2013, a team of De Beers' representatives travelled from Yellowknife, NWT to Fort Resolution, NWT to engage the DKFN membership in discussions regarding both the Snap Lake Mine and the Gahcho Kué Project.

A total of twenty-seven (27) DKFN delegates were in attendance and the engagement opportunity allowed for a combination of presentations, demonstrations and open discussion opportunities.

Some discussion themes that emerged in this workshop include:

- DKFN concern with GNWT and an approach to engagement that is initiated through the Hamlet Council of Fort Resolution, with De Beers providing clarification regarding socio economic agreements and the separate roles of GNWT, DKFN, and De Beers;
- DKFN concern regarding accessibility of the NWT Mine Training Society in Fort Resolution;

- DKFN concern regarding their community preparedness for business opportunities which led to a discussion about joint venture opportunities and small business workshops as well as clarification from De Beers regarding how NWT and Aboriginal business are given extra points in De Beers' bid evaluation process; and
- DKFN concern that there is no employment coordinator in the community and that DKFN lacks human resources to support job advertisements that are being issued by De Beers and others for opportunities at the mines.

The Community Workshop began with an Opening Prayer, welcoming remarks from Chief Balsillie, and introductions led by De Beers. Then, De Beers provided a Community Update presentation (see Appendix F) including an overview of De Beers in Canada, followed by summary of the Snap Lake Mine operation , an update on Snap Lake water management challenges and related improvements made at Snap Lake, and an overview of De Beers social performance in the NWT.

The workshop then transitioned to a focused discussion on environmental matters, with a specific focus on Snap Lake Mine's closure and reclamation plan and the AEMP. This discussion involved a closure and reclamation demonstration including a powerpoint presentation illustrating the sequence of infrastructure removal (see Appendix F), as well as a demonstration of AEMP sampling equipment and techniques, followed by closing remarks.

De Beers' presentation material from this workshop, along with the list of attendees can be found in Appendix F of this report.

3.1.5 Summer Community Site Visit, July 24, 2013

In a letter to DKFN dated April 14, 2013, De Beers invited DKFN to visit the Snap Lake mine for a summer site workshop focussed on water management system enhancements since 2011, the development of the North Pile and further opportunity to discuss the Interim Closure and Reclamation Plan. De Beers noted in its invitation that input from community members during the visit would be taken into consideration in designing monitoring plans including any recommendations on how Traditional Knowledge could inform and improve monitoring plans. In addition, De Beers offered to provide capacity funding and to cover other travel related expenses.

In follow-up to its April correspondence, De Beers wrote to DKFN again on July 16, 2013 to confirm the details of the DKFN's participation in the site based workshop noting that the intent of the workshop is to build upon previous engagement including the May 2013 Community Workshop discussions. De Beers also noted that it would provide capacity funding for DKFN's participation to ensure DKFN input and involvement of experts. De Beers offered to arrange a charter for a delegation consisting of a maximum of twelve (12) and worked with DKFN representatives to plan the logistics for their site workshop. DKFN confirmed that July 24th as the date for a DKFN site workshop

The site visit was attended by seven (7) members of DKFN including:

- Martha Beaulieu
- Stanley Beck
- Stephen Cuthbert
- Arthur Lafferty
- Henry Mandeville
- Nicole McKay
- Darin McKay

The site visit began in the Legendary Sky Room where refreshments were served upon the arrival of the DKFN delegation. An Opening Prayer was led by the DKFN followed by introductions. De Beers explained that the purpose of the site visit was to provide a summary of Snap Lake's regulatory background, to explain the kimberlite deposit, and to show first-hand the water management systems and water management infrastructure and system enhancements. The day would also include an explanation of monitoring and the Surveillance Network Program (SNP) monitoring stations and by the end of the day participants would have participated in a thorough site tour to see for themselves how the mine is being developed and managed. Personal Protective Equipment (PPE) was distributed before boarding the bus for the site surface tour.

During the surface tour, De Beers described the following site features: cement storage; processing plant; conveyor system; former incinerators; former camp pad; processed kimberlite; North Pile including test cap trials; slopes of the North Pile; perimeter and temporary sumps; waste management area including totes for backhaul, spill kits, recycling, new incinerators, double lined fuel tanks, burn pit, Emergency Response Team sea cans, and mesh screens used to support the underground mine ceiling; crushed rock; landfarm; ammonium nitrate storage site; explosives mixing site; Temporary Sump #4; site of the crane tip-over; pump shacks; landfill; crusher; laydown area; projects office; bulk sampling plant; fuel storage and refuelling stations; Perimeter Sump #3; boneyard; underground portal; mine offices; mine dry; mechanic shop; and water management pond.

DKFN raised questions during the site surface bus tour regarding the distance of the site from Yellowknife; piping network; fuel storage tank construction; and disposal of fuel storage tanks after closure. All questions were answered by De Beers without further comment or concern from DKFN.

Participants broke for lunch and then reconvened for a tour of the Water Treatment Plant (WTP) beginning in the control room. De Beers provided a Water Treatment Simplified Flow Diagram (see Appendix G) to participants outlining the water treatment process and explained the detailed steps of the flow diagram before leading the group through the plant. During the walk through, De Beers highlighted specific steps of the process including the reactor, clarifier, filters, and in-line monitoring. Participants were shown three (3) water samples, taken at various stages of treatment in the Water Treatment Plant to demonstrate the effectiveness of the plant including influent, post clarification, and effluent. De Beers discussed sampling and monitoring of plant effluent.

Participants then walked to the Gazebo located at the shore where the annual fish tasting program is conducted to see the mine water outfall and diffuser in Snap Lake. De Beers explained how the diffuser works to slowly mix treated water back into the lake to prevent impacts to fish and the aquatic environment. At this location, participants were provided with an opportunity to pay the land. During this portion of the visit, DKFN requested an opportunity to view Snap Lake diamonds. In its response De Beers noted the security issues involved with diamond viewing, and noted that if operationally possible on future visits, an opportunity to see diamonds may be considered. Participants then walked back to the main building for a tour of the environment lab. In the lab, De Beers described the Snap Lake watershed, explained how treated effluent mixes with Snap Lake, and explained monitoring stations and reference stations with the use of a map. De Beers also described water licence monitoring requirements, sampling and monitoring conducted in addition to the water licence requirements including in-house testing, demonstrated a typical in-house colormetric test for nitrate, described procedures for auditing the WTP in-line monitoring system, and outlined other monitoring programs including the fish tasting program. During the lab visit, DKFN expressed interest in employment, and raised questions regarding fish testing. In response, De Beers described its fish program involving sampling/monitoring of each species for size, reproduction, etc. noting that a license to fish for scientific purposes is required from the Department of Fisheries and Oceans to conduct research on aquatics.

Before wrapping up, participants walked through the main building to view the following facilities: mechanic shop/ warehouse; entrance to the processing plant; cultural center; workout room; recreation room; TV lounge; computer lab; yoga room; a diamond information station; and learning center.

Back in the Legendary Sky Room De Beers distributed its Snap Lake Summer 2013 Site Workshop Let's Talk pamphlet (see Appendix G) coffee mugs, and contact information for any follow-up questions. De Beers outlined upcoming community engagement opportunities and provided time for wrap-up comments from DKFN. DKFN raised questions regarding northern employment numbers, the age to apply for employment, and trainee sponsorships. De Beers responded to all questions.

On the flight home, the pilots flew over the entire site to provide participants with an aerial view.

3.2 Lutsel K'e Dene First Nation (LKDFN)

3.2.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 19, 2012

On August 29, 2012 De Beers invited LKDFN to a one (1) day Workshop in Yellowknife on September 19, 2012 to discuss the incorporation of Traditional Knowledge (TK) into the Snap Lake Aquatic Effects Monitoring Program (AEMP). The Workshop was attended by three (3) LKDFN members including Angie Lantz, Florence Catholique, and Sam Boucher.

During the Workshop LKDFN asked about the effect of overpopulation of fish and commented that a narrowing of the fish towards the end of the tail indicates that there is a lack of food, or overpopulation. Golder Associated Ltd. (Golder) responded on behalf of De Beers noting that fish in Snap Lake are in excellent condition and explained the fish characteristics that De Beers monitors. Golder also explained other factors that affect fish health.

LKDFN asked about the potential for water level changes to affect mercury concentrations in the lake water, to which Golder responded that water levels in Snap Lake have been consistent and that no significant changes in water level that would bring new elements into the water had been observed. Golder further explained how diamond mining is different from other developments like hydro power that cause fluctuations in water levels and went on to clarify that there is no correlation between water levels and mercury.

LKDFN asked for clarification regarding the meaning of "changes in fish composition" as well as clarification on monitoring methods and locations. Further to Golder's clarifications, LKDFN recommended that methods and locations must consider the flow of water and the direction of currents, noting that the Elders hold this knowledge. LKDFN continued to ask about the justification for additional reference lakes, to which Golder responded that the current reference lakes are not part of the upper watershed nor do they have the same fish fauna as Snap Lake, making them less comparable; however LKDFN were not satisfied and recommended that methodologies, sample location selections, and reference lakes incorporate participation at the local level as well as Elder knowledge. De Beers responded that originally reference lakes were reviewed by elders and that the second most applicable lake was chosen through this exercise. As well, De Beers noted that while some stations were reduced within Snap Lake, this effort was reallocated downstream due to elders' concerns during the environmental assessment over impacts to the watershed, especially MacKay Lake and the Lockhart River area. LKDFN emphasized the importance of consultation and noted that improvements in communication, particularly with respect to complex technical terms, are areas where additional help is needed to make communication effective as Aboriginal people who speak English as a second language need more time to process the information. During the Workshop, LKDFN recommended an extension to the timeline for developing the AEMP and De Beers subsequently requested an extension to allow for more time to review and discuss the relevant documents. The MVLWB approved the monitoring program but extended the timeline for review of other components including the response framework and weight of evidence which is ongoing as of the date of this report.

For more information about this Workshop see section 2.1 of this report.

3.2.2 Mine Closure and Reclamation Meeting, February 26, 2013

On February 5, 2013, De Beers expressed interest in hosting a half-day meeting in the community with LKDFN Lands and Environment staff to discuss closure and reclamation planning for the Snap Lake mine. De Beers noted that the meeting was intended to brief community staff on the Snap Lake Interim Closure and Reclamation Plan (ICRP) in advance of the Closure Options and Research Workshop scheduled on March 13, 2013 as well as to

provide an opportunity for LKDFN to comment on De Beers' 2013 engagement plan. On February 13, 2013 LKDFN confirmed its attendance. Parties confirmed the date of the meeting for February 26, 2013 and agreed on the logistics and details of the budget for holding the meeting.

The meeting was held in Lutsel K'e where it was attended by six (6) representatives of LKDFN, three (3) representatives of De Beers, and two (2) representatives of ARKTIS, including the following individuals:

- Tom Bradbury (De Beers)
- Alex Hood (De Beers)
- Stephen Lines (De Beers)
- Jamie VanGulk (ARKTIS)
- Reid Smith (ARKTIS)
- Ron Fatt (LKDFN)
- Doris Terri Enzoe (LKDFN)
- Joseph Catholique (LKDFN)
- Sam Boucher (LKDFN)
- Sonya Almond (LKDFN)
- Mike Tollis (LKDFN)

The meeting began with an Opening Prayer followed by a presentation by De Beers and ARKTIS Solutions Incorporated (ARKTIS, De Beers' consultant) on the closure and reclamation planning for the Snap Lake mine (see Appendix D). This was then followed by an opportunity for questions to which De Beers and ARKTIS responded.

During the meeting LKDFN asked various questions regarding the North Pile. This included enquiries about its embankments, height, acid generating rock, handling of garbage, and final landform shape. De Beers/ ARKTIS answered all questions regarding the North Pile noting that community input, Traditional Knowledge and expert review will all provide valuable information regarding its closure. LKDFN also asked about permafrost advancement into the processed kimberlite to which De Beers referred to modelling during the environmental assessment phase. Other general questions were asked about the process for returning the reclamation security letter of credit, how hiring priorities are applied by De Beers' consultants and contractors, accessibility to the Snap Lake mine site by LKDFN members who are travelling via snowmobile, types of fish in Snap Lake, the timing of the fish tasting program, as well as future engagement activities. De Beers responded to these questions directly and no further questions were expressed on those topics.

LKDFN expressed concerns about the cumulative effects of Snap Lake and Gahcho Kué projects operating at the same time. Concern was also raised that there may be racism directed towards LKDFN employees at the Snap Lake Mine. De Beers outlined its policy regarding harassment and explained the method for employees to raise a complaint. LKDFN also raised concerns about spills, particularly the timeliness of spill reporting and recommended that

community members be hired to undertake monitoring activities on site. De Beers responded that spills are reported within the appropriate and required timeframe and that monitoring of the spill areas continues. LKDFN also expressed dissatisfaction with how spills are regulated.

De Beers responded to concerns regarding potential effects to fish with emphasis on the Aquatic Effects Monitoring Program (AEMP) and the Surveillance Network Monitoring Program noting that trends are identified and mitigated to avoid manifestation of negative effects to fish. LKDFN commented that it would prefer to see the fish testing and sampling monitoring results in person rather than read about the results in a report. In response, De Beers referred to the Mackenzie Valley Land and Water Board (MVLWB) public registry where monitoring results are posted, and responded that LKDFN members are included in the annual fish tasting and that DBC would invite LKDFN to future engagement events where there may be opportunities to address this concern. De Beers further acknowledged LKDFN's comment that it conducts its own fish sampling as well as LKDFN's recommendation to combine both parties' fish monitoring efforts. In response to LKDFN's request that a local person conduct monitoring work and report back to the community, De Beers noted the names of specific LKDFN individuals hired by De Beers and its consultants to assist with monitoring work on site.

LKDFN commented on the need for more training of its community members, to which De Beers described the training programs it has undertaken in partnership with the Mine Training Society (MTS) and Aurora College. LKDFN also commented on its community's need for equipment, such as the rock crusher they saw on site at Snap Lake Mine. They noted that such a piece of equipment would enable them to improve the conditions of their roads as well as to facilitate training. De Beers explained that the crushing equipment is not currently available as it is used on site but also noted that communities would have the opportunity to purchase equipment at closure.

In closing, LKDFN participants agreed that an annual update on closure progress would be beneficial.

3.2.3 Closure Options and Research Workshop, March 13, 2013

On February 14, 2013 De Beers invited LKDFN to participate in the Closure Options and Research Workshop, and on February 28, 2013 LKDFN confirmed its participation. One (1) representative of the LKDFN, Mike Tollis, LKDFN Manager of Lands, Wildlife and Environment, attended the Workshop. During the Workshop LKDFN asked about the type of rock being considered as cover material for placement over the waste rock, to which De Beers/ARKTIS explained the difference between wet and dry covers. LKDFN also asked whether the length of time for re-vegetation to be completed was a concern to which De Beers/ARKTIS explained its re-vegetation research, noting the role of natural processes. In follow-up, LKDFN asked about the results of reclamation research projects, to which De Beers/ARKTIS noted that ongoing research program updates and findings from completed research would be referenced in the Interim Closure and Reclamation Plan and summarized in the Annual Mine Reclamation Status report submitted to the Mackenzie Valley Land and Water Board.

See section 2.2 for additional details about the Workshop.

3.2.4 Community Workshop, May 27, 2013

On April 15, 2013, De Beers emailed a letter to Chief Dora Enzoe, LKDFN; Mike Tollis, Manager Lands & Wildlife, LKDFN; and Graeme Drew, Senior Administrative Officer, LKDFN describing De Beers' proposed 2013 Community Engagement. The letter outlined that in building upon the 2012 community engagement opportunities, De Beers would like to continue the conversation on both the engagement plans for the Snap Lake Mine and the Gahcho Kué Project. The letter noted that during the 2012 engagement activities undertaken by De Beers, a number of inquiries from community members regarding opportunities for employment, training, scholarship programs and business opportunities as well as environmental and permitting/regulatory matters had been raised . In addition, De Beers offered to provide capacity funding to enable active participation and involvement of community Elders or experts and De Beers encouraged the participation of Elders and Youth as they have expertise, important knowledge and unique perspectives to share.

De Beers proposed a May 2013 De Beers Update Workshop to be held in the communities the week of May 21 to 30, 2013. This community workshop would be open to the public. De Beers proposed to provide a general update in the morning on employment and business opportunities, scholarships and training opportunities. De Beers proposed that the afternoon session would address environment topics by both the Snap Lake Mine and Gahcho Kué Environment staff with a specific focus on Aquatic Effects Monitoring Plans and Closure and Reclamation Plans. De Beers noted that community input received at these meetings would be taken into consideration as De Beers continually refines these plans.

On April 18, 2013, De Beers received a letter from Mr. Tollis in response to the community engagement invitation. This letter outlined concern that the proposed community visit workshop of one day for the suggested list of topics would not provide sufficient time to adequately address the issues. It was suggested by Mr. Tollis that the workshop be extended to three days. There was also a request to clarify De Beers' invitation for "site workshops" and "site visits" as "the First Nation would send different representatives to workshops than to site visits." The letter went on to request that future site visits incorporate snow machines for the youth to travel on the land, instead of flying to site. Additionally, the letter outlined a need to "formalize the relationship" between the collection and use of "traditional knowledge held by experts in Lutsel K'e." Further, Mr. Tollis expressed a willingness to "be open to collaboratively developing an agreement to formalize our relationship in terms of sharing our traditional knowledge with De Beers." In addition, concern was expressed for capacity funding reimbursement occurring following engagement sessions as the community of Lutsel K'e hosts numerous engagement activities throughout the year with various developers "to the point where a significant amount of funds is outstanding and waiting on invoice payment at year-end." Mr. Tollis noted that LKDFN was open to discussing the payment options further with De Beers. The conclusion of the letter requested to add an agenda item to the community workshop that allows for a meeting with the Wildlife Committee to formalize an engagement strategy for the 2013 year. De Beers arranged a teleconference with Mr. Tollis and Mr. Graeme Drew, Senior Administrative Officer in response.

On April 25, 2013 De Beers engaged in a telephone call regarding the upcoming community workshop with LKDFN representatives, Mike Tollis and Graeme Drew. After a review of the

general community workshop approach and agenda, it was agreed that De Beers would offer a two (2) – day workshop in Lutsel K'e focused only on updating the community regarding implementation of the Snap Lake Impact Benefit Agreement, discussing Snap Lake Mine & Gahcho Kué Project Employment, Training, Scholarships and Business opportunities (May 27, 2013) and Snap Lake Mine and Gahcho Kué Permitting and Environment (May 30, 2013). It was agreed that De Beers would send a draft agenda for the two (2) – day workshop as well as a description to Chief and Council in advance. De Beers noted it would await information from LKDFN that was being developed by LKDFN on a TK sharing agreement. De Beers offered to advance the capacity funding to LKDFN prior to the community workshops and to work with Mr. Tollis to finalize the budget for these to take place in the community so that the funds could be processed by De Beers in advance and released early. It was agreed that De Beers would follow up with Mr. Tollis to finalize the site workshop dates.

On May 7, 2013 De Beers emailed Mike Tollis the draft agenda for the upcoming community workshop scheduled for May 27, 2013 and May 30, 2013.

On May 15, 2013 De Beers received a letter from Mike Tollis in response to the draft agenda sent on May 7, 2013. The letter expressed an interest to fully engage with De Beers in the upcoming community workshops on Snap Lake Mine only and LKDFN requested that "all engagement for the Gahcho Kué Project in the community cease until such time that significant progress is made towards operating a sustainable mine at Snap Lake." It was then agreed that one day would be required to cover the reduced agenda and that the date of May 27, 2013 would be acceptable to LKDFN. De Beers proceeded with a focus on Snap Lake Mine only, in order to address community concerns and to create an opportunity for engagement regarding the Snap Lake AEMP and ICRP.

On May 26, 2013, De Beers emailed Mike Tollis and Florence Catholique, LKDFN, an updated draft agenda for the May 27, 2013 meeting confirming in the agenda that topics would focus on Snap Lake only.

On May 27, 2013, a team of De Beers' representatives travelled from Yellowknife, NWT to Lutsel K'e, NWT to engage the LKDFN membership in discussions regarding Snap Lake Mine. The community was not able to complete all activities planned by De Beers within the scheduled day so De Beers agreed to return to Lutsel K'e to complete the workshop on May 30, 2013.

The Workshop was held in Lutsel K'e where it was attended by approximately thirty seven (37) community members on the first day (May 27, 2013) and thirteen (13) community members on the second day (May 30, 2013). Seven (7) representatives of De Beers attended both days.

The first day of the Community Workshop began with an Opening Prayer, welcome from Chief Enzoe, and introductions led by De Beers. Then, De Beers provided a presentation about socio economic performance of the Snap Lake Mine with a focus on De Beers' agreement with LKDFN. This included an overview of the agreement's implementation, including education and training, recruitment and employment, health and wellness and financial provisions. During the presentation, parties discussed the following: identification of targets for measuring LKDFN

involvement in training, employment and business; apprenticeship work placements; and the effect of addictions, cultural issues and literacy on the ability of LKDFN members to participate in training and employment opportunities made available. LKDFN commented that youth who are educated outside the community do not give back to the community and requested that youth be employed to work on the land to encourage youth to be more interested in remaining in the community. LKDFN further suggested that youth should attend site visits. De Beers responded that it will collaborate with the community regarding "on-the-land" community interactions, and that De Beers supports youth participation in site visits, subject to age restrictions required by legislation. Participants also discussed that generally Aboriginal people prefer to work on surface, not in underground mines, and the positive effect that training was having on these preferences. LKDFN raised concerns regarding employees who suffer from drug and alcohol addictions. De Beers noted that in addition to supporting community health and wellness programs such as the Drug & Alcohol Strategic Planning Workshop funded by De Beers for LKDFN Chief and Council, it is considering bringing a traditional healer to site. LKDFN participants also expressed concerns regarding teacher retention in the community of Lutsel K'e and the need for teachers in Lutsel K'e to provide the kind of education that supports development of the skills for the types of workers that De Beers requires at the mine. De Beers acknowledged that it is the role of the Government of Northwest Territories (GNWT) to address the issues related to secondary education and agreed to share with the GNWT this feedback. In addition, De Beers extended an offer to work with the community to fund trades entrance exam training for interested students. LKDFN raised concerns regarding accessibility of job applications and the application process. De Beers outlined how job opportunities and training opportunities are promoted in the community and noted that a follow up phone call for LKDFN with the Human Resources department was an option to help provide clarification and further assistance.

The agenda continued with a presentation by De Beers on Human Resource initiatives including 2012 recruitment efforts and employment. Snap Lake Mine employment statistics in a context of overall Northwest Territories (NWT) diamond mine employment were discussed along with how training commitments in the Socio-Economic Agreement are being filled. De Beers outlined its workforce development approach, and explained its partnership with the Mine Training Society (MTS). De Beers also outlined its NWT post-secondary scholarship program and its recent introduction of new sponsorship scholarships. During the Human Resources presentation LKDFN asked about NWT salary enhancements, and De Beers explained the allowances in place to promote NWT residency for its employees. LKDFN also commented on the lack of skilled LKDFN individuals for the jobs that are available. De Beers agreed that this was a challenge and noted that there are training opportunities in the community agreement to address this, but it has been difficult to find candidates for these opportunities.

Next, a Business Opportunities presentation was provided by De Beers including De Beers' business policy, business registry, and Snap Lake business opportunities. During the Business Opportunities presentation LKDFN asked questions regarding hiring priorities and employment reporting by De Beers contractors and about commitments to provide business opportunities to LKDFN businesses. De Beers provided answers to the questions and acknowledged LKDFN comments regarding the difficulty of starting small businesses. In response to a request for

support with creating business proposals, De Beers noted that assistance could be provided by through its community agreement. LKDFN commented on its preference that a full-time person in the community be employed to help with the development of business plans, over workshops provided by De Beers or others, and then further noted that if business workshops were offered, to keep them simple with visual support. Community members also discussed possible business ideas.

In closing the first day of the Workshop, Chief Enzoe summarized LKDFN concerns regarding training and employment encouraging De Beers to consider offering a heavy equipment operator course in Lutsel K'e. The Chief also recommended follow-up with GNWT department of Industry, Tourism and Investment (ITI) and encouraged De Beers to offer support for a small business workshop. For the purposes of this report, De Beers notes that it had already held a small business workshop in the community of Lutsel K'e on March 6th with Ray St. Arnaud, Business Manager, Akaitcho Business Development Corporation.

The second day of the Community Workshop (May 30th) began with another welcome from Chief Enzoe and introductions led by De Beers. Then, De Beers started the Snap Lake Permitting and Environment session with a presentation including regulatory update, water management update, as well as a presentation on the AEMP (see Appendix F). During the Permitting and Environment and AEMP presentations, LKDFN requested clarification regarding the process for water collection, treatment and release; the purpose for raising the North Pile; final height of the North Pile; the kimberlite deposit; and the rationale for the selected reference lakes used in monitoring. In response to the requests for clarification De Beers provided detailed explanations with the use of charts, where helpful.

Further to the requests for clarification, questions and general discussion was initiated by LKDFN participants regarding the following: sampling frequency and rationale for sample station locations; testing of MacKay Lake; the integrity of the sumps; water use in the processing plant; grey water treatment; underground monitoring station locations; usage of cleaning products containing phosphate; the effect of the second diffuser on lake mixing and monitoring locations; paste recipe and use of paste; the feasibility of a reverse osmosis treatment plant; reporting of monitoring results; testing of northern grayling; chemical characteristics of water from underground versus surface water; monitoring of underground water as it is brought to surface; management of underground operations and roads to prevent accidents and spills; current monitoring under the AEMP and inclusion of birds in the AEMP; and increase in bugs due to increase in nutrients in water.

LKDFN drew attention to AANDC inspection reports regarding waste handling and incineration and sought clarification regarding how De Beers had responded to these reports. De Beers described its waste management enhancements and explained the replacement of its original incinerators and the improvements made with the installation and commissioning of the new incinerators. De Beers also noted that a more recent inspection report was available on the public registry in which the concern identified in the earlier report had been mitigated. LKDFN expressed concern that because of the mining activity the land will not stay clean and there will be long-term effects. In response De Beers described its long-term environmental monitoring

and how that continues post closure. Questions and comments about fish liver size led to general concern expressed by LKDFN over the effect of fish health on humans due to fish consumption. De Beers acknowledged that there are changes to the fish due to nutrient enrichment but that these were not considered negative. De Beers also noted that it is continually monitoring fish health and will continue to do so for life of mine. Concern was also expressed by LKDFN about dust from the North Pile after closure to which De Beers described its studies on cover materials for dust prevention. De Beers also noted that a visit to site in the summer would provide an opportunity to see some of the trials underway on the North Pile for capping of the pile.

LKDFN also recommended that De Beers and its scientists work more directly with LKDFN. LKDFN suggested developing a proposal for De Beers to consider involving LKDFN in monitoring programs such that the community is more assured and engaged. De Beers notes for the purposes of this report that it funds the Traditional Knowledge Panel for the Snap Lake Environmental Monitoring Agency (SLEMA) and that four members of the LKDFN are regularly involved in this program.

In closing the second day of the Workshop, Chief Enzoe requested a subsequent Workshop to further discuss the items raised during these meetings as well as to discuss closure and reclamation. De Beers indicated this would be considered. De Beers closed by reminding the community of the invitation for a summer site workshop and that company representatives looked forward to hearing from LKDFN on an ideal date for the summer site visit as well as regarding LKDFN's selection of individuals who will attend the site visit.

3.2.5 Community Site Visit for Spring Freshet, June 20, 2013

On June 6, 2013 De Beers received a letter from the LKDFN Chief recommending that the annual mine site visit take place on June 20, 2013. She informed De Beers that the LKDFN participants would be comprised of members from the Council, LKDFN Impact Benefit Agreement Committee and youth. In addition the Chief noted that it was LKDFN's understanding that De Beers would also be carrying out a separate mine site visit specifically to deal with environmental issues and she suggested that De Beers host different LKDFN participants for that visit so that it could include staff and members of the Wildlife, Lands and Environment Committee, Elders, and translators.

De Beers worked with LKDFN to find a date that was mutually acceptable and the date selected was June 20th.

The site visit was attended by ten (10) members of LKDFN including:

- Chief Dora Enzoe
- Chad Boucher
- Iris Catholique
- Deserae Jonasson
- Terry Enzoe
- Sheldon Catholique
- Krysten Jonasson
- Amanda Marlowe
- Trevor Marlowe
- Jordan Michel

The site visit began in the Snap Lake Learning Center where refreshments were served. De Beers summarized the events and outcomes of the two-day community meeting in Lutsel K'e on May 27th and 30th, 2013, and provided an overview of the site visit agenda and itinerary. Personal Protective Equipment (PPE) was distributed.

During the surface tour, key points of interest explained by De Beers included: the laydown area; waste management area; water control structures; seepage from the North Pile; the landfill; fuel tanks; the fish tasting site and an a crane accident site near Sump 4.

LKDFN raised questions regarding the management of hazardous wastes; management of the sumps, particularly water levels within the sumps; De Beers' rationale for not moving a crane that had been tipped over near Sump 4; the volume of water managed daily; the volume of fuel shipped along the winter road and the capacity of the fuel tanks; management of runoff water collected in the fuel tank bermed containment areas; and the frequency of Environment Canada inspections of the fuel tanks. All questions were answered by De Beers.

In addition to the questions asked, LKDFN expressed concerns regarding the effect of global warming on permafrost in the North Pile and the Landfill and the resulting likelihood of seepage migrating to Snap Lake. In response, De Beers explained the seepage modelling conducted as part of the site closure plan as well as water management measures post closure. De Beers also clarified that waste directed to the landfill is "clean" meaning non-chemical. The Chief raised a concern regarding the length of time between Environment Canada inspections of the fuel tanks to which De Beers explained the inspection process. Participants then walked to the Gazebo located at the shore where the annual fish tasting program is conducted to see the mine water outfall and diffuser in Snap Lake. While there, LKDFN commented on the importance of including youth with the Elders in catching and examining fish during the fish tasting event. This comment was acknowledged by De Beers.

Participants broke for lunch and then reconvened for a tour of the Water Treatment Plant (WTP) beginning in the control room where De Beers explained how the plant works. Participants were shown three (3) water samples, taken at various stages of treatment in the Water Treatment Plant to demonstrate the effectiveness of the plant including influent, post clarification, and effluent. De Beers discussed sampling and monitoring of plant effluent.

De Beers also provided an overview of sampling procedures including sampling of effluent diffused into Snap Lake and reporting. During this part of the tour, LKDFN asked questions regarding the purpose of the in-line turbidity and pH monitors, filter cleaning and management of filter waste, triggering of shut-off valves, additives used to remove suspended solids, and operation of the diffuser. All questions were answered by De Beers and no further comments or concerns were expressed.

The group returned to the main building for tours of the Emergency Response Team Room, Workshops, and Environmental Lab. At the Emergency Response Team Room, De Beers explained its crisis management plan noting De Beers' reactions and measures in response to previous spills. At the Workshop, the delegation had the opportunity to speak with one of the contractor mechanic trainees and observe the mine equipment including underground trucks.

At the lab, De Beers explained the Surveillance Network Plan (SNP), how monitoring and analysis is undertaken, the monitoring locations and reference lakes. De Beers answered questions regarding water flow with the use of a watershed map.

Following a coffee break, participants were provided with a tour of the accommodations complex including recreational areas and the cultural center.

3.2.6 Summer Site Visit – Missed Opportunity

In a letter to LKDFN dated April 15, 2013, De Beers invited LKDFN to visit the Snap Lake mine for a summer site workshop focussed on water management system enhancements since 2011, the development of the North Pile and further opportunity to discuss the Interim Closure and Reclamation Plan. De Beers noted in its invitation that input from community members during the visit would be taken into consideration in designing monitoring plans including any recommendation on how traditional knowledge could inform and improve monitoring plans. In addition, De Beers offered to provide capacity funding and other travel related expenses.

As noted in Section 3.2.4, on April 25, 2013 LKDFN and De Beers engaged in a conference call to discuss De Beers' engagement approach. During the conference call, De Beers agreed to follow-up with LKDFN following the Community Workshop to finalize arrangements for the summer site visit in July 2013.

On July 3, 2013, De Beers sent a letter to the LKDFN summarizing the results of the recent engagement activities for the Snap Lake mine and informing LKDFN that De Beers was currently in the process of coordinating summer site visits with other Aboriginal communities as outlined in its April 15, 2013 letter. De Beers also emphasized its hope that the LKDFN would consider the opportunity and confirm dates for participation to ensure that the LKDFN has the same level of understanding as other communities and can take advantage of the opportunity to provide further input to De Beers.

Further to De Beers' July 3, 2013 correspondence, De Beers sent another letter to the LKDFN on July 16, 2013, extending the opportunity for LKDFN to participate in a site based workshop at Snap Lake Mine. De Beers noted that it was finalizing the dates for the workshop planned for July and had not yet received confirmation from LKDFN regarding their participation. De Beers also emphasized that given the logistics and site clearances required, it was important to move the discussion forward in order to arrange LKDFN's participation.

De Beers also noted that it would provide capacity funding for LKDFN's participation to enable LKDFN input and involvement of experts. De Beers offered to arrange the charter for a delegation consisting of a maximum of twelve (12) and suggested that LKDFN might like to consider selecting one (or both) of the community members who they have appointed to sit on the Snap Lake Environmental Monitoring Agency to come along with their delegation. This was proposed in response to LKDFN comments at the Community Workshop that they wanted more involvement in monitoring as their appointees to the Snap Lake Environmental Monitoring Agency would be familiar with the monitoring programs and results.

On July 17, 2013 De Beers followed-up again with LKDFN via email providing detailed information to assist LKDFN in scheduling a date for the site visit; however De Beers did not receive a response and thus the LKDFN missed this opportunity offered by De Beers.

3.3 North Slave Métis Alliance (NSMA)

3.3.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 19, 2012

On August 29, 2012 De Beers invited NSMA to a one (1) day Workshop in Yellowknife on September 19, 2012 to discuss the incorporation of Traditional Knowledge (TK) into the Snap Lake Aquatic Effects Monitoring Program (AEMP). NSMA confirmed it would participate. The Workshop was attended by four (4) NSMA members including Ed Jones, Susan Enge, Eric Binion, and Hugh McSwain.

During the Workshop NSMA provided a number of comments and recommendations regarding De Beers engagement on the AEMP including: their need for a better way to communicate with Elders such as working with translators in advance of the meeting; requiring more time to be provided in advance to review De Beers' presentations or to collaborate with the Métis delegates who participated in the fish tasting in advance of the De Beers' Workshop; recommending that all Aboriginal TK experts get together on behalf of the communities to report back to De Beers on how best to dialogue about incorporating TK into the AEMP; the need for a more clear commitment from De Beers demonstrating that it is willing to consult with communities; the need for community input during the AEMP drafting process and review of the AEMP draft design before commenting on the design through the Mackenzie Valley Land and Water Board (MVLWB) process. De Beer responded by expressing it takes engagement with communities seriously and that the opportunities it presents are provided in parallel to the MVLWB processes and it will continue to work in both processes to provide improved opportunities for communities to dialogue with De Beers.

In addition NSMA asked a technical question regarding fish monitoring and about the presence of metals in fish. Golder responded by outlining what the results show and clarified that while a few fish show signs of nutrient enrichment, which is being studied as part of the AEMP, there are no resulting impacts to fish.

For more information about this Workshop see section 2.1 of this report.

3.3.2 Meeting, February 27, 2013

De Beers met with NSMA's Board of Directors on February 27, 2013 at the NSMA office. One of the topics of discussion was De Beers' planned engagement activities for 2013. (The majority of the meeting was spent on matters related to the proposed Gahcho Kué Project.) During this meeting, De Beers outlined its planned engagement activities for both the Snap Lake Mine and Gahcho Kué Project and provided a copy of its proposed engagement calendar. In response to De Beers' request for input and comment, NSMA confirmed that the engagement opportunities and suggested timing were satisfactory and NSMA expressed appreciation that De Beers was

planning to include some opportunities for youth participation. The meeting was attended by five (5) members of NSMA and two (2) De Beers' staff including:

- Bill Enge, President NSMA
- Hugh McSwain, Vice President NSMA
- Marc Whitford, Sec/Treasurer NSMA
- Bob Mercredi, Director NSMA
- Ed Jones, NSMA Elder
- Cathie Bolstad, De Beers
- Veronica Chisholm, De Beers

3.3.3 Mine Closure and Reclamation Meeting, February 28, 2013

On February 7, 2013, De Beers wrote to thank the NSMA for confirming its Lands and Environment staff would participate in a planned meeting with De Beers in Yellowknife on February 28, 2013 to discuss closure and reclamation planning for the Snap Lake Mine. De Beers noted that the meeting was intended to brief NSMA staff on the Snap Lake Interim Closure and Reclamation Plan (ICRP) in advance of the Closure Options and Research Workshop scheduled on March 13, 2013 as well as to provide opportunity for NSMA to comment on De Beers' 2013 engagement plans. On February 11, 2013 NSMA confirmed its attendance and the parties agreed to the meeting logistics.

The meeting was held at the De Beers office in Yellowknife where it was attended by three (3) representatives of NSMA, two (2) representatives of De Beers, and two (2) representatives of ARKTIS including the following individuals:

- Alexandra Hood (De Beers)
- Darren Raymond (De Beers)
- Jamie VanGulk (ARKTIS)
- Reid Smith (ARKTIS)
- Ed Jones (NSMA)
- Wayne Langeham (NSMA)
- Eric Binion (NSMA)

The meeting began with a presentation (see Appendix D) by De Beers and ARKTIS Solutions Incorporated (ARKTIS, De Beers' consultant) on the closure and reclamation planning for the Snap Lake Mine and then questions and responses.

During the meeting NSMA asked various questions regarding the North Pile including whether or not it is lined, the thickness of the rock cover, the exact size of the pile, and the potential for reshaping the pile. De Beers/ARKTIS answered all questions regarding the North Pile noting specific design criteria and modeling work that has been conducted. NSMA also asked questions regarding closure of the underground including the removal of the equipment and infrastructure and the extent of backfilling, to which De Beers/ARKTIS explained how salvageable waste, unsalvageable inert waste and unsalvageable hazardous wastes would be managed as well as how the engineering design and construction of the underground does not reply on backfilling for long-term stability. Questions were asked about updates and the approval process for the ICRP, to which De Beers/ARKTIS referred to the Mackenzie Valley Land and Water Board (MVLWB) process and water licence conditions, noting that community input regarding the plan is an important component of its development and approval. Other general questions were asked regarding De Beers' corporate structure, monitoring post closure and re-vegetation. De Beers/ARKTIS responded to these questions directly and no further concerns were expressed on those topics.

NSMA raised concern about waste, particularly metals left at the site post closure, and further recommended that waste be backhauled on the winter road and that the modular units from the accommodation camp be sold to the communities. In response, De Beers/ARKTIS explained the following: that only inert materials would be left at site; that backhauling on the winter road was assessed as an option but rejected due to restrictions; and explained its plans for the modular units.

De Beers acknowledged concerns and agreed to consider the recommendations provided by NSMA regarding De Beers' consultation including: the need for additional visual support; improved interpretation and translation; inclusion of youth in the summer site visit; and inclusion of a closure section in the annual socio-economic update that the company provides to the NSMA.

3.3.4 Closure Options and Research Workshop, March 13, 2013

On February 14, 2013 De Beers invited NSMA to participate in the Closure Options and Research Workshop. NSMA confirmed its participation and one (1) representative of the NSMA, Eric Binion, attended the Workshop. During the Workshop NSMA asked about the closure objectives and whether they were considered final. Mackenzie Valley Land and Water Board (MVLWB) and De Beers/ARKTIS Solutions Incorporated (ARKTIS) responded noting that best attempts were made to ensure objectives were clear and that although the objectives were not set in stone, they are currently approved by MVLWB and will not be re-evaluated until the next Interim Closure and Reclamation Plan revision. NSMA also asked whether burial of non-hazardous debris within the North Pile would affect permafrost aggradations, to which De Beers/ARKTIS explained the conditions that affect permafrost aggradation and noted that this is currently being evaluated within the conceptual design.

See section 2.2 for additional details about the Workshop.

3.3.5 NSMA Workshop, May 25, 2013

In a letter to NSMA dated April 15, 2013, De Beers proposed a Community Workshop in May 2013 to follow-up with its previous engagement activity. The letter noted that during the 2012 engagement activities, De Beers received a number of inquiries from NSMA members regarding opportunities for employment, training, scholarship programs and business opportunities with the company as well as regarding environmental and permitting/regulatory matters. De Beers offered to provide capacity funding to enable active participation and involvement of community elders or experts. De Beers also encouraged the participation of elders and youth as they have expertise, important knowledge and unique perspectives to share. De Beers noted in its invitation that community input received at the session would inform refinements to De Beers' Aquatic Effects Management Plan (AEMP) and Interim Closure and Reclamation Plan (ICRP).

On April 16, 2013 NSMA confirmed the date of May 25, 2013 for the NSMA Community Workshop.

The Workshop was held in the De Beers office in Yellowknife where it was attended by approximately thirteen (13) community members and eight (8) representatives of De Beers.

The NSMA Community Workshop began with an Opening Prayer, welcome from NSMA, and introductions led by De Beers. Then, De Beers provided a presentation including a comparison of De Beers mines in Canada, followed by Snap Lake Mine quick facts, an update on water management challenges and related improvements at Snap Lake, and an overview of De Beers social investment in the NWT.

The agenda continued with a presentation by De Beers on Human Resource Initiatives including 2012 recruitment efforts and employment. Snap Lake Mine employment statistics in a context of overall Northwest Territories (NWT) diamond mine employment were discussed along with how training commitments are being filled. De Beers outlined its workforce development approach, and explained its partnership with the Mine Training Society (MTS). De Beers also outlined its NWT scholarship program and its recent introduction of new sponsorship scholarships.

During the Human Resources presentation, parties discussed the importance of post-secondary education in the ability of staff to be promoted and advance. One of the NSMA participants commented on personal experience in applying for jobs in mining, to which De Beers encouraged NSMA to contact its Human Resources team for information. In addition NSMA asked questions regarding the types of job positions that De Beers is seeking to fill; underground training; and opportunities for gaining practical experience. De Beers answered all questions and no further comments or concerns were expressed.

A Business Opportunities presentation by De Beers including De Beers' NWT Business Policy, business registry, and Snap Lake business opportunities was also provided.

During the Business Opportunities presentation NSMA asked about De Beers' business registration format as well as specific opportunities available to Métis. In response De Beers

agreed to meet with interested local NSMA businesses to further demonstrate the registry and discuss opportunities.

De Beers provided a presentation updating NSMA on implementation of its Agreement with the NSMA including information about initiatives and activities, training and employment, and scholarship programs. De Beers noted that the committee responsible for implementing the Agreement is flexible, open, and evolving.

Following a break for lunch, De Beers started the Snap Lake Permitting and Environment session with a presentation overview including a regulatory update, a water management update, as well as a presentation on the AEMP (see Appendix F). During the presentation NSMA asked about water treatment and the removal of 'salt' to which De Beers described what it means by "salty water" noting that all water pumped from site undergoes a treatment process before release to the environment and that the level of salts going into the lake is actually similar to a bottle of spring water. NSMA also asked whether the diffuser had any effect on fish to which De Beers referred to its plume characterization study which determined that there would not be any effect. De Beers also referenced the Environmental Assessment for the Snap Lake Mine where there was an identified zone of turbulence that was acknowledged and noted that it was no greater than this.

The final agenda item on Closure and Reclamation included a presentation (see Appendix F) with slides on closure objectives, closure planning in the Northwest Territories, closure timeline, community engagement, closure and reclamation plan contents, progression, framework, research options and uncertainties workshop, reclamation research plan, and next steps. Following the presentation De Beers provided a demonstration of closure and reclamation including a powerpoint presentation illustrating the sequence of infrastructure removal as well as a demonstration of AEMP sampling equipment and techniques.

During the presentation and demonstrations NSMA asked about the height of the rock piles and revisions to the plans. De Beers provided the height of the piles. De Beers also noted that NSMA staff had met with De Beers on the closure plan and that the NSMA would be given additional opportunities to engage in a discussion with De Beers during the current process as well as during subsequent updates every three (3) years as per the water license.

3.3.6 Summer Community Site Visit, July 27, 2013

In a letter to NSMA dated April 15, 2013, De Beers invited NSMA to visit the Snap Lake Mine for a summer site workshop focused on water management system enhancements since 2011, the development of the North Pile and further opportunity to discuss the Interim Closure and Reclamation Plan. De Beers noted in its invitation that input from community members during the visit would be taken into consideration in designing monitoring plans including any recommendations on how Traditional Knowledge could inform and improve monitoring plans. De Beers also noted that it would provide capacity funding for NSMA's participation to ensure NSMA input and involvement of experts.

In follow-up to its April correspondence, De Beers wrote to NSMA again on July 16, 2013 to confirm the details of the NSMA's participation in the site based workshop noting that the intent

of the workshop is to build upon previous engagement including the May 2013 NSMA Workshop discussions. De Beers offered to arrange a charter for a delegation consisting of a maximum of twelve (12) and suggested that NSMA might consider selecting one of the NSMA members who they have appointed to sit on the Snap Lake Environmental Monitoring Agency as one of the representatives in their delegation.

NSMA responded, confirming that Saturday, July 27th was preferable and the detailed logistics and arrangements were subsequently confirmed by De Beers.

The site visit was attended by ten (10) members of NSMA including:

- Hugh McSwain, Vice-president
- Marc Whitford, Director
- Ashley Mercredi, Member
- Sue Enge, Member
- Bob Mercredi, Member
- Nicole Enge, Youth
- Stefany Bulmer, Youth
- Matt Hoover, Youth
- Eric Binion, SLEMA NSMA Representative
- Edward Jones, SLEMA NSMA Elder

The site visit began in the Legendary Sky Room where refreshments were served. De Beers explained that the purpose of the site visit was to provide a summary of Snap Lake's regulatory background, to explain the kimberlite deposit, and to show first-hand the water management systems and water management infrastructure and system enhancements. The day would also include an explanation of monitoring and the Surveillance Network Program (SNP) monitoring stations and that by the end of the day, participants would have also participated in a thorough site tour to see for themselves how the mine is being developed and managed. Personal Protective Equipment (PPE) was distributed before boarding the bus for the site surface tour and made copies of its "Let's Talk" pamphlet available before participants boarded the bus for the site surface tour.

During the surface tour, De Beers described the following site features: cement storage; processing plant; conveyor system; temporary camp; former incinerators; North Pile including slopes; laydown area; waste management area including totes for backhaul, spill kits, recycling, new incinerators, double lined fuel tanks, burn pit, Emergency Response Team sea cans, and mesh screens used to support the underground mine ceiling; crusher and crushed rock; ammonium nitrate storage site; explosives mixing site; perimeter and temporary sumps and piping system; Temporary Sump #4, site of the crane tip-over; landfill; camp overflow modules; projects office; bulk sampling plant; fuel storage and refuelling stations; Perimeter Sump #3; underground portal; mine offices; mine dry; mechanic shop; and water management pond.

NSMA raised questions during the site surface tour regarding cement bags; size of Processed Kimberlite (PK); plan for the construction camp modules; plan for the old incinerators; material in

the North Pile and caribou presence around the North Pile; piping in laydown area; waste oil disposal; wildlife in the waste management area; re-use of old mine screens and mounting of new screens; type of rock crushed; size of crushed rock and storage of crushed rock; potential for explosive freezing; type of explosive used given wet conditions underground; wind turbine site; timeline for completing clean-up of the crane tip over site; amount of water processed per day; number of employees, particularly NSMA members; use of the overflow camp; volume of fuel stored; transport, assembly and testing of fuel storage tanks; and entry to the underground mine. Questions were answered by De Beers directly whenever possible. If not possible, De Beers noted the question and followed-up with answers at the end of the day.

NSMA commented that old camp modules should be recycled or reused and De Beers confirmed that as part of progressive reclamation, camp modules had been removed, were stored in Behchoko and were being put up for sale. NSMA also discussed incinerator use and emissions at other northern mines. An NSMA Elder continued to express concern regarding incineration at mine sites, noting that compliance with national air quality guidelines does not necessarily mean that incinerators are not polluting the air.

Participants broke for lunch and then reconvened for a tour of the Water Treatment Plant (WTP) beginning in the control room. De Beers provided a Water Treatment Simplified Flow Diagram to participants outlining the water treatment process and explained the detailed steps of the flow diagram before leading the group through the plant. During the walk through, De Beers highlighted specific steps of the process including the reactor, clarifier, filters, and in-line monitoring. Participants were shown three (3) water samples, taken at various stages of treatment in the Water Treatment Plant to demonstrate the effectiveness of the plant including influent, post clarification, and effluent. De Beers discussed sampling and monitoring of plant effluent. De Beers also discussed sampling and monitoring of plant effluent. During the tour NSMA asked questions about the WTP filter back wash cycle and the amount of sulphuric acid (H_2SO_4) used per year. De Beers answered questions directly about the filter back wash cycle and followed-up by the end of the day with the volume of H_2SO_4 used per year.

Participants then walked to the Gazebo located at the shore where the annual fish tasting program is conducted to see the mine water outfall and diffuser in Snap Lake. At this time parties discussed nitrate levels in Snap Lake and the cumulative impact of continuous discharge of nitrate into the lake; whether there was any recreational use of Snap Lake; the location of the closest community; lake freeze-up, particularly around the diffuser; the fish tasting program; and re-vegetation measures. In response to NSMA's questions and concerns expressed for the aquatic environment in Snap Lake, De Beers described its monitoring programs including those that assess nitrate levels and the effect of nitrate on the aquatic environment. NSMA also suggested that the Gazebo could be used to dry fish.

Participants then walked back to the main building for a tour of the environmental lab. From the lab, De Beers described the Snap Lake water shed, explained the mixing theory, monitoring stations and reference stations with the use of a map. De Beers also described water licence monitoring requirements, sampling and monitoring conducted in addition to the water licence requirements including in-house testing, demonstrated a typical in-house colormetric test for

nitrate, described procedures for auditing the WTP in-line monitoring system, and outlined other monitoring programs including the fish tasting program. During the lab tour, NSMA asked whether the WTP in-line monitoring system had ever failed. De Beers confirmed a failure in 2012 resulting in a Total Suspended Solids (TSS) discharge to Snap Lake that was out of compliance with the water licence. De Beers further explained that follow-up testing of the lake water demonstrated that the non-compliant discharge did not affect the aquatic environment. In response to a question about fish testing, De Beers explained how fish tissue, health, and populations were tested and monitored.

Before wrapping up, participants walked through the main building to view the following facilities: cultural center; workout room; recreation room; TV lounge; computer lab; yoga room; a diamond information station; and learning center. NSMA asked general questions about staff involvement in recreational and learning activities on site to which De Beers responded directly. NSMA suggested they would like an opportunity in the future to meet with and speak directly with NSMA members who are Snap Lake employees while on site. De Beers advised this could be arranged and that this should be followed up with the Director of External & Corporate Affairs.

Back in the Legendary Sky Room De Beers provided contact information for any follow-up questions. De Beers outlined upcoming community engagement events and provided opportunity for wrap-up comments from NSMA; however no additional comments were received. On the flight home, the pilots flew over the entire site to provide participants with an aerial view.

3.4 Northwest Territory Métis Nation (NWTMN)

3.4.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 19, 2012

On August 29, 2012 De Beers invited NWTMN to a one (1) day Workshop in Yellowknife on September 19, 2012 to discuss the incorporation of Traditional Knowledge (TK) into the Snap Lake Aquatic Effects Monitoring Program (AEMP). NWTMN subsequently confirmed its attendance and its participants. The Workshop was attended by three (3) NWTMN members, namely, Chris Heron, Violet Mandeville, and Earl Evans.

During the Workshop NWTMN asked whether cumulative effects would be considered, to which De Beers responded that the current focus was mine specific with plans to move towards a more cumulative focus. NWTMN also asked about fish tagging, to which a representative from De Beers environmental consultant Golder Associates explained how the fish are tagged and monitored. In response to a question about changes to the *Fisheries Act*, the Golder representative recommended discussing the issue directly with the Department of Fisheries and Oceans.

NWTMN commented on the poor translation of technical terminology and noted that the community relies on industry for education so that NWTMN can make better decisions.

NWTMN also recommended that they become involved in the redesign of the AEMP but also noted that the timelines for developing the report present a challenge for them.

For more information about this Workshop see section 2.1 of this report.

3.4.2 NWTMN Workshop, June 12, 2013

In a letter to NWTMN dated April 15, 2013, De Beers proposed a Community Workshop in May 2013 to follow-up with its previous engagement activity during which De Beers received a number of inquiries from community members regarding opportunities for employment, training, scholarship programs and business opportunities as well as environmental and permitting/regulatory matters. De Beers noted in its invitation that community input received at the session would inform refinements to De Beers' Aquatic Effects Management Plan (AEMP) and Interim Closure and Reclamation Plan (ICRP). In addition, De Beers offered to provide capacity funding to enable active participation and involvement of NWTMN Elders or experts and De Beers encouraged the participation of Elders and Youth as they have expertise, important knowledge and unique perspectives to share.

NWTMN and De Beers corresponded to confirm the date and logistics for the Workshop. The Workshop was held at the NWTMN office in Hay River where it was attended by approximately nineteen (19) NWTMN members and six (6) representatives of De Beers.

The workshop began with introductions led by De Beers provided a Community Update presentation (see Appendix F) including a comparison of De Beers mines in Canada, followed by Snap Lake Mine quick facts, an update on water management challenges and related improvements at Snap Lake, and an overview of De Beers social investment in the NWT.

The agenda continued with a presentation by De Beers on Human Resource Initiatives (see Appendix F) including 2012 recruitment efforts and employment. Snap Lake Mine employment statistics in a context of overall Northwest Territories (NWT) diamond mine employment were discussed along with how, training commitments in the Socio Economic Agreement are being filled. De Beers outlined its workforce development approach, and explained its partnership with the Mine Training Society (MTS). De Beers also outlined its NWT scholarship program and its recent introduction of new sponsorship scholarships. During the Human Resources presentation parties discussed the following: Aboriginal employment targets; educational requirements for training courses and jobs; the distinction between northern and Aboriginal classifications for employment; shift rotations; career pathing events; the concern that some who have residential school experience may associate the institutionalism of camp life at the mines with their experience in residential schools; absence of underground mine training in Hay River; costs and pick-up locations for travel to the mine site; protection of female underground workers; enrolment in Mine Training Society programs; training for management positions; percentage of northern Aboriginal managers employed; and education scholarships. De Beers answered all questions.

Specific comments and concerns raised by NWTMN included their disagreement with De Beers hiring workers from the south. De Beers explained that the company would prefer to hire workers from the North, and that the hiring priorities are established to give preference to

Northern residents. De Beers also noted its southern workforce is important for the mine's ability to operate due to the requirement for specialized skills and noted that the southern workforce is an important part of the success for the mine and that a successful mine means there are jobs for northern residents. NWTMN also commented that the 2/2 shifts were difficult for Aboriginal people due to family and land commitments and suggested that shifts be changed to 1/1. De Beers noted that a number of studies have been done on different rotations and while the 2/2 shift is not for everyone, there were no plans at this point to change the rotations. De Beers also noted that a number of workers like the 2/2 shift as it allows them time off for vacations, trips with families and hunting trips. NWTMN expressed disappointment that the Snap Lake pick-up points do not include Fort Resolution, to which De Beers responded that it provides a travel allowance for its employees travelling from Fort Resolution to the nearest pick-up point which is Hay River. A technical concern was also raised by NWTMN regarding the distance between the winter road and the reference lakes. De Beers responded that it is conducting studies approved by the MVLWB to demonstrate that the winter road is not impacting the lake.

After the lunch break De Beers provided a presentation on Business Opportunities (see Appendix F) including investment, policy, registry, and opportunities. During the Business Opportunities presentation NWTMN asked whether other Aboriginal groups have the same community agreement opportunities to which De Beers answered that all business ventures are evaluated the same way. NWTMN also commented that the contractor list seemed limited to Yellowknife and Hay River, to which De Beers responded that contracts are competitively tendered and so as tenders are issued and contracts awarded, the list of contractors can change, depending on outcomes. NWTMN expressed concern that other Aboriginal communities who have Impact Benefit Agreements with De Beers already received training and experience and thus have more of an advantage. De Beers noted that many of its existing contractors began building their capacity and experience by partnering on a joint venture as a starting point. De Beers also explained the role of the Business Development Manager in helping northern and Aboriginal businesses find partners, prepare for opportunities and providing post-tender feedback to help grow competitiveness.

Next, De Beers provided a presentation on Snap Lake Permitting and Environment including a regulatory update, water management update, as well as a presentation on the AEMP (see Appendix F). During the presentation NWTMN asked about capital costs of underground versus open pit mining and commented that the zone of influence should extend to include roads. De Beers clarified its definition of 'zone of influence' noting that it includes the mine footprint but not the roads.

A presentation was provided by De Beers on the AEMP (see Appendix F) including overview, key goals, core components, Snap Lake fish, key findings, lessons learned, sampling stations, the water licensing process, the challenges with finding reference lakes, special studies, and Traditional Knowledge. During the AEMP presentation NWTMN asked how natural environmental factors are considered in the plan; whether monitoring implies environmental impacts; harmful releases from the waste rock; under ice oxygen levels; the effect of fertilizer on algae production in Snap Lake; and the definition of "minor" flooding. NWTMN also expressed concern for long-term effects to which De Beers responded that it is committed to monitoring

until water from the site can enter the environment without treatment and that the environmental assessment had scoped this as being about 17 years.

The final agenda item on Closure and Reclamation included a presentation (see Appendix F) with slides on objectives, closuring planning in the Northwest Territories closure timeline, community engagement, closure and reclamation plan contents, progression, framework, research options and uncertainties workshop, reclamation research plan, and next steps. During the closure and reclamation presentation NWTMN asked questions about the effects of devolution and inflation on securities, to which De Beers noted the amount of securities held by the federal government and renegotiation frequency account for inflation. De Beers advised that any changes to the securities as a result of devolution would be a government decision.

3.4.3 Summer Community Site Visit, July 23, 2013

In a letter to NWTMN dated April 15, 2013, De Beers invited the NWTMN to visit the Snap Lake Mine for a summer site workshop focused on water management system enhancements since 2011, the development of the North Pile and further opportunity to discuss the Interim Closure and Reclamation Plan. De Beers noted in its invitation that input from community members during the visit would be taken into consideration in designing monitoring plans including any recommendations on how Traditional Knowledge could inform and improve monitoring plans. In addition, De Beers offered to provide capacity funding and other travel related expenses.

In follow-up to its April correspondence, De Beers wrote to NWTMN again on July 16, 2013 to confirm the details of the NWTMN's participation in the site based workshop noting that the intent of the workshop is to build upon previous engagement including the May 2013 Community Workshop discussions. De Beers also noted that it would provide capacity funding for NWTMN's participation to enable NWTMN input and involvement of experts. De Beers offered to arrange a charter for a delegation consisting of a maximum of twelve (12).

The NWTMN and De Beers subsequently confirmed that July 23rd was mutually acceptable and the NWTMN confirmed their participants.

The visit concluded with closing remarks, reminders of upcoming engagement events and distribution of De Beers' "Let's Talk" pamphlet.

The site visit was attended by nine (9) members of NWTMN including:

- Eileen Courtoreille (Hay River)
- Skylar Courtoreille (Hay River)
- Leah Desjarlais (Fort Smith)
- Earl Evans (Fort Smith)
- Paul Harrington (Hay River)
- Charles Heron (Fort Smith)
- Kelsey Heron (Fort Smith)
- Tim Heron (Tim Heron)
- Rosa Loutitt (Hay River)

The site visit began with general introductions and welcoming remarks by De Beers followed by a presentation on the Objectives of the Site Visit and Overview of the Day (see Appendix G). During the presentation NWTMN and De Beers discussed opportunities for a tour of the underground and the NWTMN suggested if a real tour was not possible, a video presentation that allowed a “tour by video” would be nice to have. De Beers noted that it often gets requests to go underground, but that these opportunities are limited due to operational constraints and legislative constraints on the ages of youth visitors to site, who must be 19 to go underground. De Beers noted that there are operational constraints and only small groups can be taken down, and that there are age restrictions for youth as well to comply with legislation. NWTMN requested to see samples of mined rock. De Beers distributed Personal Protective Equipment (PPE) before participants boarded the bus for the site surface tour.

During the surface tour, De Beers described the following site features: cement storage; processing plant; conveyor system; temporary camp; former incinerators; North Pile including slopes; laydown area; waste management area including totes for backhaul, spill kits, recycling, new incinerators, double lined fuel tanks, burn pit, Emergency Response Team sea cans, and mesh screens used to support the underground mine ceiling; crusher and crushed rock; ammonium nitrate storage site; explosives mixing site; perimeter and temporary sumps and piping system; Temporary Sump #4; site of the crane tip-over; landfill; camp overflow modules; projects office; bulk sampling plant; fuel storage and refuelling stations; Perimeter Sump #3; underground portal; mine offices; mine dry; mechanic shop; and water management pond.

NWTMN asked questions during the site surface bus tour regarding the timeframe for the re-vegetation process; the height of the North Pile; materials disposed in the burn pit; oily rag disposal; volumes of rock crushed; measures to upright the fallen crane; the differences between cement and shotcrete; water management pump operation; the volume of water pumped per minute; dust monitoring and management; the size, number and cost of fuel tanks on site; and use of the old camp modules. Questions were answered by De Beers directly whenever possible. If not possible, De Beers noted the question and followed-up with answers by the end of the day.

NWTMN commented on the distance of the new incinerator’s fuel tanks from the potential heat source of the incinerators noting that they were too close to one another. De Beers clarified what the required separation distances are, and noted that the new incinerators are set up according to specifications.

De Beers and NWTMN also discussed the effect of raising the North Pile on volumes of runoff water and measures to prevent another spill from the sumps. De Beers explained how sumps are monitored, particularly during spring freshet. In response to a question regarding plans following closure, De Beers described its closure and reclamation plan noting that updates and revisions to the plan will incorporate comments and input from NWTMN and others.

Participants broke for lunch and then reconvened for a tour of the Water Treatment Plant (WTP) beginning in the control room. De Beers outlined the water treatment process and explained the detailed steps of the process before leading the group through the plant. During the walk through, De Beers highlighted specific steps of the process including the reactor, clarifier, filters,

and in-line monitoring. Participants were shown three (3) water samples, taken at various stages of treatment in the Water Treatment Plant to demonstrate the effectiveness of the plant including influent, post clarification, and effluent. De Beers also discussed sampling and monitoring of plant effluent. During the tour NWTMN asked questions regarding the need to change the filter media and contingency plans in the event that the WTP reaches capacity. Generally conversations focussed on reporting and compliance limits.

Participants then walked back to the main building for a tour of the environmental lab. From the lab, De Beers described safety measures when working with lab equipment and described the Snap Lake watershed. In addition De Beers explained the mixing theory, monitoring stations and reference stations with the use of a map. De Beers also described water licence monitoring requirements, sampling and monitoring conducted in addition to the water licence requirements including in-house testing, demonstrated a typical in-house colormetric test for nitrate, and described procedures for auditing the WTP in-line monitoring system. De Beers also highlighted specific monitoring conducted during freshet.

In response to a question from NWTMN about wildlife monitoring De Beers described its bear and wolverine hair snagging programs, aerial surveys, and incidental observation recordings. Other questions were asked about fish monitoring; whether it was possible to remove all the solids from the wastewater; the effect of blasting on water quality; and indicators of contamination. De Beers responded to the questions by describing the following: the fish monitoring program and forthcoming fish tasting event; naturally occurring solids in the lake water; water quality limits; and what happens when water quality limits are not met noting that water is sent to the WMP and then re-processed through the WTP until it is deemed acceptable for discharge.

Before wrapping up, participants walked through the main building to view the following facilities: cultural center; workout room; recreation room; TV lounge; computer lab; yoga room; a diamond information station and learning center.

Participants met back in the Legendary Sky Room for a refreshment break followed by a wrap-up session. NWTMN asked questions about Aboriginal employment numbers, training opportunities, the average age of mine employees, and the number of people employed between the ages of 20 and 25. In response De Beers described its northern hire policy and Aboriginal employment reporting requirements. De Beers also provided information on training opportunities provided by the Mine Training Society (MTS), advertising of training positions, the high school career pathing initiative, and scholarships. De Beers agreed to follow-up regarding ages of employment; however, has since discovered that the requested information is not publicly available. Parties discussed Youth based initiatives and options for a separate Youth tour of the site focussed on training and job opportunities.

NWTMN commented on the value of practical experience in evaluating applicants and recommended that job advertisements target specific groups. NWTMN and De Beers agreed that job advertisements should be distributed to the community offices.

The visit concluded with closing remarks, reminders of upcoming engagement events and distribution of De Beers' "Let's Talk" pamphlet.

3.5 Tlicho Government

3.5.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 19, 2012

On August 29, 2012 De Beers invited Tlicho to a one (1) day Workshop in Yellowknife on September 19, 2012 to discuss the incorporation of Traditional Knowledge (TK) into the Snap Lake Aquatic Effects Monitoring Program (AEMP). The Tlicho Government confirmed it would send representatives to attend the Workshop and it was attended by Albertine Eyakfwo, Joe Champlain and Charlie Apples. No questions or comments were raised by Tlicho during the Workshop.

For more information about this Workshop see section 2.1 of this report.

3.5.2 Mine Closure and Reclamation Meeting, January 22, 2013

On December 20, 2012 De Beers contacted the Kwe Beh Working Group (KBWG) via email expressing interest in scheduling a Closure and Reclamation information session with the KBWG in February 2013 with the understanding that De Beers would like to involve the KBWG while the Interim Closure and Reclamation Plan (ICRP) was in the development stage. On January 16, 2013 KBWG and De Beers corresponded to confirm the date of January 22, 2013 as well as the goals of the meeting including:

- Awareness of current Snap Lake closure plan process;
- Communicate closure plan highlights including objectives and criteria;
- Discuss best way to work with the community to communicate closure goals and plan;
- Opportunities for working with Elders; and
- Discuss engagement plans for 2013 for closure and the Aquatic Effects Monitoring Plan (AEMP) re-design.

The meeting was held at the Tlicho Government office in Yellowknfe and was attended by six (6) representatives of KBWG as well as two (2) representatives of De Beers including the following individuals:

- Chief Alfonz Nitsiza
- Sonny Zoe, KBWG Chair
- William Mantla, KBWG
- Noel Bishop, KBWG
- Ginger Gibson, KBWG
- Henry Zoe, KBWG
- Elizabeth Biscaye, De Beers

- Tom Bradbury, De Beers

The meeting began with introductions led by De Beers followed by a presentation on the ICRP (see Appendix D) by De Beers. KBWG then provided background information regarding progressive reclamation and the regulatory process referencing experience with Diavik and BHP, and noting that the plan takes time to develop which means that De Beers will return periodically to further discuss plan developments with the group. De Beers clarified that the mine life of Snap Lake differs from Diavik and BHP.

During the meeting KBWG asked questions regarding: the North Pile including its size, cover, seepage from the pile, height and slope contours; fish tasting program; underground reclamation; collaboration with other mines; and site visits. De Beers answered all the questions agreeing to follow-up with specific numerical answers where necessary.

KBWG commented on the importance of understanding seepage from the North Pile and the potential for acids within the seepage, to which De Beers responded that seepage is monitored and reported to the Snap Lake Environmental Monitoring Agency (SLEMA). KBWG further commented on the importance of monitoring to identify issues which may require adaptive management. KBWG also commended De Beers on its spill reporting.

KBWG described their initiative to develop a report that would assist mines in reclaiming to natural landform conditions, noting that the report would include Elder input on esker contours facilitated by a summer visit to esker sites. Parties agreed that the Snap Lake Mine site visit should be planned after the Elders visit the eskers so that they can compare the North Pile contours with their knowledge of esker contours. KBWG commented on the length of time it will take to reclaim the underground mine with the paste backfill process agreeing that a mine site visit would be a good idea.

De Beers discussed the option of incorporating a workshop into the site visit, and there was a suggestion for a future workshop on flora and fauna to assist with consultation regarding re-vegetation plans. Parties then moved on to discuss the logistics of planning the site visit.

During the meeting De Beers agreed to collaborate with other mines on various initiatives and agreed to put the KBWG on its fish tasting report distribution list.

In follow-up this meeting, on February 18, 2013, De Beers expressed interest in hosting a half-day meeting in the community with Tlicho Lands and Environment staff to discuss closure and reclamation planning for the Snap Lake Mine. De Beers noted that the meeting was intended to brief community staff on the Snap Lake Interim Closure and Reclamation Plan (ICRP) in advance of the Closure Options and Research Workshop scheduled on March 13, 2013 as well as to provide comment on De Beers' engagement strategy for the process. No response was received from the Tlicho regarding De Beers' expression of interest.

3.5.3 KBWG Update Meeting, April 3, 2013

At the invitation of the KBWG, on April 3, 2013 De Beers met with Tlicho Government at the Tlicho Government office to provide project updates on Snap Lake and Gahcho Kué. The meeting was attended by:

- Nicole Harris, Sr. Human Resources Coordinator, De Beers
- Elizabeth Biscaye, Superintendent Community Relations, De Beers
- Grace Mackenzie, Community Liaison Coordinator, De Beers
- Darren Raymond, Manager of Safety, Health & Risk, De Beers
- Stephen Anderson, Superintendent of Materials Management, De Beers
- Steven Lines, Permitting Superintendent, Gahcho Kué Project, De Beers
- Veronica Chisholm, Permitting Manager, Gahcho Kué Project, De Beers
- Chief Charlie Football, Wekweeti
- Sonny Zoe, Chairperson Kwe Beh Working Group
- Henry Zoe, Mines Liaison Coordinator and KBWG Member
- William Mantla, KBWG Member
- Noel Bishop, KBWG Member
- Marjorie Matheson Maund
- Ginger Gibson, Technical Coordinator – KBWG

Participants introduced themselves and reviewed the agenda including the following items related to Snap Lake: Safety, Health and Risk; Business Opportunities; Human Resources; and External and Corporate Affairs.

De Beers reported on the environmental activities at Snap Lake including the Aquatic Effect Monitoring Plan (AEMP); Interim Closure and Reclamation Plan (ICRP); and spills. During this discussion Tlicho Government representatives asked about the status of the dredged spill to which De Beers provided an update noting that clean-up was completed prior to freshet. De Beers also explained its spill reporting protocols.

In addition, Tlicho Government representatives spoke about training programs requesting that training on-the-job training positions be established in the environmental field for Tlicho citizens that would help the community become more self-sufficient in dealing with the Rae Rock mine issues near Behchoko. The Tlicho Government also suggested that its Imbe Program which hires summer students to work with Elders may be a good program to partner on with De Beers as it brings youth and elders together on the land and the Tlicho Government plans to continue the program. De Beers noted this could be looked at as part of the 2014 work plans.

De Beers provided a Business Opportunities update noting contracts that are up for renewal, and contracts under review, as well as a report on the 2013 winter road season. De Beers then provided an update on Human Resources, noting current employment and training statistics, opportunities for Mining Professional in Training positions, current vacancies and procurement with Tlicho Businesses, 2013 summer student employment positions advertised, career fairs, and human resources workshop. Finally, De Beers provided an update on External and Corporate Affairs and Community Relations, noting reporting on community agreements, the fish tasting program, specific community relations activities, and the Tlicho Community Development Officer's workshop.

3.5.4 Community Workshops

In a letter to KBWG dated April 2, 2013, De Beers proposed Community Workshops in May 2013 to follow-up with its previous engagement activity. The letter noted that during 2012 engagement activities, De Beers received a number of inquiries from community members

regarding opportunities for employment, training, scholarship programs and business opportunities with the company as well as regarding environmental and permitting/regulatory matters. De Beers offered to provide capacity funding to enable active participation and involvement of community elders or experts and De Beers encouraged the participation of elders and youth noting they have expertise, important knowledge and unique perspectives to share. De Beers noted in its invitation that community input received at the session would inform refinements to the Snap Lake Mine Aquatic Effects Management Plan (AEMP) and Interim Closure and Reclamation Plan (ICRP).

De Beers corresponded with Tlicho over the following weeks to confirm the date and logistics for the Workshops.

3.5.4.1 Behchoko, June 6, 2013

The Workshop was held in Behchoko where it was attended by approximately sixty five (65) community members and seven (7) representatives of De Beers.

The Community Workshop began with an Opening Prayer followed by introductions led by De Beers and a reminder of the opportunity for participation in the summer site visit. A Community Update presentation (see Appendix F) was provided by De Beers including: Snap Lake Mine quick facts; water management upgrades; social investment; community agreements; Tlicho Traditional Economy Support Program; employment and training opportunities; health and wellness; community relations initiatives and activities; business and contracting opportunities; and community agreement activity reporting.

Continuing with the agenda, De Beers provided a Human Resources presentation (see Appendix F) including recruitment efforts; statistics; employment history; Northwest Territories diamond mine employment; Socio-Economic Agreement (SEA) training agreement; northern residency priority; trades/apprentices; workforce development; Mine Training Society (MTS) partnership; scholarships; and forward looking.During the Human Resources presentation Tlicho participants asked questions about the selection of trainees from different communities, whether jobs posted require a driver's licence, and opportunities for previously terminated employees. In response, De Beers clarified that a driver's license is not required to work on site, and outlined the process for rehiring of employees who have been terminated for cause.

De Beers then provided a presentation on Business Initiatives (see Appendix F) including investment, policy, registry and opportunities; Permitting and Environment (see Appendix F) including regulatory update, kimberlite, and water challenges; the AEMP (see Appendix F) including overview, key goals, core components, fish in Snap Lake, key findings, lessons learned, sampling stations, water licence process, the challenges of finding good reference lakes, special studies, and Traditional Knowledge; Closure and Reclamation (see Appendix F) including objectives, planning in the NWT, timeline, community engagement, contents of the Closure and Reclamation Plan, progression of the Closure and Reclamation Plan, closure planning framework, Research Options and Uncertainties Workshop; Reclamation Research Plan; and next steps. Tlicho meeting participants did not raise any questions, comments or concerns regarding the Snap Lake Mine during these presentations.

3.5.4.2 Gameti, June 4, 2013

The Workshop was held in Gameti where it was attended by approximately twenty five (25) community members and seven (7) representatives of De Beers.

The Community Workshop began with introductions led by De Beers and a reminder of the summer site visits. A Community Update presentation (see Appendix F) was provided by De Beers including: Snap Lake mine quick facts; water management upgrades; social investment; community agreements; Tlicho Traditional Economy Support Program; employment and training opportunities; health and wellness; community relations initiatives and activities; business and contracting opportunities; and community agreement activity reporting.

Continuing with the agenda, De Beers provided a Human Resources presentation (see Appendix F) including recruitment efforts; statistics; employment history; Northwest Territories diamond mine employment; Socio-Economic Agreement (SEA) training agreement; northern residency priority; trades/apprentices; workforce development; Mine Training Society (MTS) partnership; scholarships; and forward looking. During the Human Resources presentation Tlicho participants commented on the length of training programs noting that fourteen (14) weeks is too long.

In addition, Tlicho participants discussed their youth, commenting on the benefits of employment for youth and recommending second chances for youth who have been terminated from employment at the diamond mines due to lack of attendance. Tlicho citizens also commented that while working at mine site, employees worry about their families at home and that for the Tlicho citizens who come from small communities, working in remote camps with so many people from other cultures is sometimes challenging. In response, De Beers explained that dismissed employees can reapply for work at the mine if they can show that they have overcome any previous problems. In addition, De Beers explained that employees who are uncomfortable approaching De Beers Human Resource staff with their issues are invited to speak with De Beers' Community Liaison who can speak their language and understands their culture. De Beers also invited students and youth to its Career Path Workshop.

Further to the discussion about youth, an Elder asked how De Beers could help motivate Tlicho youth, to which De Beers noted that it was offering scholarships, was participating in career fairs, is collecting resumes during the Workshop and is offering training positions. The Elder suggested De Beers should consider offering training that would benefit the community. Tlicho participants also expressed concern regarding how youth manage their money to which De Beers referred to its on-line money management program, available in community learning centres and at the mine site.

De Beers then provided a presentation on Business Initiatives (see Appendix F) including investment, policy, registry and opportunities. In response to questions during the Business Initiatives presentation De Beers provided clarification regarding the Snap Lake mine life and closure securities. Tlicho participants also asked how graduates with limited education and experience could strengthen their resumes. De Beers noted that resume evaluation depends on competition and is evaluated on a case-by-case basis.

Next, De Beers provided presentations on Permitting and Environment (see Appendix F) including regulatory update, kimberlite, and water challenges; the AEMP (see Appendix F) including overview, key goals, core components, fish in Snap Lake, key findings, lessons learned, sampling stations, water licence process, the challenges of finding good reference lakes, special studies, and Traditional Knowledge. During these presentations a Tlicho participant commented on visual observations of fish including mention of something like silver on the stomach lining as well as bugs in the flesh. De Beers confirmed that mercury can accumulate in fat and that many fish in the North have tapeworm parasites, although this is considered common.

A final presentation on Closure and Reclamation (see Appendix F) was provided by De Beers including objectives, planning in the Northwest Territories, timeline, community engagement, contents of the Closure and Reclamation Plan, progression of the Closure and Reclamation Plan, closure planning framework, Research Options and Uncertainties Workshop; Reclamation Research Plan; and next steps.

3.5.4.3 Wekweeti, June 3, 2013

The Workshop was held in Wekweeti where it was attended by four (4) community members and eight (8) representatives of De Beers.

Due to relatively low attendance at this Workshop, De Beers decided to forego the usual presentations and create a more interactive environment whereby community members could view the posters, maps and mine model displays and ask questions informally. Hardcopy handouts of the presentations were made available to participants (see Appendix F).

During the Workshop, Tlicho participants asked general questions regarding the height and covers for rock piles, summer monitoring programs, blasting residue, and the effect of mining on wildlife populations. De Beers answered all questions noting that rock piles would be capped and possibly re-vegetated taking into consideration that vegetation may attract wildlife.

Tlicho participants expressed concern based on other operating mines for the potential for blasting residue to enter the local water sources, to which De Beers confirmed that monitoring would ensure that water sources were not adversely impacted.

Tlicho commented that since the Ekati mine opened, bears do not frequent the community any more. In response, De Beers explained the hair snagging program conducted jointly for Snap Lake, Ekati, and Diavik to monitor bear movement. Further concerns for wildlife were raised regarding a decrease in caribou numbers and the resulting need for community members to purchase food in Yellowknife. De Beers noted that the Government of Northwest Territories is responsible for conducting caribou head counts.

3.5.4.4 Whati, June 5, 2013

The Workshop was held in Whati where it was attended by approximately forty six (46) community members and seven (7) representatives of De Beers.

The Community Workshop began with introductions led by De Beers and a reminder of the summer site visits. A Community Update presentation (see Appendix F) was provided by De

Beers including: Snap Lake Mine quick facts; water management upgrades; social investment; community agreements; Tlicho Traditional Economy Support Program; employment and training opportunities; health and wellness; community relations initiatives and activities; business and contracting opportunities; and community agreement activity reporting.

Continuing with the agenda, De Beers provided a Human Resources presentation (see Appendix F) including: recruitment efforts; statistics; employment history; Northwest Territories diamond mine employment; Socio-Economic Agreement (SEA) training agreement; northern residency priority; trades/apprentices; workforce development; Mine Training Society (MTS) partnership; scholarships; and forward looking.

De Beers then provided the following presentations on Business Initiatives (see Appendix F) including investment, policy, registry and opportunities; Permitting and Environment (see Appendix F) including regulatory update, kimberlites, and water challenges; the AEMP (see Appendix F) including overview, key goals, core components, fish in Snap Lake, key findings, lessons learned, sampling stations, water licence process, the challenges of finding good reference lakes, special studies, and Traditional Knowledge; Closure and Reclamation (see Appendix F) including objectives, planning in the NWT, timeline, community engagement, contents of the Closure and Reclamation Plan, progression of the Closure and Reclamation Plan, closure planning framework, Research Options and Uncertainties Workshop; Reclamation Research Plan; and next steps. Tlicho participants did not raise any questions, comments or concerns regarding the Snap Lake Mine during these presentations.

Between De Beers presentations, a 15-minute animated movie created by Tlicho youth was shown at the request of the community. The movie, co-created with University of Alberta students, described the history of the Tlicho from a story originating in 1772 and passed down the generations through oral history. This was the first time that the story had been screened in Whati.

3.5.4.5 Kwe Beh Working Group, June 24, 2013

De Beers met with the KBWG on June 24, 2013 at the Tlicho Government office in Yellowknife to provide an update on De Beers' projects, particularly the Tlicho Community Workshops.

The meeting was attended by nine (9) representatives of the KBWG and three (3) De Beers representatives including:

- Sonny Zoe (KBWG)
- Henry Zoe (KBWG)
- William Mantla (KBWG)
- Noel Bishop (KBWG)
- John B. Zoe (KBWG)
- Marjorie Matheson Maud (KBWG)
- Ginger Gibson (KBWG)
- Itoah Scott (Tlicho summer student)
- Kerri Garner (Lands Protection)
- Elizabeth Biscaye (De Beers)

- Grace Mackenzie (De Beers)
- Veronica Chisholm (De Beers)

The meeting begin with introductions followed by an update by De Beers on the community visits and future engagement activities. De Beers described the content, format, and results of its Community Workshops noting that it looked forward to receiving any feedback received by KBWG from the communities.

Parties discussed improvements for future engagement including: advertising; communication with Community Directors regarding arrangements such as transportation and catering; distribution of honorariums; invoicing from communities; and inclusion of Senior Administration Officers and other Tlicho staff in the planning process.

Parties also discussed plans for the summer site visit agreeing that youth, adults, Elders and Tlicho community citizens who attended the Community Workshops attend the site visit.

3.5.5 Summer Site Visit, August 29, 2013

In a letter dated April 2, 2013, De Beers invited Tlicho Government to visit the Snap Lake Mine for a summer site workshop focussed on water management system enhancements since 2011, the development of the North Pile and further opportunity to discuss the Interim Closure and Reclamation Plan. De Beers noted in its invitation that input from community members during the visit would be taken into consideration in designing monitoring plans including any recommendations on how Traditional Knowledge could inform and improve monitoring plans. In addition, De Beers offered to provide capacity funding and other travel related expenses.

In follow-up to its April correspondence, De Beers wrote to the Tlicho Government again on July 16, 2013 to confirm the details of the Tlicho Government's participation in the site-based workshop noting that the intent of the workshop is to build upon previous engagement including the June 2013 Community Workshop discussions. De Beers offered to arrange a charter for a delegation consisting of a maximum of twelve (12) people.

The visit was attended by eight (8) members of the Tlicho including:

- Eddie Camille (Behchoko Elder)
- Harry Apples (Behchoko Elder)
- Henry Zoe (Yellowknife)
- Marie Adele Wetrade (Gameti)
- Marjorie Matheson-Maund (Yellowknife)
- Noel Drybones (Behchoko)
- William Mantla (Behchoko)
- Peter Huskey (Behchoko Interpreter)

The site visit began in the Training Room where refreshments were served. An Opening Prayer was conducted by Tlicho Elder followed by an overview of the agenda by De Beers. De Beers explained that the purpose of the site visit was to inform Tlicho of De Beers' water licence amendment and to follow-up with the Community Workshops in June. De Beers led

introductions which were followed by a question and answer session. During the introductory session Tlicho participants requested a tour of the underground mine to which De Beers agreed to work with Tlicho to arrange at a future date. Questions about spills were answered by De Beers with detailed descriptions of the types of spills encountered on site, how De Beers prevents, cleans up, remediates, and reports spills. De Beers asked whether Tlicho Government would prefer to be informed of all spills or only the reportable spills to which the Tlicho Government requested to be informed only of any major spills. In response to a question regarding the time it takes to clean-up a spill, De Beers responded that the time for clean-up depends upon the nature of the spill but that in all cases De Beers takes immediate action. Tlicho participants expressed interest in visiting the site in winter commenting that the potential for spills seems greater in winter and that some Tlicho participants have considered driving their own vehicles to site. De Beers agreed that it was amendable to a winter site visit noting however that it is generally easier to traverse the site in summer and that more features are visible in summer. De Beers also explained safety and security issues associated with Tlicho citizens driving to the site.

De Beers distributed Personal Protective Equipment (PPE) before participants boarded the bus for the site surface tour. During the surface tour, De Beers described the following site features: cement storage; processing plant; conveyors; former incinerators; piping including paste lines; North Pile including slopes, design, and esker like contours; perimeter and temporary sumps; waste management area including wooden crates, new incinerators, double lined fuel tanks, burn pit, emergency response sea cans, and mesh screens used to support the underground mine ceiling; quarry and crushing area; construction camp; North Pile test caps; ammonium nitrate storage; explosives mixing; proposed landfarm; snow dump; Temporary Sump #4 (TS4) and crane tip over site; landfill; bermed area for blasting caps; laydown area; camp overflow modules; projects office; bulk sampling plant; fuel storage tanks and refuelling area; winter road staging area; Perimeter Sump #3 (PS3); mine offices; mine dry; mechanic shop; and water management pond.

During the site surface tour Tlicho participants asked various questions regarding the number of people who work in the waste management area, monitoring of TS4, the total area of the mine site, the volume of water managed on site, water management in the fuel tank farm containment, filling of fuel tanks, and culverts observed in the North Pile. De Beers answered all questions noting that four people are qualified to work in the waste management area and that the mine site area is smaller than Ekati. De Beers also explained how TS4 is monitored with the use of pressure sensors, 24 hour in-person monitoring during freshet, pump shacks, and level poles. De Beers described the sources and volumes of water on site including surface runoff, underground water, and Water Treatment Plant (WTP) overflow noting that water captured in the fuel tank containment areas is tested and directed to the WTP. De Beers described how fuel tanks are filled noting that tank #3 is filled first and described how dips, valves and drip trays are used. De Beers explained that the culvert in the North Pile directs water from the North Pile to PS3.

Participants broke for lunch and then reconvened for a tour of the WTP beginning in the control room. De Beers outlined the water treatment process and explained the detailed steps of the

process before leading the group through the plant. During the walk through, De Beers highlighted specific steps of the process including the reactor, clarifier, filters, and in-line monitoring. Participants were show three (3) water samples to demonstrate the effectiveness of the plant including influent, post clarification, and effluent. De Beers also discussed sampling and monitoring of plant effluent.

From the WTP, parties walked to the mine water out-fall and diffuser in Snap Lake where De Beers described how the diffuser works, water sampling stations, the location of the underground ore body, underground overflow, underground exhaust and fresh air raise, as well as the aurora viewing station. Tlicho participants asked questions about the underground tunnelling system and the depth of the mine below the lake bottom as well as the length of the diffuser pipe. De Beers answered all questions.

After a health break participants reconvened in the environmental lab. From the lab, De Beers described the Snap Lake watershed, explained the mixing theory, monitoring stations and reference stations with the use of a wall map. De Beers also described water licence monitoring requirements, sampling and monitoring conducted in addition to the water license requirements including in-house testing, demonstrated a typical in-house colormetric test for nitrate, described procedures for auditing the WTP in-line monitoring system, and outlined other monitoring programs including the fish tasting program. During the tour of the environmental lab Tlicho participants asked about sewage discharge and monitoring for E. coli. De Beers noted that it does not monitor for *E.coli,* but rather faecal coliforms. De Beers also identified the external labs it uses in the NWT, Alberta and British Columbia to analyse the samples. Tlicho participants also expressed concern for dust fall in MacKay Lake. De Beers explained that dust falls close to site further noting its vegetation and dust fall studies to confirm that statement and that the results are reported on in the Air Quality and Vegetation Annual Reports submitted to SLEMA In response to a question regarding qualifications to work in the lab De Beers noted that staff require college degree at a minimum in an environmental field of study and that De Beers hires summer students to work in the lab.

Participants returned to the Training Room to return PPE and for snacks for the flight home before meeting in the Cultural Center for a wrap-up session. De Beers requested comments on the tour as well as the engagement format. De Beers answered questions to clarify the shape of the ore body using a crumpled piece of paper as a demonstration and confirmed that Snap Lake was a diamond mine. Tlicho representatives provided comments on the tour noting that it was too fast and that they would like a slower tour that could be extended over a couple of days at the mine site. In addition, Tlicho participants recommended that a two-day tour could include a tour of the process plant as well as an opportunity to speak directly with the employees. Another request was made to view Snap Lake diamonds. De Beers explained the security issues associated with the requested tour and viewing but agreed to discuss options such as a video tour. One Tlicho participant requested visits to the site in winter so that they could see how vehicles are parked. The Tlicho translator requested that future meetings incorporate the use of translation equipment. The site visit closed with a prayer by one of the Tlicho participants.

3.6 Yellowknives Dene First Nation

3.6.1 Aquatic Effects Monitoring Program and Traditional Knowledge Workshop, September 19, 2012

On August 29, 2012 De Beers invited YKDFN to a one (1) day Workshop in Yellowknife on September 19, 2012 to discuss the incorporation of Traditional Knowledge (TK) into the Snap Lake Aquatic Effects Monitoring Program (AEMP). YKDFN subsequently confirmed its attendance and the names of its delegates. The Workshop was attended by four (4) YKDFN members including Shannon Gault, Peter Sangris, John Drygeese, and Fred Sangris. During the Workshop YKDFN commented that each group is different in terms of TK and will therefore require its own consultation and engagement program.

For more information about this Workshop see section 2.1 of this report.

3.6.2 Closure Options and Research Workshop, March 13, 2013

On February 14, 2013 De Beers invited YKDFN to participate in the Closure Options and Research Workshop, and subsequently the YKDFN confirmed its participation. One (1) representative of the YKDFN, Todd Slack, attended the Workshop.

During the Workshop, YKDFN requested clarification regarding the closure goals and principles to which De Beers/ARKTIS Solutions Incorporated (ARKTIS) referred to adoption of the Mackenzie Valley Land and Water Board guidelines. YKDFN asked about priority areas and how they will be determined to which De Beers/ARKTIS noted that areas would be determined based on research programs, community input, Traditional Knowledge (TK) and expert review. YKDFN followed up with De Beers/ARKTIS asking if De Beers was content with the closure objectives. De Beers/ARKTIS explained that although the terminology in the closure objectives for the underground mine, such as “no impact”, may not be achievable, the objectives are further defined by their associated closure criteria which measures whether a closure objective has been achieved. De Beers noted that the closure objectives are consistent across the three diamond mines and will be consistent for all new projects and that these are approved by the MVWLB.

YKDFN asked whether the plan includes a list of commitments and De Beers/ARKTIS confirmed that it does not include a specific section or list but would consider the recommendation. In response to YKDFN’s comment regarding the importance of the requests of land owners in providing direction for closure planning over science-based prediction of impacts, De Beers/ARKTIS explained how the refinement of environmental assessment predictions reduces uncertainties relating to conditions at closure. YKDFN asked for a justification for using a site-wide water quality approach over a component specific approach, to which De Beers/ARKTIS clarified that mine component specific water quality criteria would be developed. De Beers/ARKTIS later clarified that closure criteria for water quality may be different than operational water quality criteria.

During a discussion about closure options YKDFN commented on the closure pyramid to which De Beers/ARKTIS agreed to consider development of a flowchart or table that demonstrates direct linkages between objectives, options, activities, criteria and research. De Beers/ARKTIS

also explained why no further options would be considered for Processed Kimberlite (PK) disposal noting that a facility had already been designed, constructed and filled with PK. YKDFN asked about the trigger to select desired aesthetics to which De Beers/ARKTIS responded that such a trigger would be determined through engagement with the communities, TK and expert review. De Beers/ARKTIS also acknowledged YKDFN's recommendation that additional information was needed for attendees to understand the pros and cons of each closure option as well as site specific limitations. In response to YKDFN's concern regarding the terminology used for re-vegetation options, De Beers/ARKTIS agreed to update the plan to provide more clarity. Further on the topic of re-vegetation, YKDFN and De Beers/ARKTIS discussed how to reduce uncertainty related to re-vegetation timelines referring to literature reviews and site specific reclamation research. De Beers/ARKTIS also confirmed for YKDFN that non-hazardous, non-salvageable debris was disposed within the North Pile.

During a discussion about reclamation research YKDFN asked about research on closure objectives, to which De Beers/ARKTIS noted that the current objectives that were recently developed were not based on research but that future research would inform and improve upon them. De Beers/ARKTIS also confirmed that it will need to demonstrate that the site has achieved closure objectives in order for the financial security deposit to be returned.

See section 2.2 for additional details about the Workshop.

3.6.3 Meeting, March 20, 2013

On February 7, 2013, De Beers expressed interest in hosting a half-day meeting in the community with YKDFN Lands and Environment staff to discuss closure and reclamation planning for the Snap Lake Mine. De Beers noted that the meeting was intended to brief community staff on the Snap Lake Interim Closure and Reclamation Plan (ICRP) in advance of the Closure Options and Research Workshop scheduled on March 13, 2013 as well as to provide comment on De Beers' engagement strategy for the process.

YKDFN declined De Beers' ICRP Meeting offer but agreed to meet with De Beers on March 20, 2013 instead to discuss general community engagement strategies. Parties to this meeting included Shannon Gault and Randy Freeman. During the meeting parties agreed to tentatively schedule a community workshop on May 22, 2013 and a summer site visit on August 21, 2013. YKDFN and De Beers agreed that the community workshop would be an open house in N'dilo focussed on providing updates on human resource related matters in addition to the Aquatic Effects Monitoring Program (AEMP) and the ICRP.

3.6.4 Community Site Visit for Spring Freshet, May 21, 2013

On May 1, 2013 YKDFN staff submitted a request to De Beers via email to visit to the Snap Lake Mine site around the end of May or early June. The Chief and De Beers spoke via telephone on May 7, 2013 during which De Beers acknowledged receipt of the site visit request noting that confirmation of the available dates with Snap Lake site management was underway. De Beers also suggested that the visit be used as an opportunity to present to the Chief and Council members an overview of the presentation planned for the Community Workshop such that Chief and Council could comment on the presentation before it was shown to the YKDFN Community. The Chief requested that the site visit occur no later than May 21 to capture spring

freshet and to observe De Beers' water management improvements. De Beers subsequently confirmed May 21st for the visit. The YKDFN site visit began with an outline of the day's agenda including an overview of site operations and water management in the morning and a site tour in the afternoon. The Chief also requested information and a tour of the North Pile as well as an update in De Beers' efforts to promote and support culture both on site and in the community.

The site visit was attended by four (4) YKDFN including Chief Edward Sangris; Philip Liske (Councillor); Peter Sangris (Councillor); and Alfred Baillargeon (Councillor).

De Beers provided a presentation on the Snap Lake Mine focused on water management enhancement work conducted during 2012 and ongoing work in 2013 followed by an update on upcoming regulatory activity including the Aquatic Effects Management Plan (AEMP) and Interim Closure and Reclamation Plan (ICRP). De Beers also updated the YKDFN on the implementation of its community agreement and described plans for the YKDFN Community Workshop.

During the morning session YKDFN asked various questions about the following: wildlife encounters; status of the North Pile; volume of water treated daily during freshet; status of installation of the new incinerator; waste management, specifically waste backhauled; clarification on the AEMP; management of melt water during spring freshet; scheduling of the next fish tasting event; and the frequency of government inspections.

De Beers answered all questions, using visual support tools where appropriate, and noted the following: that a nuisance wolf was put down in collaboration with the Government of Northwest Territories Environment and Natural Resources (GNWT ENR); North Pile water management measures, filling of starter cell 'voids', and capping trials; the need for a crane to install the new incinerators with further explanation of the crane accident and spill; management of waste in the absence of incinerators; proposed changes to the monitoring program including the reasons for increased downstream monitoring and changes to the reference lakes; and how De Beers determines mine specific effects from other natural causes.

Further to its questions YKDFN expressed concern regarding the effect of production targets on water management. De Beers stated that achievements in mining and production would not come at the expense of environmental management noting a decrease in 2012 mine production in order to prioritize water management issues. YKDFN also expressed concern regarding the role of the Snap Lake Environmental Monitoring Agency (SLEMA) noting dissatisfaction with the Agency's reporting and engagement activities. In response, De Beers explained how SLEMA operates, including its funding and board structure and provided suggestions on how YKDFN could provide input to SLEMA to help the Agency become more useful to communities. In response to YKDFN concern that industry covers up its messes, such as waste sites, De Beers showed YKDFN the mine's waste sites during the tour so that delegates could observe how waste is sorted, handled and managed.

During the lunch break De Beers explained further details about the North Pile including the pile slopes and reclamation measures as well as re-vegetation research. The afternoon site surface tour included observation of the waste management area, temporary and perimeter sumps; the

North Pile water management systems; fuel tank farm; winter road access; water treatment plant; Emergency Response Training area; and the environmental lab.

Following the site surface tour, a wrap-up session was held over refreshments in the dining room. Parties discussed the diamond market and the general costs of mining including capital and closure costs. De Beers also explained its long-term investment approach.

3.6.5 Community Workshop, May 29, 2013

In a letter to YKDFN dated April 15, 2013, De Beers proposed a Community Workshop in May 2013 to follow-up with its previous engagement activity during which De Beers received a number of inquiries from community members regarding opportunities for employment, training, scholarship programs and business opportunities as well as environmental matters. De Beers noted in its invitation that community input received at the session would inform refinements to De Beers' Aquatic Effects Management Plan (AEMP) and Interim Closure and Reclamation Plan (ICRP). In addition, De Beers offered to provide capacity funding to ensure active participation and involvement of community Elders and youth as they have expertise, important knowledge and unique perspectives to share. De Beers corresponded with YKDFN staff on March 20, 2013 and April 25, 2013 and the Chief on May 7, 2013 to confirm the date and general agenda for the Workshop.

The Workshop was held in N'Dilo, and although De Beers inadvertently omitted a sign-in sheet, it is estimated that approximately 8-10 YKDFN community members attended along with seven (7) representatives of De Beers

The Community Workshop begin with introductions led by De Beers followed by a Community Update presentation (see Appendix F) summarized by De Beers including Snap Lake Mine quick facts as well as an update on community agreements including information on the community liaison coordinator, roles and responsibilities, training, health and wellness, employment, prosperity award, and social investment. During the Community Update summary YKDFN members asked about the number of people hired to which De Beers provided a response.

The agenda continued with a presentation summarized by De Beers on Human Resources (see Appendix F) as well as a presentation summary on Business Initiatives. After the presentations, De Beers presented information about Permitting and Environment including regulatory update, kimberlite, and water challenges. During this presentation YKDFN members asked various questions concerning water management during freshet including freeboard levels, monitoring, reporting, inspection, back-up pumps and the effect of climate change. De Beers explained regulated freeboard levels and the use of transducers that provide computerized summary levels of all the sumps and further explained that during freshet monitoring occurs 24 hours a day, seven days a week with a person assigned so that this is visual observation. De Beers noted that De Beers submits monthly reports that are available to the YKDFN. With respect to climate change, De Beers noted that its monitoring reports would show possible trends. De Beers also noted that pumps are now hardwired into the electrical grid and confirmed that back-up pumps are on site if necessary noting their portability. YKDFN expressed interest in

attending a site visit with AANDC and MVLWB to which De Beers recommended contacting those agencies to obtain permission.

In response to YKDFN questions regarding waste, De Beers confirmed that its incinerators are dual chamber, and that De Beers has established baseline conditions. In response to a YKDFN question regarding waste stored underground, which was made with reference to Giant mine, De Beers explained the chemical differences between diamond mining at Snap Lake and gold (mineral) mining at Giant noting that waste rock is tested at the rate of one sample per 100,000 tonnes to ensure that it meets standards for less than 0.17% sulphide content and that as per requirements PAG is internalized. YKDFN expressed concern regarding spills on the ice road to which De Beers explained that it informs all contractors about safety, health and environment protocols and procedures and enforces proper clean-up in the event of an accident. De Beers further noted that it monitors the ice road regularly. De Beers also committed to discuss the issue with YKDFN annually.

YKDFN expressed interest in becoming involved with the management of animals and water. In addition YKDFN requested that future meetings be coordinated around other events to avoid conflicts that prevent other people from attending. De Beers noted that the meeting date was chosen by YKDFN and all future meeting dates will be chosen by YKDFN.

De Beers then provided an update on its AEMP (see Appendix F) including overview, key goals, core components, Snap Lake fish, key findings, lessons learned, sampling stations, the water licensing process, the challenges with finding reference lakes, special studies, and Traditional Knowledge. During the AEMP presentation YKDFN asked about sampling stations along the drainage route to which De Beers confirmed that the Water Survey of Canada would survey beyond the direct areas of the mine. YKDFN also inquired about the effect of increased nutrients on oxygen levels in Snap Lake, and contingency measures should the levels become too low. De Beers noted that oxygen levels had decreased very slightly without affecting the fish and that De Beers would be meeting with other members of the AEMP development team to discuss the oxygen threshold.

YKDFN also expressed concern that caribou would not return to the mine site, to which De Beers explained how the development of its Wildlife Management Plan incorporated input from Elders to help De Beers support wildlife habitation in the mine area.

3.6.6 Summer Site Visit, July 30, 2013

In a letter to YKDFN dated April 15, 2013, De Beers invited YKDFN to visit the Snap Lake Mine for a summer site workshop focussed on water management system enhancements since 2011, the development of the North Pile and further opportunity to discuss the Interim Closure and Reclamation Plan. De Beers noted in its invitation that input from community members during the visit would be taken into consideration in designing monitoring plans including any recommendation on how traditional knowledge could inform and improve monitoring plans. In addition, De Beers offered to provide capacity funding and other expenses.

In follow-up to its April correspondence, De Beers wrote to YKDFN again on July 16, 2013 to confirm the details of the YKDFN's participation in the site based workshop noting that the intent

of the workshop is to build upon previous engagement including the May 2013 Community Workshop discussions. De Beers also noted that despite company policy, it would provide capacity funding for YKDFN's participation to ensure YKDFN input and involvement of experts. De Beers offered to arrange the charter for a delegation consisting of a maximum of twelve (12).

The site visit was attended by ten (10) members of YKDFN including:

- Chief Ernest Betsina
- Peter Sangris, Elder
- George Tatsiechele, Elder
- Shannon Gault, staff
- Sarah Plotner, staff
- Cody Drygeese, Youth
- Angus Charlo, Dettah
- Paul Mackenzie, Ndilo
- Maverick Betsina, Youth
- Lena Drygeese, interpreter

The site visit began in the Legendary Sky Room where refreshments were served. General introductions were led by De Beers and an Opening Prayer was led by YKDFN. De Beers provided a presentation on the Objectives of the Site Visit and Overview of the Day (see Appendix G) including information on the purpose of the site visit, summary of regulatory background, mine deposit, water management enhancements, monitoring, tour route, and itinerary. De Beers described with a sketch the underground mine plan and infrastructure including the location of the ore body, conveyor, decline, and ventilation shafts. De Beers further noted that it would be willing to host a smaller group of two to three people for an underground tour to which YKDFN commented they would submit a formal request for such.

During the introductory session YKDFN and De Beers discussed the following: the mine deposit including its size, depth, access, and location; water seepage underground; transport of ore to surface; backfilling; land disturbance; connate water; and annual water consumption. De Beers described the ore deposit as well as how fissures and faults introduce water into the mine noting that this water is collected, treated, and discharged back to Snap Lake. De Beers described the "drift and slash" and "room and pillar" mine methods, how ore is trucked to the underground crusher and conveyed to surface, as well as how mined blocks are backfilled. De Beers explained the concept of connate water and the differences between Fluoride and Chloride in connate water noting that Snap Lake connate water contains more Chloride than Fluoride. De Beers also explained that there is more underground inflow than expected requiring site infrastructure upgrades and amendments to the water licence.

De Beers distributed Personal Protective Equipment (PPE) before participants boarded the bus for the site surface tour. During the surface tour, De Beers described the following site features: cement storage; processing plant; conveyors; temporary camp; former incinerators; North Pile including slopes and cap testing trials; paste pipelines; waste management area including wooden crates, new incinerators, spill kits, double lined fuel tanks, burn pit, emergency

response sea cans, and mesh screens; ammonium nitrate storage; explosives mixing; perimeter and temporary sumps; Temporary Sump #4 (TS4), crane tip over site; landfill; crushed rock; laydown area; water management pond; projects office; bulk sampling plant; camp overflow modules; fuel storage tanks and refuelling stations; winter road equipment laydown; Perimeter Sump #3 (PS3); water intake; underground portal; mine offices; mine dry; and mechanic shop.

YKDFN asked questions during the site surface bus tour regarding the following: number of YKDFN workers on site; diamonds in Processed Kimberlite (PK); pipeline upgrades; the incinerators including types of waste incinerated, emission testing, ash disposal, hours operated per day, volumes incinerated per day, general operation, and power generation; wildlife protocols; dust suppression methods; wind power generator; the crane tip over including when it happened, the operator, and hydrocarbon spill; design of TS4; the existence of a channel between Snap and Camsell Lakes; whether the water management pond is lined; volume of fuel stored per year and fuel consumption; potential to use hydro-electric energy; cloud berries; thickness of bedrock under Snap Lake; and De Beers' plan for its ATCO trailers.

In response to the questions De Beers provided specific numerical answers where required. De Beers also confirmed the following: there are small diamonds remaining in the PK; pipelines have been upgraded since the last YKDFN site visit; incinerator emission testing was scheduled for August or September 2013; incinerator ash is disposed in the landfill subject to testing results; incinerator is powered by diesel; the crane tip over occurred in April 2013 (the crane operator broke a wrist); Camsell Lake is upstream from Snap Lake and there is indirect inflow to Camsell, but no channel; cloud berries are found on site as well as blueberries, bearberries, crowberries, and cranberries; and ATCO trailers left over from the Snap Lake Mine construction camp were likely bound for Gahcho Kué.

In further responses and topics of discussion De Beers explained that it does not incinerate plastics or tin cans as those are washed and shipped off site, nor does De Beers incinerate oily rags. De Beers explained how the incinerator operates including temperature and weight variables for specific materials noting that proper operation is essential to the life of the facility.

In response to questions of wildlife, De Beers explained that wildlife were given the right of way unless it is on the airstrip while a plane is scheduled to land, at which point they are encouraged to move with the use of an airhorn, as are any animals which present a threat to humans. De Beers also confirmed observations of wildlife on site including song birds, sandpiper, fox, wolverine, and arctic hare.

De Beers described its dust suppression measures including the use of water when necessary. De Beers also referenced a dust study completed by De Beers for the Gahcho Kué Project and noting that most dust is generated during airplane take-off. As such De Beers sprays water on the runway prior to take-off.

De Beers and YKDFN discussed alternative energy sources including wind and hydro-electric. De Beers noted that it had undertaken wind studies but that the opportunity for wind energy had been deemed cost ineffective for the time being. Parties discussed the wind generator at Diavik and De Beers noted that it was in the process of evaluating the effectiveness of its wind tower

and would need to determine whether or not to remove the tower. De Beers also explained the issues associated with hydro-electric energy including timing, life-cycle planning, caribou accessibility, and repairs/ maintenance.

In response to the questions regarding the design of TS4, De Beers noted the volume of the sump, explained the nature of spring freshet including its duration and described the measures in place to prevent any future spills resulting from increased flow during freshet including pressure sensors, continuous monitoring and linking of the pumping stations to the electrical grid.

In response to questions about spills due to the crane tip-over accident, De Beers explained how it responded immediately to the accident to clean up any accessible spill material and drain remaining fluids from the machine; however De Beers currently cannot access the soil beneath the crane safely until it is removed. Once removed De Beers will complete remediation. De Beers confirmed that any hydrocarbon left in place does not pose a threat to the aquatic environment.

In response to questions about the design of the water management pond, De Beers described how it is lined at the Dam face and keyed into bedrock. De Beers noted that the bedrock under the pond is the most competent rock on site and that seepage from the pond to Snap Lake is reported.

In response to questions regarding fuel consumption, De Beers noted that fuel consumption was increasing due to expansion of the underground operations and that De Beers is planning to install another fuel storage tank. In addition De Beers described its policies to reduce truck use and conserve overall fuel consumption. De Beers also explained how temperatures and conditions of the winter road affect the volumes of fuel that are transported to site via the winter road.

YKDFN requested a tour of the power generator. De Beers agreed and parties visited the generator between the lunch break and the afternoon tour, however it was later determined that due to work being completed on the power generator, access was not available for visitors for safety reasons.

Participants broke for lunch and then reconvened for a tour of the Water Treatment Plant (WTP) beginning in the control room. De Beers outlined the water treatment process and explained the detailed steps of the process before leading the group through the plant. During the walk through, De Beers highlighted specific steps of the process including the reactor, clarifier, filters, and in-line monitoring. Participants were show three (3) water samples to demonstrate the effectiveness of the plant including influent, post clarification, and effluent. De Beers also discussed sampling and monitoring of plant effluent. During the tour YKDFN asked questions about the type of acid used in the process to which De Beers confirmed that sulphuric acid (H_2SO_4) is used to adjust the pH of the water noting that in small quantities the acid is beneficial. In response to questions regarding the quality of the effluent, De Beers confirmed that the discharge is not harmful to the aquatic environment and meets regulatory standards.

In response to YKDFN comment suggesting preference for a tailings pond, De Beers explained that most of the water treated in the WTP is lake water which has seeped into the underground mine, not water from the North Pile. De Beers mentioned further that diamond mine tailings (PK) are less harmful than metal mine tailings. De Beers also explained that Snap Lake does not have tailings like a mineral mine and so a tailings facility is not necessary and explained that effluent that does not meet the required standards is returned to the treatment system. De Beers also noted that site water is typically contains elevated nutrients but does not have issues with metals.

YKDFN asked whether an increase in the volume of influent to the WTP would impact the clarification/settling process to which De Beers explained that a portable treatment plant would be installed to add capacity, ensure treatment and feed back into the main WTP for pH adjustment prior to discharge so as to maintain one compliance point.

YKDFN also asked how De Beers prevents pipes from freezing. De Beers explained that its pipes are heat traced and the WTP building is heated.

Following the tour of the WTP participants walked to the Gazebo to view the diffuser and Snap Lake, and for an opportunity to pay the Land. While outside parties discussed the location of the portal, ore body and underground mine relative to where they were standing. Parties also discussed how the mine is supported to prevent collapse.

Participants then walked back to the main building for a tour of the environmental lab. From the lab, De Beers described the Snap Lake water shed using a wall map, identified Camsell Lake on the map noting indirect inflow from Snap Lake to Camsell Lake but no direct channel, explained how treated effluent is mixing with Snap Lake, monitoring stations and reference stations. De Beers also described water licence monitoring requirements, sampling and monitoring conducted in addition to the water licence requirements including in-house testing, demonstrated a typical in-house colormetric test for nitrate, described procedures for auditing the WTP in-line monitoring system, and outlined other monitoring programs including the fish tasting program. During the lab tour YKDFN asked how many times per day samples were collected from the WTP. De Beers noted that the time between samples is typically every three (3) days even though the water licence only requires it every six (6) days; however, depending upon operations sampling may be conducted every day. YKDFN commended De Beers on its fish tasting program commenting on the importance of involving Elders who know how to cook the fish.

Before wrapping up, participants walked through the main building to view the following facilities: cultural center; workout room; recreation room; TV lounge; computer lab; yoga room; sample diamond cut station; and learning center.

Participants returned to the Legendary Sky Room for closing remarks. De Beers distributed souvenir coffee mugs, participants were encouraged to pack up snacks for the flight home, and PPE was returned. De Beers asked whether YKDFN were satisfied with the tour and YKDFN responded with requests to tour the power generator, the underground mine, and the process plant. De Beers explained that there were safety and security issues with the requested tours,

but that it would consider their feasibility. In addition, YKDFN expressed interest in berry picking. De Beers reminded YKDFN of upcoming Fish Tasting event and asked for comments about the engagement format. No further comments from YKDFN were provided.

4 Life of Mine Engagement

Life of Mine Engagement planning will be guided by MVLWB guidelines as well as De Beers' Sustainable Development Policy and Working with Aboriginal Communities Policy. Life of Mine Engagement will be guided by De Beers' policies (Sustainable Development and Working with Aboriginal communities) and will generally include:

- An annual winter or spring visit to communities by the company to meet with communities regarding the mine's operations;
- Annual summer site visits for community delegations;
- Delivery to the Government of the Northwest Territories and release to the public of an annual report regarding the Socio-Economic aspects of the Project;
- Delivery to Aboriginal groups with which De Beers has Impact Benefit Agreements for the Snap Lake Mine of an annual report regarding the Socio-Economic aspects of the Project, specific to their participation in employment, training and business opportunities.
- A minimum of quarterly meetings with Lands and Environment Staff of each of the six Aboriginal Parties.
- Attendance at SLEMA Annual General Meeting and meeting with SLEMA periodically upon request;
- Production of periodic publications that will provide the public with updates on the Project and an opportunity to provide feedback to De Beers regarding the information presented.

5 ACKNOWLEDGEMENTS AND CLOSING REMARKS

De Beers acknowledges that in the NWT, we are just one mining company among a number of companies that are continually seeking the time and commitment of Aboriginal Parties to engage in discussion regarding our planned activities. While De Beers provides capacity funding to each of the Aboriginal Parties for our engagement activities and we cover all costs associated with our meetings and visits, we acknowledge that it takes time and effort on the part of Aboriginal communities to contribute to our conversations and to the development of our Project.

De Beers would like to express our appreciation and thanks to the Aboriginal communities for working with us, for making staff available and for encouraging the contribution of community members. With their input, the Snap Lake Mine is better and we not only value their time and advice, but also the friendships we have grown through our ongoing dialogue.

Appendix A

Acronyms

Acronym	Full Name
AANDC	Aboriginal Affairs and Northern Development Canada
AEMP	Aquatic Effects Monitoring Program
De Beers or DBC	De Beers Canada Inc.
CEC	Chief Executive Council
COO	Chief Operating Officer
DFO	Department of Fisheries and Oceans
DKFN	Deninu K'ue First Nation
EC	Environment Canada
FRMC	Fort Resolution Métis Council
GNWT	Government of Northwest Territories
Golder	Golder Associates Ltd.
ICRP	Interim Closure and Reclamation Plan
ITI	Industry Tourism and Investment
IBA	Impact Benefit Agreement
KBWG	Kwe Beh Working Group
LKDFN	Lutsel K'e Dene First Nation
MVLWB	Mackenzie Valley Land and Water Board
NNSL	Northern New Services Limited
NSMA	North Slave Métis Alliance
NWTMN	Northwest Territory Métis Nation
PAG	Potentially Acid Generating (Rock)
PPE	Personal Protective Equipment
PWHC	Points West Heritage Consulting

SAO	Senior Administrative Officer
SL	Snap Lake
SLEMA	Snap Lake Environmental Monitoring Agency
Tlicho or TG	Tlicho Government
TK	Traditional Knowledge
YKDFN	Yellowknives Dene First Nation

Appendix B

Communications Logs

Tab A – Deninu K'ue First Nation

Tab B – Lutsel K'e Dene First Nation

Tab C – North Slave Métis Alliance

Tab D – Northwest Territory Métis Nation

Tab E – Tlicho Government

Tab F – Yellowknives Dene First Nation

Name of Organization	Date and Time Called	External Contact_Organization	Type of Communication	Status_Outcome of Call
Deninu K'ue First Nation ([	9/13/2013 9:00	Nick Football (Elder) – Behchoko Philip Liske (Elder) – Ndilo Mike Francis (Elder) – Ndilo Wayne Langenhan – NSMA Hugh McSwain – NSMA John Catholique – LKDFN Joe V. Catholique - LKDFN Dave White, (SLEMA) - Yellowknife Zhong Liu (SLEMA) - Yellowknife Lena Drygeese (Interpreter) – Dettah Archie Catholique (interpreter) – Lutselk'e	Site Visit	Annual Fish Tasting Snap Lake Mine
Deninu K'ue First Nation (DKFN)	7/16/2013 14:20	Rosy Bjornson, DKFN	Email	DBC emails DKFN a letter with information regarding summer site workshop opportunity and discusses dates for the site visit.
DKFN	5/24/2013 9:00	DKFN	DKFN Community Meeting	DBC provides an overview of Snap Lake, including socio economic benefits to Northwest Territories, water management discussion and Aquatic Effects Management Plan and Interim Closure and Reclamation Plan discussion.
DKFN	5/15/2013 11:25	Rosy Bjornson, DKFN	Email	DBC emails DKFN regarding administrative details for the Community Workshop May 22nd.
DKFN	5/15/2013 11:25	Rosy Bjornson, DKFN	Email	DBC emails DKFN to confirm Interpreter for the May 22nd Community Workshop
DKFN	5/14/2013 13:55	Rosy Bjornson, DKFN	Email	DBC stops in to see DKFN representative but DKFN representative not available. DBC emails DKFN additional information regarding logistics and administrative details for the DKFN Community Workshop May 22nd
DKFN	5/5/2013 10:40	Rosy Bjornson, Resource Management Coordinator, Carol Ann Chaplin, SAO, DKFN	Email	DBC and DKFN confirm May 24 for DBC Workshop in Fort Resolution.
DKFN	4/29/2013 16:10	Rosy Bjornson, DKFN	Email	DBC emails DKFN regarding administrative and logistics matters fro the May workshop
DKFN	4/29/2013 16:05	Rosy Bjornson, DKFN	Email	DKFN emails DBC regarding Community Workshop May 22nd
DKFN	4/29/2013 14:55	Rosy Bjornson, DKFN cc. DKFN SAO	Email	DBC follows up pm previous phone call regarding the community visits. DBC aims to confirming dates, times, logistics and meeting expense budget.
DKFN	4/16/2013 9:20	Rosie Bjornson, DKFN	Email	DKFN requests word version of DBC's proposed 2013 Community Engagement letter. DBC emails it.
DKFN	4/15/2013 21:15	Patrick Simon, DKFN Rosie Bjornson, DKFN cc. Chief Louis Balsillie, DKFN	Email	DBC emails a letter describing DBC's proposed 2013 Community Engagement with DKFN and seeking opportunities for a spring community meeting and summer site visit/workshop.
DKFN	2/25/2013 9:30	Darren Raymond (De Beers) Alexandra Hood (De Beers) Tom Bradbury (De Beers) Jamie VanGulck (ARKTIS) Reid Smith (ARKTIS)	Meeting	DBC and ARKTIS meet with DKFN regarding Snap Lake Mine Closure and Reclamation
DKFN	2/22/2013 17:00	Carol Ann Chaplin, SAO, DKFN cc: Rosy Bjornson, Resource Management Coordinator, DKFN	Email	DBC confirms administrative details regarding the planned February 25th meeting regarding Mine Closure and Reclamation.
DKFN	2/22/2013 17:00	Carol Ann Chaplin, SAO, DKFN cc: Rosy Bjornson, Resource Management Coordinator, DKFN	Email	DBC and DKFN discuss administrative details regarding the upcoming Interim Closure and Reclamation Plan Workshop on February 25th.
DKFN	2/21/2013 13:25	Carol Ann Chaplin, SAO, DKFN	Email	DKFN provides information regarding meeting costs for February 25th meeting.
DKFN	2/20/2013 15:15	Rosy Bjornson, Resource Management Coordinator, DKFN	Email	DBC discusses budget and capacity funding for the upcoming Interim Closure and Reclamation Plan Workshop.
DKFN	2/20/2013 15:10	Rosy Bjornson, Resource Management Coordinator, DKFN	Email	DBC and DKFN dialogue on local arrangements and logistics for February 25th meeting.

DKFN	2/20/2013 13:50	Rosy Bjornson, Resource Management Coordinator, DKFN	Email	DKFN and DBC dialogue regarding administrative and logistical matters for upcoming community meeting.
DKFN	2/14/2013 10:30	Rosy Bjornson, Resource Management Coordinator, DKFN	Email	A number of emails were exchanges between DBC and DKFN regarding the date, capacity funding, logistics for the upcoming Snap Lake Interim Closure and Reclamation Plan Workshop.
DKFN	2/13/2013 16:45	Rosy Bjornson, Resource Management Coordinator, DKFN	Letter by email	DBC requests permission to hold a half-day pre-briefing workshop for the DKFN Lands and Environment staff to discuss Snap Lake Closure and Reclamation Planning. DBC notes that a further technical workshop will be held in Yellowknife on March 13.
DKFN	12/19/2012 16:20	Rosy Bjornson, Resource Management Coordinator, DKFN cc: David White, SLEMA	letter by email	DBC responds to DKFN's comments on the SL Wildlife Effects Monitoring Program re: Muskoxen.
DKFN	9/17/2012 10:45	Rosy Bjornson, Resource Management Coordinator, DKFN	Email	DKFN and DBC discuss travel arrangements for September 18th meeting.
DKFN	9/14/2012 15:55	DKFN Administration Office cc: Patrick Simon, Environment Manager, DKFN	Email	DBC sends meeting logistics, travel and other information for upcoming meeting.
DKFN	9/11/2012 15:15	Rosy Bjornson, Resource Management Coordinator, DKFN	Email	DBC confirms administrative and logistical details for upcoming meeting.
DKFN	9/19/2012 0:00	DKFN: Patrick Simon, Robert Sayine LKDFN: Angie Lantz, Florence Catholique, Sam Boucher NWTMN: Chris Heron, Violet Mandeville, Earl Evans NSMA: Ed Jones, Susan Enge, Eric Binon, Hugh McSwain Tlicho: Albertine Eyakfwo, Joe Champlain, Charlie Apples YKDFN: Shannon Gault, Peter Sangris, John Drygeese, Fred Sangris Interpreters: Margaret Mackenzie, Mary Rose Sundberg, Ann Biscaye, Sarazine Boucher (Basil) SLEMA: Zhong Liu, Dave White Golder: Mitch Goodjohn, Rebecca Stuparyk, Ryan Stevenson, Paul Vecsei	Meeting	De Beers Snap Lake Traditional Knowledge and AEMP Workshop.
DKFN	9/11/2012 13:30	Rosy Bjornson, Resource Management Coordinator, DKFN	Email	DKFN and DBC dialogue regarding administrative and logistical details for DKFN's attendance at upcoming meeting.
DKFN	9/11/2012 12:00	Rosy Bjornson, Resource Management Coordinator, DKFN cc: Chief Louis Balsillie, DKFN	Email	DBC outlines capacity funding/financial support for the three Workshops Sept.18-20, 2012.
DKFN	9/11/2012 11:30	Rosy Bjornson, Resource Management Coordinator, DKFN cc: Chief Louis Balsillie, DKFN	Email	DKFN and DBC discuss capacity funding for DKFN participation in DBC meeting.
DKFN	9/10/2012 14:20	Rosy Bjornson, Resource Management Coordinator, DKFN	Email	DBC provides information to DKFN regarding administrative items related to upcoming meeting.
DKFN	9/10/2012 14:15	Rosy Bjornson, Resource Management Coordinator, DKFN	Email	DBC acknowledges DKFN's changes to delegates attending DBC meeting.
DKFN	9/10/2012 14:05	Rosy Bjornson, Resource Management Coordinator, DKFN cc: Patrick Simon, Environment Manager, DKFN	Email	DKFN provides notification to DBC regarding a change in DKFN delegates to DBC meeting.
DKFN	9/10/2012 9:40	Rosy Bjornson, Resource Management Coordinator, DKFN	Email	DKFN discusses administrative matters related to upcoming meeting.
DKFN	9/6/2012 11:35	Rosy Bjornson, Resource Management Coordinator, DKFN cc: Patrick Simon, Environment Manager, DKFN	Email	DBC advises DKFN that it will be coordinating travel and accommodation arrangements for all three workshops Sept.18-20.

DKFN	9/6/2012 9:40	Rosy Bjornson, Resource Management Coordinator, DKFN cc: Patrick Simon, Environment Manager, DKFN; Linda VandenBerg, consultant for DKFN	Email	DKFN provides names of three DKFN representatives for the September 19 Workshop.
DKFN	9/5/2012 10:15	Rosy Bjornson, Resource Management Coordinator, DKFN	Email	DKFN thanks DBC for clarification regarding funding support for the Sept.19 Workshop.
DKFN	9/5/2012 10:00	Rosy Bjornson, Resource Management Coordinator, DKFN cc: Patrick Simon, Environment Manager, DKFN; Linda VandenBerg, consultant for DKFN	Email	DBC replies to DKFN's email of September 5th providing additional details requested.
DKFN	9/5/2012 9:40	Rosy Bjornson, Resource Management Coordinator, DKFN cc: Patrick Simon, Environment Manager, DKFN; Linda VandenBerg, consultant for DKFN	Email	DKFN requests clarification on the capacity and travel funding for the SL TK Study AEMP Workshop Sept.19, 2012.

Name of Organization	Date and Time Called	External Contact_Organization	Type of Communication	Status_Outcome of Call
LKDFN	9/13/2013 9:00	Nick Football (Elder) – Behchoko Philip Liske (Elder) – Ndilo Mike Francis (Elder) – Ndilo Wayne Langenhan – NSMA Hugh McSwain – NSMA John Catholique – LKDFN Joe V. Catholique - LKDFN Dave White, (SLEMA) - Yellowknife Zhong Liu (SLEMA) - Yellowknife Lena Drygeese (Interpreter) – Dettah Archie Catholique (interpreter) – Lutselk'e	Site Visit	Annual Fish Tasting Snap Lake Mine
LKDFN	7/16/2013 14:35	Mike Tollis, LKDFN cc. Chief Dora Enzoe – LKDFN	Email	DBC emails LKDFN a letter regarding the 2013 De Beers Community Engagement, reminding of opportunity to visit Snap Lake and pursuing a date for summer site visits.
LKDFN	7/16/2013 9:00	Mike Tollis, LKDFN	Telephone Call	DBC calls and communicates to Mr. Tollis that he will be receiving a letter regarding the SL and GK site visits. Mr. Tolis indicates that he has reviewed the letter sent by DBC to the Chief and notes that it has been difficult to locate land and wildlife members and that while LKDFN may be interested in visiting Snap Lake, they will not participate in an opportunity to visit Gahcho Kué.
LKDFN	7/3/2013 9:00	Chief Dora Enzoe, LKDFN	Email	DBC writes Chief Enzoe in follow up to June 6th meeting regarding opportunities for engagement that are being declined and encourages LKDFN to reconsider.
LKDFN	6/20/2013 9:00	Chad Boucher, LKDFN Iris Catholique, LKDFN Deserae Jonasson, LDKFN Terry Enzoe, LDKFN Chief Dora Enzoe, LKDFN Sheldon Catholique, LKDFN Krysten Jonasson, LKDFN Amanda Marlowe, LKDFN Trevor Marlowe, LKDFN Jordan Michel, LKDFN	Site Visit	LKDFN Snap Lake Site Visit.
LKDFN	6/19/2013 10:20	Florence Catholique, LKDFN cc. Chief Dora Enzoe, LKDFN Graeme Drew, LKDFN Agatha Laboucan, LKDFN	Email	DBC emails final itinerary for LKDFN Snap Lake site visit on June 20th 2013.
LKDFN	6/6/2013 10:20	LKDFN Admin	Telephone Call	DBC calls Chief Enzoe's office and is advised that the Chief is in a meeting and is not available until 11:00. DBC is advised that its message will be passed on. DBC later connects and confirms site visit date and that logistics details will follow.
LKDFN	6/6/2013 10:20	Chief Dora Enzoe, LKDFN cc. Florence Catholique. LKDFN Graeme Drew, LKDFN Agatha Laboucan, LKDFN Addie Jonasson, LKDFN Alfred Lockhart, LKDFN Steve Nitah, LKDFN Tom Lockhart, LKDFN Angie Lantz, LKDFN Gloria Enzoe, LKDFN	Email	Chief Enzoe sends letter requesting a visit to the Snap Lake Mine.
LKDFN	5/30/2013 9:00	Lutsel K'e Dene First Nation	Public Meeting	Completed a full day workshop on Snap Lake Environmental Aspects, including water management upgrades. Community did not complete Closure and Reclamation discussion, so DBC offered to complete that during the site visit in summer. Site visit to be confirmed by Lutsel K'e.

LKDFN	5/27/2013 9:00	Lutsel K'e Dene First Nation Community Meeting	Public Meeting	Full Day Community Workshop held regarding Snap Lake community agreement implementation and results. The community was not able to complete all activities planned by DBC. LKDFN requested DBC come back and DBC agreed to come back for another full day and cover water license and environment aspects. May 30th was agreed.
LKDFN	5/26/2013 8:35	Mike Tollis, LKDFN Florence Catholique, LKDFN cc. Tom Lockhart, LKDFN Steven Nitah, LKDFN Graeme Drew, LKDFN Agatha Laboucan, LKDFN	Email	DBC emails an updated draft agenda for the Mon, May 27th LKDFN Meeting.
LKDFN	5/23/2013 17:40	Mike Tollis, LKDFN	Email	DBC emails the 2013 De Beers Snap Lake Environment Presentation.
LKDFN	5/23/2013 16:50	Mike Tollis, LKDFN Florence Catholique, cc. Tom Lockhart, GNWT Steve Nitah, LKDFN Graeme Drew, LKDFN Agatha Laboucan, LKDNN	Email	DBC emails agenda and itinerary for May 27th DBC 2013 Community Workshop.
LKDFN	5/23/2013 16:35	Florence Catholique, LKDFN cc. Tom Lockhart, GNWT Steven Nitah, LKDFN Graeme Drew, LKDFN Mike Tollis, LKDFN Agatha Laboucan, LKDFN	Email	DBC emails presentations for upcoming community workshop.
LKDFN	5/21/2013 16:35	Florence Catholique, LKDFN cc. Steven Nitah, LKDFN Tom Lockhart, LKDFN Agatha Laboucan, LKDFN	Email	DBC sends email providing additional information regarding DBC attendees for the Community Workshop, the Community Briefing, Site Visits, and a number of other activities in progress with LKDFN.
LKDFN	5/21/2013 13:35	Florence Catholique, LKDFN	Email	LKDFN sends information regarding efforts to find attendees to upcoming community workshop among other matters.
LKDFN	5/21/2013 10:45	Mike Tollis, LKDFN	Email	DBC emails LKDFN regarding logistics for the Community meeting and asks LKDFN to confirm costs.
LKDFN	5/16/2013 9:15	Mike Tollis, LKDFN cc. Graeme Drew, LKDFN Dora Enzoe, LKDFN	Email	LKDFN emails DBC a letter regarding the upcoming meetings in Lutsel K'e.
LKDFN	5/14/2013 12:45	Mike Tollis, LKDFN	Email	DBC emails LKDFN the draft Agenda for the DBC Update Workshop scheduled for May 27th and May 30th in Lutsel K'e.
LKDFN	5/7/2013 12:25	Mike Tollis, LKDFN cc. Graeme Drew, LKDFN	Email	DBC follows up with LKDFN regarding Community Workshop to confirm dates. DBC outlines capacity funding.
LKDFN	4/25/2013 16:30	Graeme Drew, LKDFN Mike Tollis, LKDFN	Telephone Call	DBD and LKDFN hold a teleconference call to discuss DBC's request to engage with LKDFN in a Community workshop and summer site visit/workshop etc.
LKDFN	4/19/2013 12:10	Mike Tollis, WLE Manager, LKDFN cc: Chief Dora Enzoe, Graeme Drew, SAO, LKDFN	Email	DBC acknowledges receipt of April 18 LKDFN letter and advises that DBC will be in touch.
LKDFN	4/18/2013 17:45	Mike Tollis, WLE Manager, LKDFN cc: Chief Dora Enzoe, Graeme Drew, SAO, LKDFN	Letter by email	LKDFN replies to DBC letter of April 15 regarding proposed Community Workshop at the end of May.
LKDFN	4/15/2013 20:15	Mike Tollis, LKDFN cc. Chief Dora Enzoe, LKDFN Graeme Drew, Senior Administrative Officer, LKDFN	Email	DBC emailed a letter describing its proposed 2013 Community Engagement with LKDFN.

LKDFN	2/27/2013 11:30	Mike Tollis, LKDFN	Telephone Call	Discuss LKDFN TK Study, AEMP Technical Workshop, AEMP Reclamation Community Meeting and Ni Hati Yati.
LKDFN	2/26/2013 10:00	Jamie Van Gulck, ARKTIS Reid Smith, ARKTIS Ron Fatt, LKDFN Doris Terri Enzoe, LKDFN Sam Boucher, LKDFN Sonya Almond, LKDFN Mike Tollis, LKDFN	Public Meeting	Community Meeting - Snap Lake Mine Closure and Reclamation.
LKDFN	2/26/2013 0:00	LKDFN	Meeting	DBC holds a Snap Lake Interim Closure and Reclamation Plan meeting with the LKDFN in Lutsel K'e.
LKDFN	2/13/2013 14:10	Mike Tollis, LKDFN	Email	Multiple emails confirming the details of the Interim Closure and Reclamation Plan Meeting in Lutsel K'e on Feb 26th. DBC sent LKDFN the January Interim Closure and Reclamation Plan newsletter.
LKDFN	2/7/2013 16:00	Mike Tollis, LKDFN	Email	DBC sends LKDFN an invite to a pre-briefing workshop for the Interim Closure and Reclamation Plan.
LKDFN	1/16/2013 15:45	Mike Tollis, LKDFN	Email	DBC sends draft agenda for the meeting with LKDFN Lands and Environment staff regarding the Snap Lake Closure and Reclamation planning.
LKDFN	12/20/2012 15:25	Mike Tollis, WLE Manager, LKDFN	Email	DBC replies to LKDFN' email of Dec.20 and advises that DBC is looking at the last week of Jan. or first two weeks of Feb. to hold the Snap Lake Closure and Reclamation session.
LKDFN	12/20/2012 14:45	Mike Tollis, WLE Manager, LKDFN	Email	LKDFN replies to DBC's email of Dec.20 regarding the proposed Snap Lake Closure and Reclamation sessions.
LKDFN	12/20/2012 14:15	Mike Tollis, WLE Manager, LKDFN	Email	DBC requests a time from LKDFN for DBC to call to discuss a proposed information session on Snap Lake Closure and Reclamation.
LKDFN	12/20/2012 9:00	Mike Tollis, LKDFN	Telephone Call	Unavailable, Left a message and followed up with emailed regarding ICRP closure
LKDFN	9/21/2012 8:50	Sonya Almond, Administrative Assistant, WLED, LKDFN	Email	DBC replies to LKDFN's request for confirmation of LKDFN delegates attendance at the SL & GK Workshops in Yellowknife September 18,19,20. DBC also advises LKDFN that George Marlowe was also there on the last day. LKDFN replied that was fine.
LKDFN	9/17/2012 12:30	Sonya Almond, Administrative Assistant, WLED, LKDFN	Email	DBC advises LKDFN of travel and logistics for September meeting.
LKDFN	9/19/2012 0:00	DKFN: Patrick Simon, Robert Sayine LKDFN: Angie Lantz, Florence Catholique, Sam Boucher NWTMN: Chris Heron, Violet Mandeville, Earl Evans NSMA: Ed Jones, Susan Enge, Eric Binon, Hugh McSwain Tlicho: Albertine Eyakfwo, Joe Champlain, Charlie Apples YKDFN: Shannon Gault, Peter Sangris, John Drygeese, Fred Sangis Interpreters: Margaret Mackenzie, Mary Rose Sundberg, Ann Biscaye, Sarazine Boucher (Basil) SLEMA: Zhong Liu, Dave White Golder: Mitch Goodjohn, Rebecca Stuparyk, Ryan Stevenson, Paul Vecsei	Meeting	De Beers Snap Lake Traditional Knowledge and AEMP Workshop.
LKDFN	9/14/2012 16:35	Sonya Almond, WLED Administrative Assistant, LKDFN cc: Mike Tollis, WLE Manager, LKDFN; Angie Lantz, LKDFN Delegate	Email	DBC provides travel and logistics details for GK & SL Workshops in YK Sept.18-20.

LKDFN	9/13/2012 15:30	Sonya Almond, Administrative Assistant, WLED, LKDFN cc: Florence Catholique, Ray Griffith, SAO, Mike Tollis, WLE Manager, all LKDFN	Email	LKDFN advises DBC of LKDFN delegates for the SL & GK Workshops in Yellowknife Sept.18,19,20. DBC acknowledges receipt of names.
LKDFN	9/13/2012 15:00	Mike Tollis, WLE Manager, Ray Griffith, SAO, Sonya Almond, WLED Administrative Assistant, all LKDFN	Email	DBC inquires if the LKDFN will be sending representatives to the upcoming GK workshops Sept.18 & 20 and SL workshop Sept.19, as DBC has not received a reply to the invitations.
LKDFN	8/29/2012 11:30	Mike Tollis, WLE Manager, LKDFN cc: Ray Griffith, SAO, LKDFN	letter by email	DBC invites LKDFN to TK Study AEMP Workshop Sept.19, 2012.
LKDFN	7/26/2012 0:00	Mike Tollis, WLE Manager, LKDFN cc: Ray Griffith, SAO, LKDFN	letter	DBC invites 2 LKDFN elders to Snap Lake Annual Fish Tasting Sept.13.

Name of Organization	Date and Time Called	External Contact_Organization	Type of Communication	Status_Outcome of Call
NSMA	9/13/2013 9:00	Nick Football (Elder) – Behchoko Philip Liske (Elder) – Ndilo Mike Francis (Elder) – Ndilo Wayne Langenhan – NSMA Hugh McSwain – NSMA John Catholique – LKDFN Joe V. Catholique - LKDFN Dave White, (SLEMA) - Yellowknife Zhong Liu (SLEMA) - Yellowknife Lena Drygeese (Interpreter) – Dettah Archie Catholique (interpreter) – Lutselk'e	Site Visit	Annual Fish Tasting Snap Lake Mine
North Slave Metis Alliance (NSMA)	7/27/2013 0:00	Hugh McSwain, Marc Whitford, Ashley Mercredi, Sue Enge, Bob Mercredi, Nicole Enge, Stefany Bulmer, Matt Hoover, Eric Binion, Edward Jones	Site Workshop	NSMA delegation participate in Snap Lake Site Visit.
NSMA	7/16/2013 10:30	Eric Binion, NSMA cc. Bill Enge, President, NSMA	Email	DBC emails NSMA a letter regarding 2013 DBC Community Engagement for summer site workshop.
NSMA	5/28/2013 9:35	Marc Whitford, GNWT Eric Binion, NSMA cc., Robert Mercredi Hugh Home Bill Enge, NSMA	Email	NSMA emails to thank DBC for the Saturday, May 25th meeting and expresses appreciation for engagement approach.
NSMA	5/25/2013 9:00	North Slave Metis Alliance Members & Board	Public Meeting	DBC provides a full day workshop on Snap Lake and Gahcho Kué. Provided overview of benefits from Snap Lake flowing to NSMA and discussed water management and Aquatic Effects Management Plan and Interim Closure and Reclamation Plan.
NSMA	4/16/2013 11:50	Eric Binion, NSMA	Email	NSMA provides suggested dates for upcoming NSMA /DBC Meetings and site visits.
NSMA	4/16/2013 11:50	Eric Binion, NSMA	Email	DBC confirms the dates NSMA suggests for the Site Visits and Workshops work for DBC.
NSMA	2/28/2013 13:00	Reid Smith, ARKTIS Jamie Van Gulck, ARKTIS Ed Jones, NSMA Wayne Langehan, NSMA Eric Binion, NSMA	Public Meeting	NSMA Meeting - Snap Lake Mine Closure and Reclamation
NSMA	2/14/2013 10:40	Eric Binion, NSMA	Email	Multiple emails from DBC regarding details for upcoming ICRP meeting.
NSMA	2/12/2013 17:00	Eric Binion, NSMA Marc Casas, MVLWB	Email	Multiple emails: DBC sent out Aquatic Effects Management Plan reference lake tech memos and received comments regarding the 2013 Aquatic Effects Management Plan from NSMA. NSMA also sent its comments to MVLWB.
NSMA	2/11/2013 17:05	Eric Binion, Regulatory Analyst, NSMA	Email	DBC thanks NSMA for their comments sent to the MVLWB regarding the Snap Lake Aquatic Effects Management Plan Design Plan.
NSMA	2/11/2013 10:30	Eric Binion, NSMA cc. Charles, NSMA	Email	Multiple emails - DBC and NSMA set up a date for their Interim Closure and Reclamation Plan meeting for Feb 28th 1pm
NSMA	2/7/2013 15:45	Eric Binion, Regulatory Analyst, NSMA	letter by email	DBC sends formal invite to NSMA to discuss Snap Lake Interim Closure and Reclamation Plan on Feb.28 with NSMA Land and Environment staff. This meeting is a precursor to the March 13th meeting with other agencies and communities.
NSMA	2/7/2013 14:55	Bill Enge, NSMA President	Email	DBC confirms meeting date selected by NSMA. NSMA replies that meeting date will no longer work due to time conflicts with other meetings, suggests alternate meeting dates and times.
NSMA	2/5/2013 16:15	Bill Enge, NSMA President	Email	Multiple emails regarding proposed meeting dates.
NSMA	2/5/2013 16:00	Eric Binion, Regulatory Analyst, NSMA	Email	DBC and NSMA exchange emails and set Feb.28 for meeting to discuss Snap Lake Interim Closure and Reclamation Plan.

NSMA	2/4/2013 18:10	Bill Enge, NSMA President	Email	NSMA replies to DBC meeting invitation with suggested date of the evening of Thurs, Feb 7th 2013.
NSMA	2/1/2013 9:35	Eric Binion, Regulatory Analyst, NSMA	Email	NSMA advises DBC they need to reschedule the Feb.13 meeting.
NSMA	1/30/2013 12:50	Bill Enge, President, NSMA	Email	DBC follow-up to conversation with NSMA regarding meeting with DBC and NSMA Board of Directors and Senior staff. DBC advises of availability and items for agenda.
NSMA	1/21/2013 16:00	Eric Binion, Regulatory Analyst, NSMA	Email	DBC advises NSMA overlap of their meeting and the BHP hearings on Feb.13. Inquiring if a rescheduling will be necessary.
NSMA	1/9/2013 9:10	Eric Binion, Regulatory Analyst, NSMA cc: Bill Enge, President, NSMA	Email	DBC replies to NSMA's email of Jan.8.
NSMA	1/8/2013 8:55	Eric Binion, Regulatory Analyst, NSMA cc: Bill Enge, President, NSMA	Email	NSMA confirms meeting in the DBC office on Feb.6 and the agenda.
NSMA	1/7/2013 13:30	Eric Binion, Regulatory Analyst, NSMA	Email	DBC provides outline for meeting with NSMA Environment and Lands re Snap Lake Closure and Reclamation discussion. DBC advises that it would like to meet at the DBC office.
NSMA	1/4/2013 9:25	Eric Binion, Regulatory Analyst, NSMA	Email	NSMA advises an afternoon meeting Feb.6 would work for NSMA to discuss the Snap Lake Closure and Reclamation.
NSMA	12/24/2012 11:50	Eric Binion, Regulatory Analyst, NSMA	Email	DBC acknowledges receipt of NSMA's email of Dec.21.
NSMA	12/21/2012 9:50	Eric Binion, Regulatory Analyst, NSMA	Email	NSMA replies to DBC's email of Dec.20 indicating NSMA would be interested in a ICRP meeting in Feb.
NSMA	12/20/2012 14:15	Eric Binion, Regulatory Analyst, NSMA	Email	DBC requests NSMA call DBC to discuss a proposed information session on Snap Lake Closure and Reclamation.
NSMA	12/20/2012 9:00	Eric Binion, NSMA	Telephone Call	Unavailable tried to leave NSMA a message regarding ICRP Closure but was told by reception to email.
NSMA	11/20/2012 16:20	Bill Enge, President, NSMA	Email	NSMA confirms its environment manager.
NSMA	9/19/2012 0:00	DKFN: Patrick Simon, Robert Sayine LKDFN: Angie Lantz, Florence Catholique, Sam Boucher NWTMN: Chris Heron, Violet Mandeville, Earl Evans NSMA: Ed Jones, Susan Enge, Eric Binon, Hugh McSwain Tlicho: Albertine Eyakfwo, Joe Champlain, Charlie Apples YKDFN: Shannon Gault, Peter Sangris, John Drygeese, Fred Sangris Interpreters: Margaret Mackenzie, Mary Rose Sundberg, Ann Biscaye, Sarazine Boucher (Basil) SLEMA: Zhong Liu, Dave White Golder: Mitch Goodjohn, Rebecca Stuparyk, Ryan Stevenson, Paul Vecsei	Meeting	De Beers Snap Lake Traditional Knowledge and AEMP Workshop.
NSMA	9/14/2012 11:30	Sue Enge, Project Manager, NSMA	Email	DBC replies to NSMA email of Sept.13 and outlines administrative details for September meetings.
NSMA	8/29/2012 0:55	Bill Enge, President, NSMA	Email	DBC requests confirmation of the NSMA contacts for Snap lake and Gahcho Kué relating to matters on regulatory issues.
NSMA	8/29/2012 0:00	Bill Enge, President, NSMA cc: Sue Enge, Project Manager, NSMA	letter by email	DBC invites NSMA to TK Study AEMP Workshop Sept.19, 2012.
NSMA	7/26/2012 0:00	Sheryl Grieve, Environment & Resource Manager, NSMA cc: Bill Enge, President, NSMA	letter	DBC invites 2 NSMA elders to the Annual Fish Tasting Sept.13.

Name of Organization	Date and Time Called	External Contact_Organization	Type of Communication	Status_Outcome of Call
Northwest Territories Metis Nation (NWTMN)	8/1/2013 15:15	Earl Jacobson, NWTMN cc. Jennifer Heron, NWTMN	Email	DBC follows up with NWTMN regarding administrative matters related to recent trip to Snap Lake.
	7/23/2013 0:00	Eileen Courtoreille, Skylar Courtoreille, Leah Desjarlais, Earl Evans, Paul Harrington, Charles Heron, Kelsey Heron; Tim Heron Rosa Loutitt	Site Workshop	NWTMN delegation participate in Snap Lake Site Visit.
NWTMN	7/22/2013 9:45	Gary Bailey, NWTMN	Telephone Call	Follow-up conversation regarding site clearance requirements.
NWTMN	7/19/2013 14:35	Tim Heron, NWTMN cc. Earl Jacobson, NWTMN FRMN	Email	DBC emails NWTMN regretfully stating that DBCI is unable to make changes to the SL Site visit passengers at this late a date as there is no time to get site clearances and required approvals.
NWTMN	7/19/2013 14:05	Tim Heron, NWTMN cc. Earl Jacobson, NWTMN	Email	NWTMN emailed DBC requesting participant replacement for the Snap Lake Site Visit. NWTMN also asked to add 3 more people from Fort Resolution to the list.
NWTMN	7/17/2013 16:55	Earl Jacobson, NWTMN Tim Heron, NWTMN HRMC FRMC	Email	DBC emailed draft Itinerary for the Snap Lake NWTMN site visit and requests information required for logistics.
NWTMN	7/16/2013 12:45	Tim Heron, NWTMN cc. Garry Bailey, NWTMN	Email	DBC emails NWTMN a letter regarding 2013 DBC Community Engagement.
NWTMN	7/9/2013 15:10	Earl Jacobson, NWTMN cc. Jennifer Heron, NWTMN	Email	NWTMN emails DBC regarding administrative matters for site visit.
NWTMN	6/12/2013 9:00	Northwest Territory Métis Nation	NWTMN Meeting	DBC provides a workshop for NWTMN including update on Snap Lake HR, Employment, Business Opportunities and Social Investment as well as water management. Workshop also facilitates input from NWTMN into Aquatic Effects Management Plan and Interim Closure and Reclamation Plan for Snap Lake.
NWTMN	6/7/2013 9:00	Earl Jacobson, NWTMN cc. Tim Heron, NWTMN	Email	DBC emails information and agenda regarding June 12th meeting.
NWTMN	6/4/2013 8:55	Earl Jacobson, NWTMN cc. Tim Heron, NWTMN	Email	DBC emails NWTMN regarding financial and administrative matters related to meeting being planned.
NWTMN	5/28/2013 15:20	Earl Jacobson, NWTMN	Email	NWTMN emails DBC information regarding meeting administrative matters.
NWTMN	5/21/2013 16:45	Tim Heron, NWTMN cc. Earl Jacobson, NWTMN	Email	DBC emails NWTMN regarding upcoming meeting and related administrative and financial matters. .
NWTMN	5/7/2013 12:05	Tim Heron, NWTMN cc. Earl Jacobson, NWTMN President	Email	DBC follows up on phone conversation with NWTMN regarding Community Briefing Workshop date, location, and other administrative matters.
NWTMN	5/6/2013 10:10	Tim Heron, IMA Coordinator, Garry Bailey, President, NWTMN	Email	DBC clarifies capacity funding for the May Community Workshop and available seats on planes for the summer site visits to Snap Lake and Gahcho Kué.
NWTMN	5/1/2013 15:00	Earl Jacobson, NWTMN	Email	DBC follows up with NWTMN regarding the community Meetings and administrative matters.
NWTMN	5/1/2013 14:30	Tim Heron, NWTMN Earl Jacobson, NWTMN	Email	DBC email regarding the Spring Community Workshop, requesting possible dates and location. NWTMN responds that they will get back to DBC by Friday.
NWTMN	5/1/2013 14:30	Tim Heron, IMA Coordinator, Earl Jacobson, Executive Director,	Email	Series of emails (May 1-7) between DBC and NWTMN regarding dates, funding, participant numbers for the upcoming DBC Community Workshop.
NWTMN	4/26/2013 12:20	Tim Heron, NWTMN Earl Jacobson, NWTMN President Tom Unka, NWTMN	Email	DBC emails to suggest dates for the NWTMN community meetings (May 21 or May 23). NWTMN notes that there are conflicting meetings on those days and that NWTMN will get back to DBC.
NWTMN	4/16/2013 11:35	Tom Unka, NWTMN	Email	NWTMN emails DBC regarding interpreters.
NWTMN	4/15/2013 20:40	Tim Heron, NWTMN Earl Jacobson, NWTMN cc. Gary Bailey, President – NWTMN	Email	DBC emailed a letter describing DBC proposed 2013 Community Engagement with NWT Métis Nation.

NWTMN	2/19/2013 15:55	Tim Heron, IMA Coordinator, NWTMN	Email	DBC requests NWTMN to provide possible dates for the Snap Lake Interim Closure and Reclamation Plan Workshop in March.
NWTMN	2/13/2013 16:40	Tim Heron, IMA Coordinator, NWTMN	letter by email	DBC requests permission to hold a half day pre-briefing workshop for the NWTMN Lands and Environment staff to discuss Snap Lake closure and reclamation planning. A further technical workshop will be held in Yellowknife on March 13.
NWTMN	2/13/2013 10:30	Tim Heron, IMA Coordinator, NWTMN	Email	DBC inquires about NWTMN availability to participate in a Snap Lake Interim Closure and Reclamation Plan workshop in March.
Other	9/19/2012 0:00	DKFN: Patrick Simon, Robert Sayine LKDFN: Angie Lantz, Florence Catholique, Sam Boucher NWTMN: Chris Heron, Violet Mandeville, Earl Evans NSMA: Ed Jones, Susan Enge, Eric Binon, Hugh McSwain Tlicho: Albertine Eyakfwo, Joe Champlain, Charlie Apples YKDFN: Shannon Gault, Peter Sangris, John Drygeese, Fred Sangris Interpreters: Margaret Mackenzie, Mary Rose Sundberg, Ann Biscaye, Sarazine Boucher (Basil) SLEMA: Zhong Liu, Dave White Golder: Mitch Goodjohn, Rebecca Stuparyk, Ryan Stevenson, Paul Vecsei	Meeting	De Beers Snap Lake Traditional Knowledge and AEMP Workshop.
NWTMN	9/10/2012 17:50	Earl Jacobson, Executive Director, NWTMN	Email	DBC acknowledges receiving NWTMN voicemail and was unable to get through to NWTMN cell as requested. DBC will try again tomorrow.
NWTMN	8/30/2012 14:10	Tim Heron, IMA Coordinator, NWTMN	Email	DBC answers NWTMN questions on travel arrangements and rates for the SL TK Study AEMP Workshop Sept.19, 2012.
NWTMN	8/30/2012 11:15	Tim Heron, IMA Coordinator, NWTMN	Telephone Call	NWTMN calls DBC to discuss travel logistics for the upcoming meeting.
NWTMN	8/29/2012 0:00	Tim Heron, IMA Coordinator, NWTMN cc: Betty Villebrun, President, NWTMN	letter by email	DBC invites NWTMN to TK Study AEMP Workshop Sept.19, 2012.

Name of Organization	Date and Time Called	External Contact_Organization	Type of Communication	Status_Outcome of Call
Tlicho	9/13/2013 9:00	Nick Football (Elder) – Behchoko Philip Liske (Elder) – Ndilo Mike Francis (Elder) – Ndilo Wayne Langenhan – NSMA Hugh McSwain – NSMA John Catholique – LKDFN Joe V. Catholique - LKDFN Dave White, (SLEMA) - Yellowknife Zhong Liu (SLEMA) - Yellowknife Lena Drygeese (Interpreter) – Dettah Archie Catholique (interpreter) – Lutselk'e	Site Visit	Annual Fish Tasting Snap Lake Mine
Tlicho	8/29/2013 9:00	Eddie Camille TlichoHarry Apples Tlicho Henry Zoe Tlicho Marie Adele Wetrade Tlicho Marjorie Matheson-Maund Tlicho Noel Drybones Tlicho Raymond Mantla Tlicho William Mantla Tlicho Peter Huskey Tlicho Interpreter	Site Visit	Tlicho delegation participate in Snap Lake Site Visit
Tlicho	7/16/2013 11:45	Sonny Zoe, Tlicho cc. Ginger Gibson, Tlicho	Email	DBC emails TG a letter regarding the 2013 DBC Community Engagement.
Tlicho	6/24/2013 9:00	Sonny Zoe, Chairperson Kwe Beh Working Group, Tlicho Henry Zoe, KBWG Member, Tlicho William Mantla, KBWG Member, Tlicho Noel Bishop, KBWG Member, Tlicho John B. Zoe, KBWG Member, Tlicho Marjorie Matheson Maund, KBWG Member, Tlicho Ginger Gibson, KBWG Member, Tlicho Itoah Scott, Tlicho Summer Student Kerri Garner, Lands Protection, Tlicho	Meeting	DBC Update – Quarterly Updates on Gahcho Kué & Snap Lake
Tlicho	6/6/2013 0:00	Tlicho Government - Community of Behchoko	Public Meeting	Public Meeting to provide update on Water Management matters, discuss Aquatic Effects Monitoring Program and Interim Closure and Reclamation Plan for Snap Lake.
Tlicho	6/5/2013 9:00	Tlicho Government - Whati	Public Meeting	DBC held a public workshop including an overview of Snap Lake water management matters. Discussed Aquatic Effects Monitoring Program as well.
Tlicho	6/4/2013 9:00	Tlicho Government - Community Government of Gameti	Meeting	A full day workshop was provided to go over Snap Lake Water management, environmental performance, Aquatic Effects Monitoring Program and Interim Closure and Reclamation Plan.
Tlicho	6/3/2013 0:00	Tlicho Government, Wekweeti Community	Public Meeting	A public workshops was held in the community regarding both the Snap Lake Mine and Gahcho Kué Project.
Tlicho	5/31/2013 11:40	Tlicho Government	Email	DBC Community Meeting Posters sent to Wekweeti, Gameti and Whati.
Tlicho	5/30/2013 9:00	Sonny Zoe, Tlicho cc. Henry Zoe, Tlicho	Letter by Mail	DBC sends letter regarding Capacity funding for the 2013 De Beers Community Update.
Tlicho	5/2/2013 15:55	Adeline Football, Tlicho Jennifer Wetrade, Tlicho Shirley Ann Beaverho, Tlicho Sherri Zoe, Tlicho Henry Zoe, Tlicho	Email	DBC contacted TG to confirm TG community visit dates and to request a quote for each visit.
Tlicho	5/2/2013 15:05	Adeline Football, Tlicho Jennifer Wetrade, Tlicho Shirley Beaverho, Tlicho Sherri Zoe, Tlicho	Email	TG confirms Community Center is booked for Community Visit in Wekweeti.
Tlicho	4/30/2013 12:00	Shirley Beaverho, Tlicho Henry Zoe, Tlicho	Email	DBC requests date of Whati community meeting, TG replies with June 5th.

Tlicho	4/30/2013 9:00	Adeline Football, Tlicho Jennifer Wetrade, Tlicho Shirley Beaverho, Tlicho Sherri Zoe, Tlicho	Email	DBC emails TG to book the community /culture centre for the Tlicho community visits.
Tlicho	4/22/2013 11:05	Henry Zoe, Tlicho cc. Laura Duncan, Tlicho Kerri Garner, Tlicho Sherri Zoe, Tlicho Shirley Beaverho, Tlicho Jennifer Wetrade, Tlicho Adeline Football, Tlicho Ginger Gibson, Tlicho Marjorie Matheson-Maund, Tlicho	Email	TG emailed DBC to confirm the proposed dates for the DBC Community Meetings May 21-30 along with contacts for each community.
Tlicho	4/19/2013 11:15	Henry Zoe, Tlicho	Email	DBC emails TG to determine DBC Community meeting dates and asks TG to follow up.
Tlicho	4/3/2013 14:00	Chief Charlie Football, Wekweeti, Tlicho Sonny Zoe, Chairperson Kwe Beh Working Group, Tlicho Henry Zoe, Mines Liaison Coordinator and KBWG Member, Tlicho William Mantla, KBWG Member, Tlicho Noel Bishop, KBWG Member, Tlicho Marjorie Matheson Maund, Tlicho Ginger Gibson, Tlicho	Meeting	DBC Update – Snap Lake
Tlicho	4/2/2013 20:30	Ginger Gibson	Email	DBC emails TG a letter describing the 2013 community engagement approach that DBC would like to discuss with the Kwe Beh Working Group.
Tlicho	3/18/2013 15:30	Kerri Garner, Tlicho Ginger Gibson, Tlicho	Email	DBC emails TG to confirm logistics and attendance for the Aquatic Effects Monitoring Program Meeting March 25-26.
Tlicho	2/27/2013 12:20	Ginger Gibson, Technical Coordinator, Kwe Beh Working Group, Tlicho Government	Email	DBC sends TG requested information on the North Pile.
Tlicho	2/19/2013 16:20	Laura Duncan, Tlicho Executive Officer, Tlicho Government	Email	TG acknowledges receipt of DBC email Feb.19 re Snap Lake Interim Closure and Reclamation Plan meetings.
Tlicho	2/19/2013 16:10	Laura Duncan, Tlicho Executive Officer, Tlicho Government cc: Ginger Gibson, Technical Advisor, Kwe Beh Working Group and Kerri Garner, Director, Lands Protection, Tlicho Government	letter by email	DBC requests permission to hold a half day pre-briefing working for the TG Lands and Environment staff to discuss Snap Lake Closure and Reclamation Planning. A further Technical workshop will be held in YK on March 13.
Tlicho	1/22/2013 0:00	Kwe Beh Working Group of Tlicho Government	Meeting	DBC met with the Kwe Beh Working Group to discuss Snap Lake Closure and Reclamation Plan.
Tlicho	1/16/2013 15:40	Ginger Gibson, Technical Coordinator, Kwe Beh Working Group, Tlicho Government	Email	DBC and TG exchange emails setting up time and goals for the upcoming Kwe Beh Working Group meeting re Snap Lake Closure and Reclamation Plan.
Tlicho	1/14/2013 9:20	Ginger Gibson, Technical Coordinator, Kwe Beh Working Group, Tlicho Government	Email	DBC accepts Kwe Beh Working Group offer to attend the next KBWG meeting to present the Snap Lake outline for Interim Closure and Reclamation Plan.
Tlicho	1/10/2013 15:00	Ginger Gibson, Technical Coordinator, Kwe Beh Working Group, Tlicho Government	Email	DBC asks TG if an abbreviated presentation should be done with the Kwe Beh Working Group prior to proceeding with presentations in the Tlicho Communities.
Tlicho	12/20/2012 14:05	Ginger Gibson, Technical Coordinator, Kwe Beh Working Group, Tlicho Government	Email	Multiple Emails. DBC and TG work to find a time when a telephone call can be scheduled to discuss community engagement approach and plans.
Tlicho	10/26/2012 13:50	Kerri Garner, Lands Director, Tlicho Government	Email	DBC advises the Tlicho invoice for the Sept.18-20 Workshops needs to be revised, as capacity funding is being disbursed separately, therefore no need to be on invoice. Also one airfare needs to be deleted, as the person did not attend the workshops.

Tlicho	10/4/2012 17:55	Ginger Gibson, Technical Coordinator, Kwe Beh Working Group	Email	DBC replies to Tlicho email of Oct.4 re Tlicho Career Development Staff meeting opportunity. DBC advised who from DBC will make the appointment for DBC reps to attend Nov.14 or 15.
Tlicho	10/4/2012 15:25	Ginger Gibson, Technical Coordinator, Kwe Beh Working Group	Email	Tlicho advises opportunity for recruiters of DBC to meet Tlicho Government Career Development Officers from all Tlicho communities in Yellowknife Nov.14 or 15 - appointment is needed.
Tlicho	10/3/2012 0:00	Chiefs Executive Council, Tlicho Government	Meeting	DBC met with Tlicho Chief Executive Council. DBC provided update on Snap Lake Mine and discussed a number of matters related to the mine's operation and environmental monitoring and performance.
Tlicho	9/28/2012 0:00	Ginger Gibson, Technical Coordinator, Kwe Beh Working Group	Email	DBC and Tlicho exchange numerous emails on September 28 to set-up meeting with Grand Chief and DBC Chief Operating Officer on Oct. 3. Draft agenda also discussed.
Tlicho	9/21/2012 7:00	Ginger Gibson, Technical Coordinator, Kwe Beh Working Group	Email	DBC confirms Oct.2 at 4pm for meeting Tlicho Chief Executive Council and DBC Chief Operating Officer in Yellowknife.
Tlicho	9/19/2012 15:20	Ginger Gibson, Technical Coordinator, Kwe Beh Working Group cc: Henry Zoe, Senior Director of Community Government	Email	Tlicho requests Oct.3 meeting with Tlicho Chief Executive Council and DBC Chief Operating Officer be postponed to Oct.24 or 25.
Other	9/19/2012 0:00	DKFN: Patrick Simon, Robert Sayine LKDFN: Angie Lantz, Florence Catholique, Sam Boucher NWTMN: Chris Heron, Violet Mandeville, Earl Evans NSMA: Ed Jones, Susan Enge, Eric Binon, Hugh McSwain Tlicho: Albertine Eyakfwo, Joe Champlain, Charlie Apples YKDFN: Shannon Gault, Peter Sangris, John Drygeese, Fred Sangris Interpreters: Margaret Mackenzie, Mary Rose Sundberg, Ann Biscaye, Sarazine Boucher (Basil) SLEMA: Zhong Liu, Dave White Golder: Mitch Goodjohn, Rebecca Stuparyk, Ryan Stevenson, Paul Vecsei	Meeting	De Beers Snap Lake Traditional Knowledge and AEMP Workshop.
Tlicho	9/19/2012 7:55	Ginger Gibson, Technical Coordinator, Tlicho Government	Email	Tlicho confirms meeting time and place for Tlicho Chief Executive Council and DBC Chief Operating Officer meeting Oct.2.
Tlicho	9/14/2012 17:30	Kerri Garner, Lands Director, Tlicho Government	Email	Garner advises names of Tlicho participants for the SL TK Study AEMP Workshop Sept.19, 2012.
Tlicho	9/14/2012 17:25	Kerri Garner, Lands Director, Tlicho Government	Email	DBC requests names of Tlicho participants for the SL TK Study AEMP Workshop Sept.19, 2012.
Tlicho	9/13/2012 16:20	Kerri Garner, Lands Director, Tlicho Government	Email	DBC provides Tlicho with further clarification on the capacity funding for the upcoming workshops and acknowledges names of Tlicho participants for the Sept.18 & 20 sessions. Also discusses travel/accommodation arrangements. Requests participant names for the Sept.19 workshop.
Tlicho	9/11/2012 14:45	Kerri Garner, Lands Director, Tlicho Government	Email	Tlicho thanks DBC for clarification on the Workshop funding. Confirms that Tlicho will make all travel and other arrangements for their delegates for the Sept.18-20 Workshops.
Tlicho	9/7/2012 17:20	Kerri Garner, Lands Director, Tlicho Government	Email	Tlicho thanks DBC for phone conversation clarifying the details of the Workshops Sept.18-20, 2012. Provides names of Tlicho participants and confirms Tlicho will make the travel arrangements.
Tlicho	8/30/2012 8:20	Ginger Gibson, Technical Coordinator, Kew Beh Working Group	Email	DBC discusses upcoming meeting with DBC Chief Operating Officer and Tlicho Chiefs Executive Council on Oct.3. Topics will cover Snap Lake and Gahcho Kue items.

Tlicho	8/29/2012 11:30	Kerri Garner, A/Director, Lands Protection, Tlicho Government cc: Sonny Zoe, Kwe Beh Working Group; Laura Duncan, Tlicho Executive Officer	letter by email	DBC invites Tlicho to TK Study AEMP Workshop Sept.19, 2012.
Tlicho	8/8/2012 9:30	Ginger Gibson, Technical Coordinator, Kwe Beh Working Group, Tlicho Govt.	Telephone Call	Discussed TK Workshop for AEMP Snap Lake
Tlicho	7/26/2012 0:00	Kerri Garner, A/Director, Lands Protection, Tlicho Government cc: Sonny Zoe, Chair, Kwe Beh Working Group Laura Duncan, Tlicho Executive Officer, Tlicho Government	letter	DBC invites 2 Tlicho elders to Snap Lake Annual Fish Tasting Sept.13.

Name of Organization	Date and Time Called	External Contact_Organization	Type of Communication	Status_Outcome of Call
Other	9/13/2013 9:00	Nick Football (Elder) – Behchoko Philip Liske (Elder) – Ndilo Mike Francis (Elder) – Ndilo Wayne Langenhan – NSMA Hugh McSwain – NSMA John Catholique – LKDFN Joe V. Catholique - LKDFN Dave White, (SLEMA) - Yellowknife Zhong Liu (SLEMA) - Yellowknife Lena Drygeese (Interpreter) – Dettah Archie Catholique (interpreter) – Lutselk'e	Site Visit	Annual Fish Tasting Snap Lake Mine
Yellowknifes Dene First Nation (YKDFN)	7/30/2013 9:00	Chief Ernest Betsina, Peter Sangris, George Tatsiechele, Shannon Gault, Sarah Plotner, Cody Drygeese Angus Charlo, Paul Mackenzie, Maverick Betsina, Lena Drygeese	Site Workshop	YKDFN delegation participate in Snap Lake Site Visit
YKDFN	7/27/2013 17:35	Shannon Gault, YKDFN	Email	DBC follows up with YKDFN regarding administrative matters for site clearances.
YKDFN	7/16/2013 13:10	Shannon Gault, YKDFN	Email	DBC emails YKDFN letter regarding the 2013 DBC Community Engagement
YKDFN	7/11/2013 14:55	Shannon Gault, YKDFN	Telephone Call	DBC spoke to YKDFN confirming site visits, Tuesday July 30 – Snap Lake Visit, Thursday August 8 – Gahcho Kué.
YKDFN	5/30/2013 13:00	Yellowknives Dene First Nation	YKDFN Community Meeting	Community Meeting held to Discuss both Snap Lake and Gahcho Kué
YKDFN	5/29/2013 22:50	Chief Edward Sangris, YKDFN cc. Shannon Gault, YKDFN	Letter by Mail	DBC send thank you letter to YKDFN for the May 21st trip to Snap Lake.
YKDFN	5/29/2013 1:00	YKDFN Community Meeting	Public Meeting	DBC provided an update on Snap Lake Mine. DBC reviewed water management and discussed monitoring, Aquatic Effects Monitoring Program, Interim Closure and Reclamation Plan etc.
YKDFN	5/21/2013 11:00	Shannon Gault, YKDFN	Email	DBC emails regarding administrative matters for upcoming site visit.
YKDFN	5/21/2013 9:00	Chief Edward Sangris Philip Liske, Councillor Peter D. Sangris, Councillor Alfred Baillargeon, Councillor Jonas Sangris, Councillor	Site Visit	YKDFN Site Visit
YKDFN	5/16/2013 15:45	Shannon Gault, Land Manager, YKDFN	Email	YKDFN provides a list of items discussed with DBC for a YKDFN community workshop that the YKDFN is setting up for its' membership.
YKDFN	5/7/2013 11:25	Chief Sangris, YKDFN	Telephone Call	Conversation between DBC and YKDFN regarding community meetings and Snap Lake Freshet Visit etc.
YKDFN	5/2/2013 14:15	Sarah Plottner, IBA Implementation Rep, Shannon Gault, Lands Manager, YKDFN	Email	Series of emails (May 1-7) YKDFN requesting Snap Lake site visit - dates, participant numbers discussed.
YKDFN	5/1/2013 11:00	Sarah Plotner, IBA Implementation Rep, YKDFN	Email	YKDFN advises DBC that Chief Betsina requests a site visit to Snap Lake end of May or early June.
YKDFN	4/29/2013 14:35	Shannon Gault, YKDFN	Email	DBC emails to make arrangements for the YKDFN Community Workshop in Ndilo May 29th 2013.
YKDFN	4/19/2013 10:40	Shannon Gault, YKDFN	Email	DBC emails YKDFN to set up date for the DBC May Community Meeting.
YKDFN	3/20/2013 15:20	Shannon Gault, YKDFN Randy Freeman, YKDFN	Meeting	Meeting to discuss DBC Annual Update Community meeting (Wed, May 22) and tentative dates for Community meetings set.
YKDFN	3/20/2013 9:45	Randy Freeman, YKDFN cc. Shannon Gault, YKDFN	Email	DBC confirms today's meeting.
YKDFN	3/15/2013 13:10	Randy Freeman, YKDFN	Email	Parties agree on meeting time to discuss community Meeting Wed. Mar 20th 2013 among other agenda items.
YKDFN	3/15/2013 3:00	Randy Freeman, YKDFN	Email	DBC requests a meeting with YKDFN on Wed, Thurs or Fri the week of March 18-22 2013.

	3/13/2013 0:00	Todd Slack, YKDFN	Meeting	YKDFN representative attends Closure options and Research workshop.
YKDFN	2/22/2013 13:10	Todd Slack, YKDFN	Email	YKDFN requests copies of the recent Socio-Economic Reports. DBC responds.
YKDFN	2/7/2013 16:10	Todd Slack, Research & Regulatory Specialist, YKDFN	Letter by email	DBC sends invite to YKDFN Land and Environment staff to a Snap Lake Interim Closure and Reclamation Plan meeting on March 13.
YKDFN	1/16/2013 14:20	Todd Slack, Research & Regulatory Specialist, YKDFN	Email	DBC follow-up to email sent to YKDFN on Dec.20. DBC has not had a reply from YKDFN. DBC wishes to discuss the planning of a Snap Lake Closure and Reclamation session with YKDFN Lands and Environment staff.
YKDFN	12/20/2012 14:10	Todd Slack, Research & Regulatory Specialist, YKDFN	Email	DBC requests a time to call YKDFN to discuss a proposed information session on Snap Lake Closure and Reclamation.
YKDFN	12/20/2012 9:00	Todd Slack, YKDFN	Telephone Call	DBC left message and followed up with email regarding ICRP Closure
YKDFN	10/16/2012 9:55	Shannon Gault, EA to Chief Edward Sangris, YKDFN	Email	YKDFN acknowledges receipt of DBC's email of Oct.16 re meeting dates.
YKDFN	10/16/2012 9:00	Shannon Gault, EA to Chief Edward Sangris, YKDFN	Email	DBC replies to YKDFN questions of Oct.15 inquiring when the meetings are planned for the Snap Lake Closure Plan and Aquatics Effects Monitoring noting that they will be the first week of February 2013.
YKDFN	10/15/2012 15:40	Shannon Gault, EA to Chief Edward Sangris, YKDFN	Telephone Call	DBC leaves YKDFN a voicemail advising that DBC is still seeking answer to YKDFN question regarding a meeting date for the SL Closure Plan and Aquatics Effects Monitoring. DBC will contact YKDFN tomorrow with an update.
YKDFN	10/15/2012 11:45	Shannon Gault, EA to Chief Edward Sangris, YKDFN	Telephone Call	YKDFN and DBC discuss details regarding SL Closure Plan and AEMP.
Other	9/19/2012 0:00	DKFN: Patrick Simon, Robert Sayine LKDFN: Angie Lantz, Florence Catholique, Sam Boucher NWTMN: Chris Heron, Violet Mandeville, Earl Evans NSMA: Ed Jones, Susan Enge, Eric Binon, Hugh McSwain Tlicho: Albertine Eyakfwo, Joe Champlain, Charlie Apples YKDFN: Shannon Gault, Peter Sangris, John Drygeese, Fred Sangris Interpreters: Margaret Mackenzie, Mary Rose Sundberg, Ann Biscaye, Sarazine Boucher (Basil) SLEMA: Zhong Liu, Dave White Golder: Mitch Goodjohn, Rebecca Stuparyk, Ryan Stevenson, Paul Vecsei	Meeting	De Beers Snap Lake Traditional Knowledge and AEMP Workshop.
YKDFN	9/14/2012 10:50	Shannon Gault, EA to Chief Edward Sangris, YKDFN cc: Chief Sangris; Randy Freeman, Lands Director and Todd Slack, Research and Regulatory Specialist, YKDFN	Email	DBC acknowledges receipt of YKDFN participants names for the upcoming Workshops Sept.18-20, 2012.
YKDFN	9/14/2012 9:25	Shannon Gault, EA to Chief Edward Sangris, YKDFN cc: Chief Sangris; Randy Freeman, Lands Director and Todd Slack, Research and Regulatory Specialist, YKDFN	Email	YKDFN confirms YKDFN participants for the Sept.18-20 Workshops.
YKDFN	9/13/2012 15:00	Randy Freeman, Director, Lands Management, Todd Slack, Research & Regulatory Specialist, YKDFN	Email	DBC sends reminder of the SL & GK Workshops Sept.18-20 and that the YKDFN have not yet indicated if they will be attending.
YKDFN	8/29/2012 11:30	Randy Freeman, Director Lands Management, YKDFN cc: Todd Slack, Research & Regulatory Specialist, YKDFN	letter by email	DBC invites YKDFN to a TK Study AEMP Workshop Sept.19, 2012.

YKDFN	8/29/2012 9:00	Randy Freeman, YKDFN cc. Todd Slack, YKDFN	Email	DBC sends YKDFN correspondence regarding Snap Lake AEMP and Traditional Knowledge Workshop.
YKDFN	7/26/2012 0:00	Randy Freeman, Director, Lands & Environment, YKDFN cc: Terry Testart, CEO, YKDFN	letter	DBC invites 2 YKDFN elders to Snap Lake Annual Fish Tasting Sept.13.

Appendix C

Aquatic Effects Monitoring Program

And Traditional Knowledge Workshop Presentation

September 2012

Snap Lake Mine
Aquatic Effects Monitoring Program (AEMP) Design Update

Alexandra Hood

De Beers Snap Lake Traditional Knowledge Workshop
Regarding the AEMP Design Update

Yellowknife, NWT, Canada

September 19, 2012

Snap Lake AEMP: Background

De Beers Inc. (De Beers) owns and operates the Snap Lake Mine (the Mine), a diamond mine located approximately 220 kilometres northeast of Yellowknife, Northwest Territories.

The **Aquatic Effects Monitoring Program (AEMP)** is designed to monitor Snap Lake for mine-related effects, to verify and update the **Environmental Assessment Report (EAR)** predictions, and to support management decisions for the Mine.

The AEMP is a requirement of the Water License MV2001L2-0002 (Water License) Part G.

The **Mackenzie Valley Land and Water Board (MVLWB)** approved the AEMP in July 2005, and 8 reports have been produced from 2005 – 2011.

Purpose of Today's Workshop

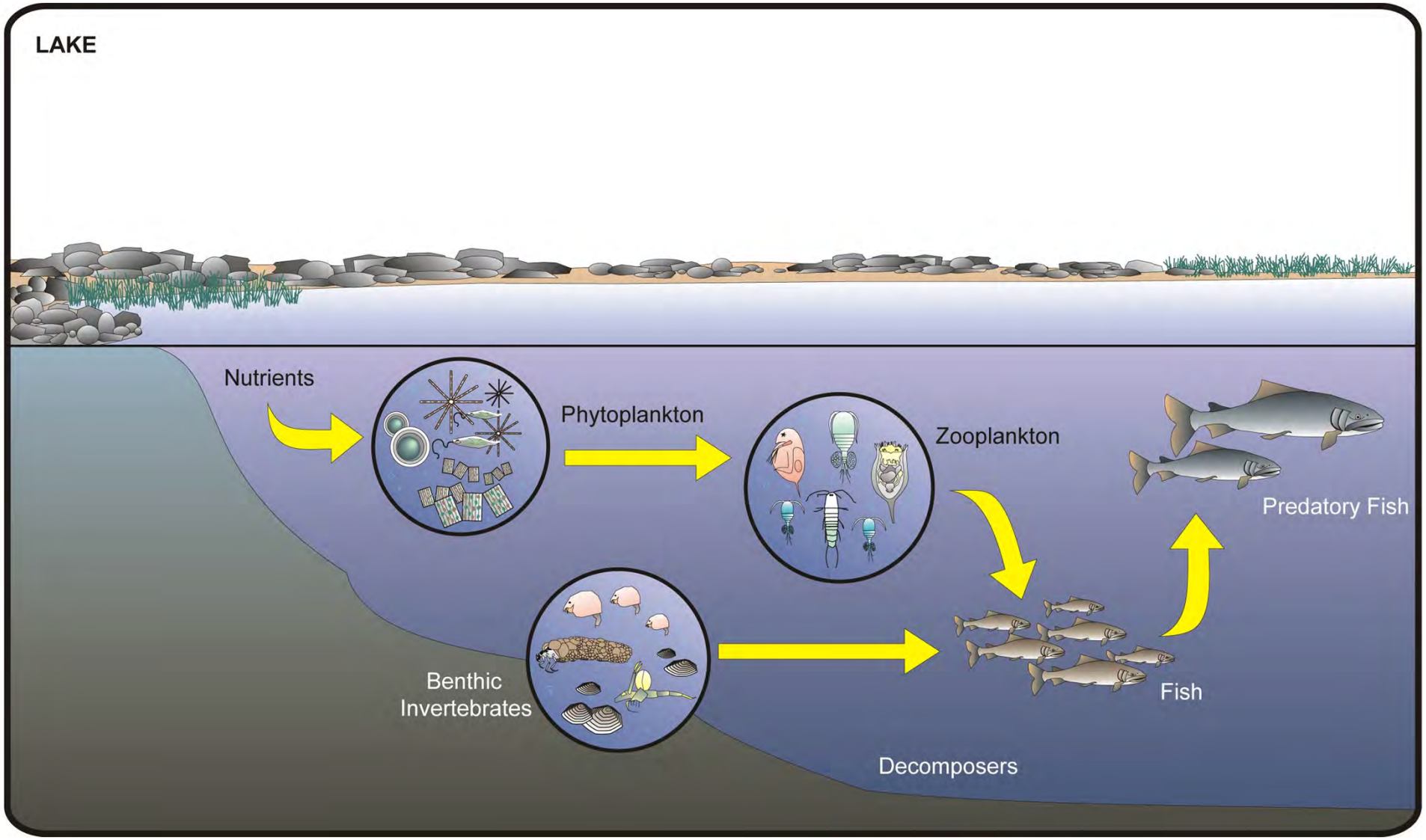
- Discuss Aquatic Effects Monitoring Program results and proposed changes
- Discuss potential methods for incorporating Traditional Knowledge into the AEMP

Snap Lake Ecosystem

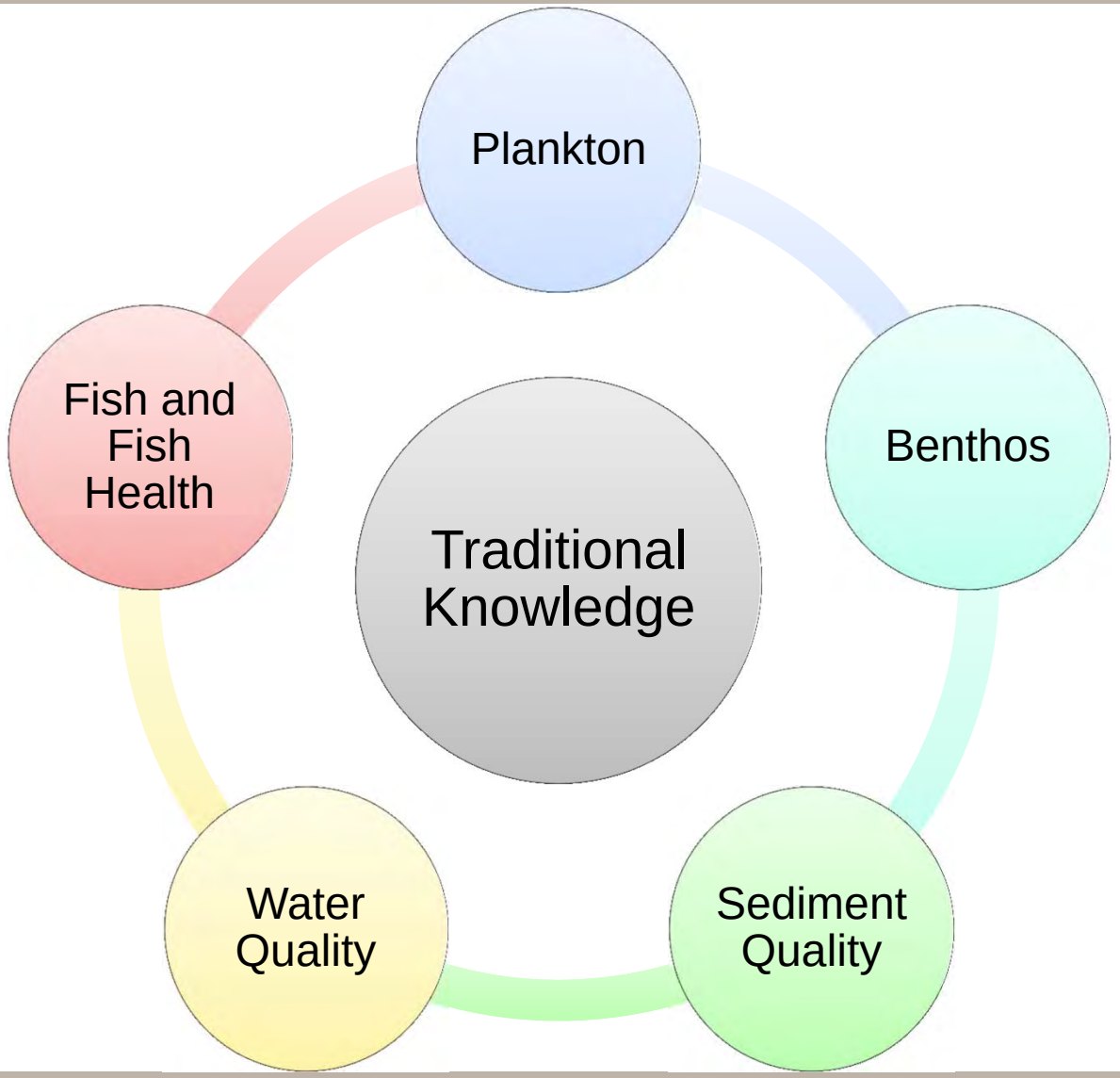
- Fish are the top of the food chain
- Fish are the main valued ecosystem component
- Top priority – fish to eat, water to drink

- Threshold 1: no change to fish community composition
- Threshold 2: fish must be edible
- Threshold 3: water must be good to drink
- Threshold 4: effluent cannot be toxic to fish

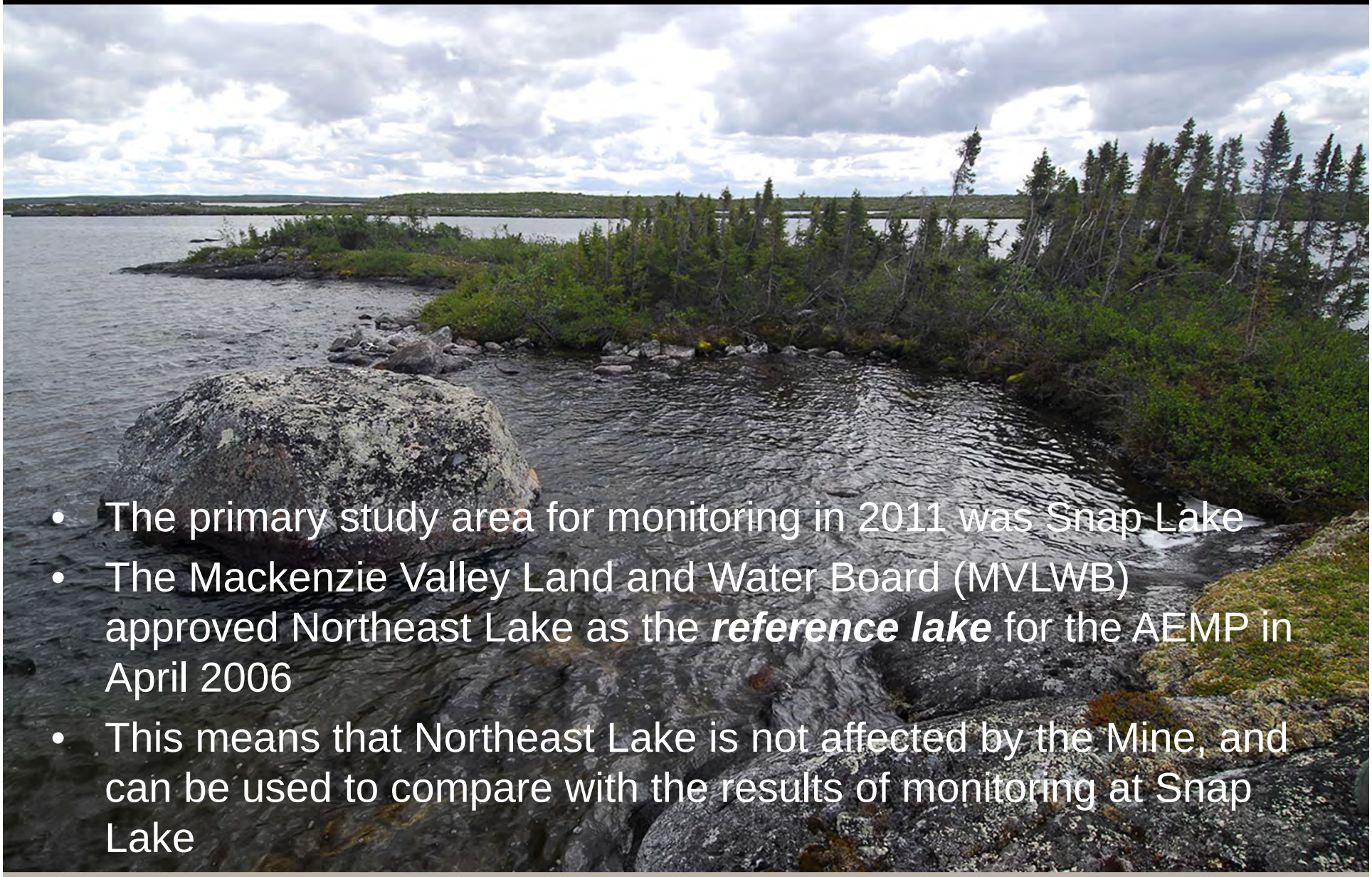
Snap Lake Aquatic Food Web



Current AEMP at Snap Lake



Study Area and Reference Lake



- The primary study area for monitoring in 2011 was Snap Lake
- The Mackenzie Valley Land and Water Board (MVLWB) approved Northeast Lake as the ***reference lake*** for the AEMP in April 2006
- This means that Northeast Lake is not affected by the Mine, and can be used to compare with the results of monitoring at Snap Lake

Water Quality Monitoring Objectives

Water Quality monitoring objectives for AEMP:

- characterize and interpret water quality in Snap Lake;
- support and inform management decisions made by Mine personnel;
- verify and update the Environmental Assessment Report and,
- recommend changes to the water quality component of the AEMP for future years.

Water Quality Monitoring Objectives

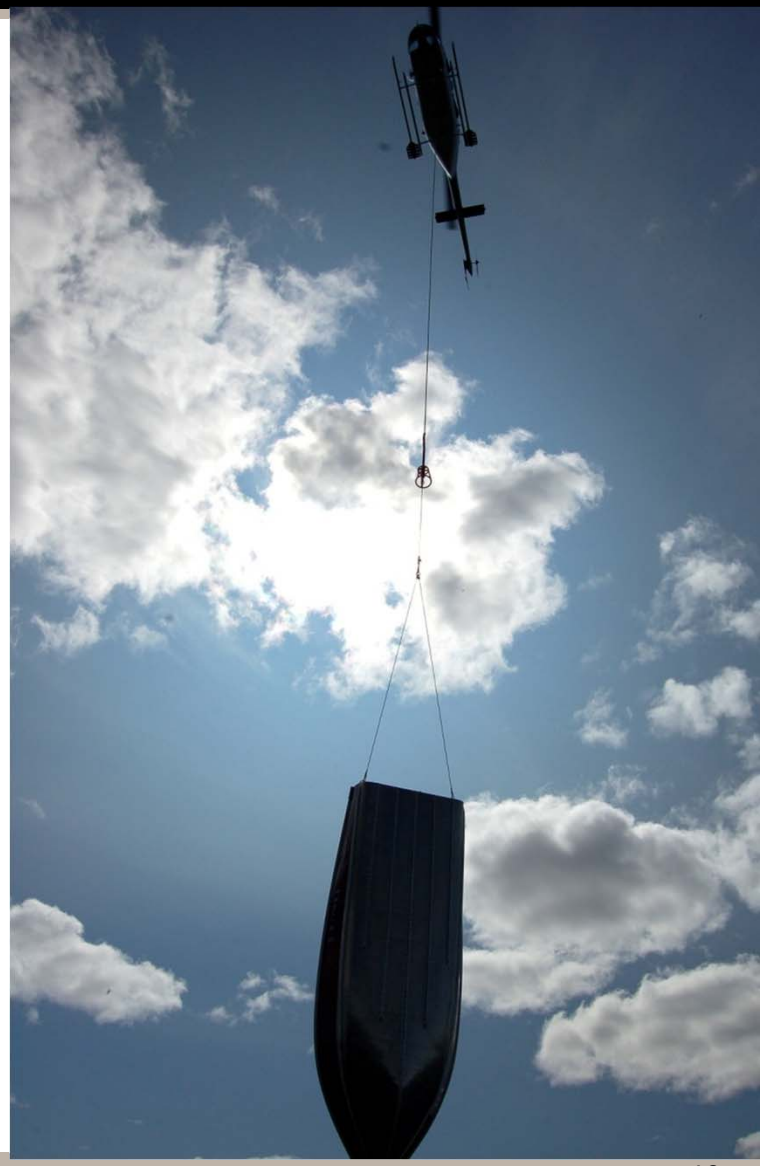
Water Quality Key Questions:

- Which water quality parameters are increasing over time and how do the increases compare to what was predicted as well as water quality Guidelines?
- Can the diffuser effluent plume be detected downstream of Snap Lake?

Water Quality Sample Collection

Current Water Quality Sampling

- Stations in Snap Lake have been classified as diffuser (3), near-field (6), mid field (2), far-field (4), and northwest arm stations (4)
- Samples are collected at three water depths
- Temperature, pH, DO, and conductivity, conventional parameters, major ions and nutrients are analyzed



Getting to some locations is complicated. Here, our boat is being taken to a remote Lake by helicopter!

Sediment Quality Monitoring Objectives

Sediment quality AEMP Monitoring Objectives:

- Assess trends in deposition from mine effluent in bottom sediment quality in Snap Lake and Northeast Lake (the reference lake), and make comparisons to previous years; and,
- Recommend any necessary changes to the sediment quality component of the AEMP for future years.

Sediment and benthos can be sampled by "grabbing" a chunk of lake bottom using a Kemerer.

Sediment Sample Collection

Overview of Current Sampling

- Two lakes sampled, Snap Lake and Northeast Lake
- Sediment samples collected annually
  - 2004-2008 collected in late winter, changed to late summer in 2009
- 18 stations sampled at depths between 10 and 15 meters
- 2011 attempts were made to sample a thinner sample of sediment
- Samples from each station are analyzed for particle size, total organic carbon (TOC), nutrients, and total metals

Benthos Monitoring Objectives

Snap Lake benthic invertebrate community survey address the two key questions:

- Are the lake bottom bugs affected by changes in water and sediment quality in Snap Lake?
- If the bugs are affected, is the change greater than that stated in the Environmental Assessment Report

A mayfly in its aquatic life stage, known as a nymph.

Benthos Sample Collection

Overview of Current Sampling

- Study design initially a gradient study
- 2006 sampling changed to a control impact design
- Samples collected with an Eckman grab and seived to remove the sediment bugs
- Samples were identified and calculated for numbers (density) per station and assessed for impacts of biological and habitat changes

A cadis fly nymph with its home-built shell

A tiny scud, the size of your fingernail. Delicious fish food!

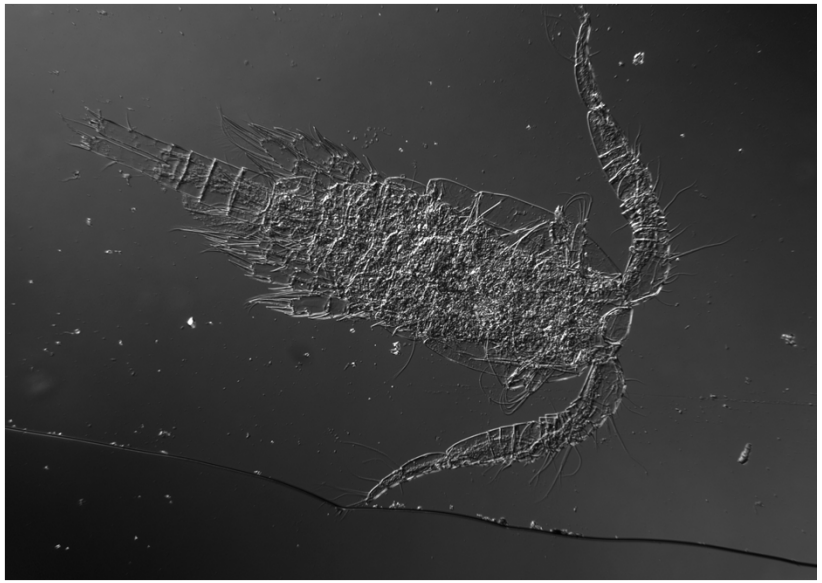
Plankton Monitoring Objectives and Sample Collection

Plankton AEMP monitoring objectives:

- determine and monitor if there are changes in the Snap Lake plankton community as a whole

Overview of Current Sampling

- 9 Stations sampled in Snap Lake, 5 samples in Northeast Lake
- Carried out in conjunction with the water quality program
- Assesses presence/absence and types of species (are edible species still present)



Fish Monitoring Objectives

Assess Fish Habitat and potential impacts to Fish Health

- Is fish health affected by changes in water and sediment quality in Snap Lake over time?
- Are changes observed over time greater than those predicted in the Environmental Assessment Report?

Fish Community Monitoring

- Standard fish population monitoring program to collect data to monitor potential changes in fish populations associated with the Mine

Burbot is a freshwater cod that lives in the deepest cold waters of Snap Lake.

Fish Studies

Fish species in Snap Lake include Round Whitefish, Arctic grayling, Burbot ,Lake Chub, Longnose Sucker, Lake Trout and Slimy Sculpin

A small Sculpin at home among the rocks

Fish Health Program, completed every 5 years

- Gill nets and angling were used to target Lake Trout and Round Whitefish. In 2009, minnow traps, hoop nets and electro-fishing were used to target Lake Chub.
- Assess number, size and health of fish across years and between Snap Lake and reference lakes

Fish Studies

Fish Community Monitoring , completed every 5 years

- Focus on Lake Trout and Round whitefish
- Record number and weight of fish sampled, age and growth and other relevant parameters

Slide 18

ah2 Couldn;t decide whether to add age and recruitment
alex hood, 9/11/2012

How can we incorporate TK into aquatic monitoring at Snap Lake?

De Beers Canada

Comments / Suggestions / Questions?

Appendix D

Interim Closure and Reclamation Plan Presentation

and Workshop Posters

De Beers
GROUP OF COMPANIES

Community Meetings – Snap Lake Mine Closure and Reclamation Pre-Briefing

February, 2013

Introduction

De Beers
GROUP OF COMPANIES

- Review Agenda
  - Housekeeping & safety message
  - Prayer
  - Introductions (hosts and participants)
  - Purpose of the presentation
  - Presentation and discussion
  - Break (15 min)
  - Continue presentation and discussion

Objective

De Beers
GROUP OF COMPANIES

- The objective of this presentation is to provide a pre-briefing for community members regarding closure planning for the Snap Lake Mine prior to the upcoming Technical Workshop.
- Expected outcomes include:
  - A better understanding by community members of:
    - De Beers approach to community engagement.
    - The closure planning process for the Snap Lake Mine.
  - A better understanding by De Beers of:
    - community member questions and concerns regarding closure planning.
    - community member questions and concerns regarding De Beers community engagement approach.

Presentation Outline

DE BEERS
GROUP OF COMPANIES

- Introduction to De Beers Canada and the Snap Lake Mine
- Overview of Closure Planning
- Progression of Closure and Reclamation Plan
- History of Engagement
- Current Interim Closure and Reclamation Plan Revision
  - Mine components and closure objectives
  - Closure Criteria
  - Options and Research
- Moving Forward

De Beers in Canada

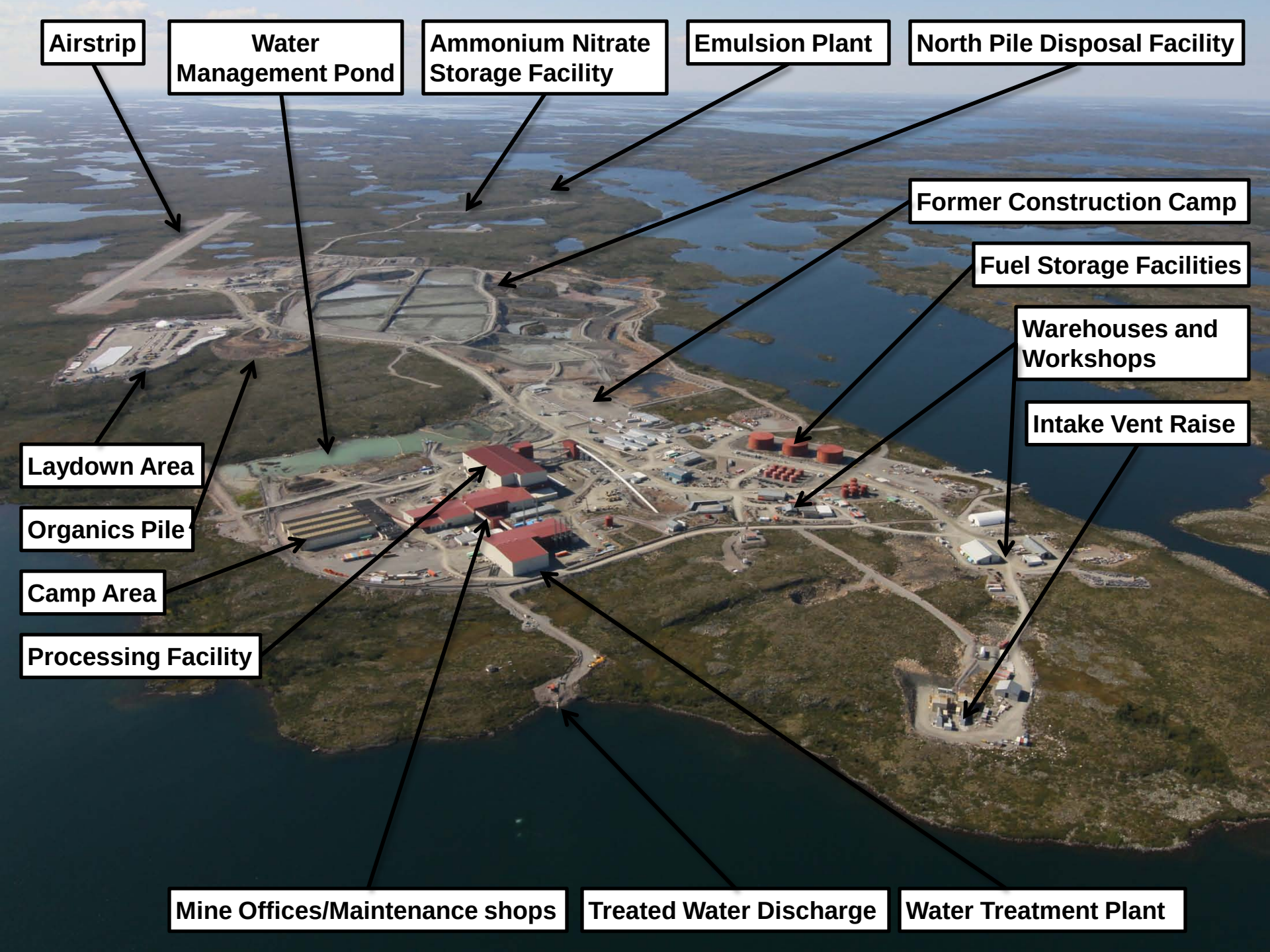
DE BEERS
GROUP OF COMPANIES

Year	Milestone
1961 to present	• Exploration for diamond deposits
2000	• De Beers acquires Winspear Diamonds and Snap Lake Deposit
2004	• Environmental Agreement for Snap Lake Mine • Snap Lake Mine receives Environmental Assessment approval, Type A Water Licence issued
2005	• Construction begins at Snap Lake Mine • EA for Victor Mine approved and construction of that mine begins • Gahcho Kué Project EA process begins
2008	• Snap Lake Mine and Victor Mine commence operations • Global recession
2009	• Global recession continues • Reduction in production and staffing levels at Snap Lake Mine
2010	• Production ramp-up at Snap Lake Mine and increase in staffing • Initiation of work streams required for renewal of Water Licence
2011	• Land Use Permit issued
2012	• Approval of Type A Water Licence to operate • Anglo American purchase of De Beers

Snap Lake Mine Facts

De Beers
GROUP OF COMPANIES

Mine Life	20+ years
Mine site area	> 500 ha
Annual processing capacity	1,100,000 tonnes
Tonnes treated in 2011	814,000 tonnes
Annual production capacity	1,400,000 carats
Carats recovered in 2011	881,000 carats
2011 Workforce	678 PY
2011 Northern Workforce	249 PY
2011 Expenditure	$161 million
2011 Northern Expenditure	$110 million (68% of total)
2011 Aboriginal Expenditure	$39.8 million (36% of Northern Expenditure)


Airstrip
Water Management Pond
Ammonium Nitrate Storage Facility
Emulsion Plant
North Pile Disposal Facility
Former Construction Camp
Fuel Storage Facilities
Warehouses and Workshops
Intake Vent Raise
Laydown Area
Organics Pile
Camp Area
Processing Facility
Mine Offices/Maintenance shops
Treated Water Discharge
Water Treatment Plant

Closure Planning in the NWT

De Beers
GROUP OF COMPANIES

- Regulatory Policy
  - Developed by AANDC/INAC in 1980s in response to environmental impacts and financial burden to the Canadian public. In 2002, INAC released its *Mine Site Reclamation Policy for the Northwest Territories*.
- Closure and Reclamation Plans
  - Required as a condition of Water Licence issued by Land and Water Boards of the Mackenzie Valley.
- Closure Plan Guidelines
  - Developed by AANDC/INAC in 2000s to standardize process for proponents. The guidelines were revised by AANDC/INAC in partnership with the Land and Water Boards of the Mackenzie Valley in 2011. A finalized version of the guidelines has yet to be released.

Closure Planning in the NWT

De Beers
GROUP OF COMPANIES

- De Beers Internal Policies also guide operations and closure planning.
  - Sustainable Development
  - Working with Aboriginal Communities
  - Mineral Waste Management
- Anglo American mine closure planning toolbox
  - Purpose of toolbox to ensure that closure planning progresses at an adequate rate.

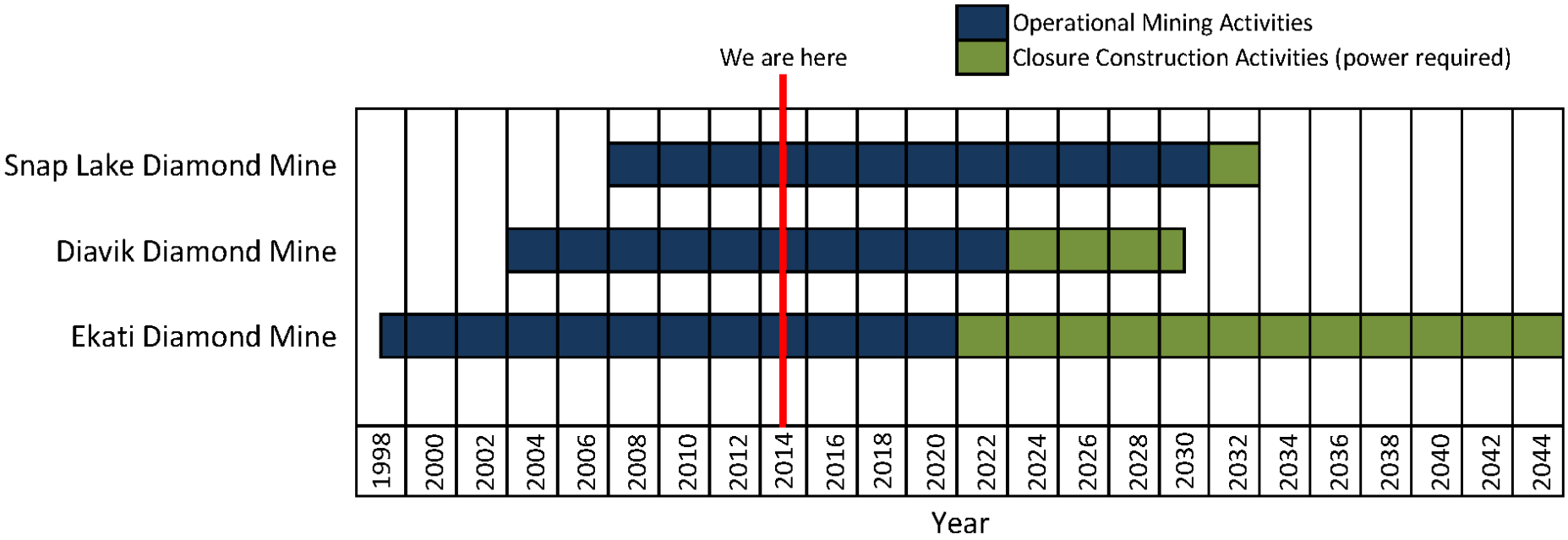
Time remaining to scheduled closure				
> 25 years	25-15 years	15-10 years	10-5 years	5-0 years
Preliminary Closure Plan		Draft Closure Plan	Detailed Closure Plan	Final Closure Plan

Source: Anglo American (2007). Sustainable Development Planning and Mine Closure. Toolbox, v1, 2007.

Closure Timeline

DE BEERS
GROUP OF COMPANIES

- Snap Lake Mine is in the early stages of closure planning relative to nearby diamond mines (Ekati and Diavik)
- Final Closure and Reclamation Plan will be completed by 2028.
- Expected years to the end of mining operations are: Ekati - 7 years, Diavik - 9 years, and Snap Lake - 17 years.



Closure and Reclamation Plan

De Beers
GROUP OF COMPANIES

1. Executive Summary
2. Introduction
3. Project environment
4. Project description
5. Requirements for permanent closure and reclamation
6. Progressive reclamation
7. Temporary closure
8. Integrated schedule of activities approaching permanent closure
9. Post-closure site assessment

Progression of the Closure Plan

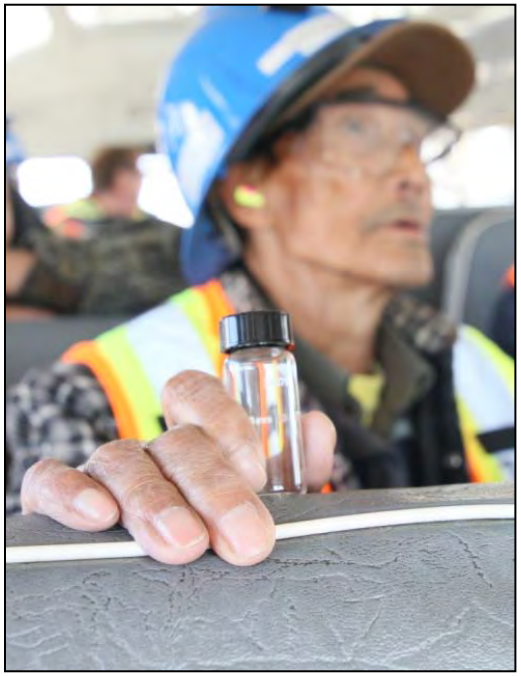
De Beers
GROUP OF COMPANIES

- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as a requirement of the Project Environmental Assessment
- Interim Closure and Reclamation Plan (2006)
  - Prepared as a requirement of the Water Licence MV2001L2-0002
- Interim Closure and Reclamation Plan (2011)
  - Prepared as part of the Water Licence application package
- Interim Closure and Reclamation Plan (2013)
  - Prepared as a requirement of the renewed Water Licence MV2011L2-0004.
  - Revised every 3 years
- Final Closure and Reclamation Plan (at least 2 years before the end of operations)

Community Engagement

De Beers
GROUP OF COMPANIES

- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as part of the Environmental Assessment process
  - Conceptual
- Methods of engagement included:
  - Information sessions in all several communities
  - Open house community meetings
  - One-on-one interviews
  - Guided site tours
    - Lutsel K'e, Dettah, N'dilo, Behchoko, Gameti, Wha Ti, Wekweti, Yellowknife and NSMA population.
    - Government reviewers, regulators, non-government organizations and local businesses.



Community Engagement

De Beers
GROUP OF COMPANIES

- First Revision of Closure and Reclamation Plan
  - Interim Closure and Reclamation Plan (2006)
    - Requirement of the Water Licence issued by the Mackenzie Valley Land and Water Board.
    - Additional detail regarding closure methods and proposed research included to satisfy conditions of Water Licence and reviewer comments on existing plan.

- The Interim Closure and Reclamation Plan was subject to stakeholder review during the Board approval process.

Community Engagement

De Beers
GROUP OF COMPANIES

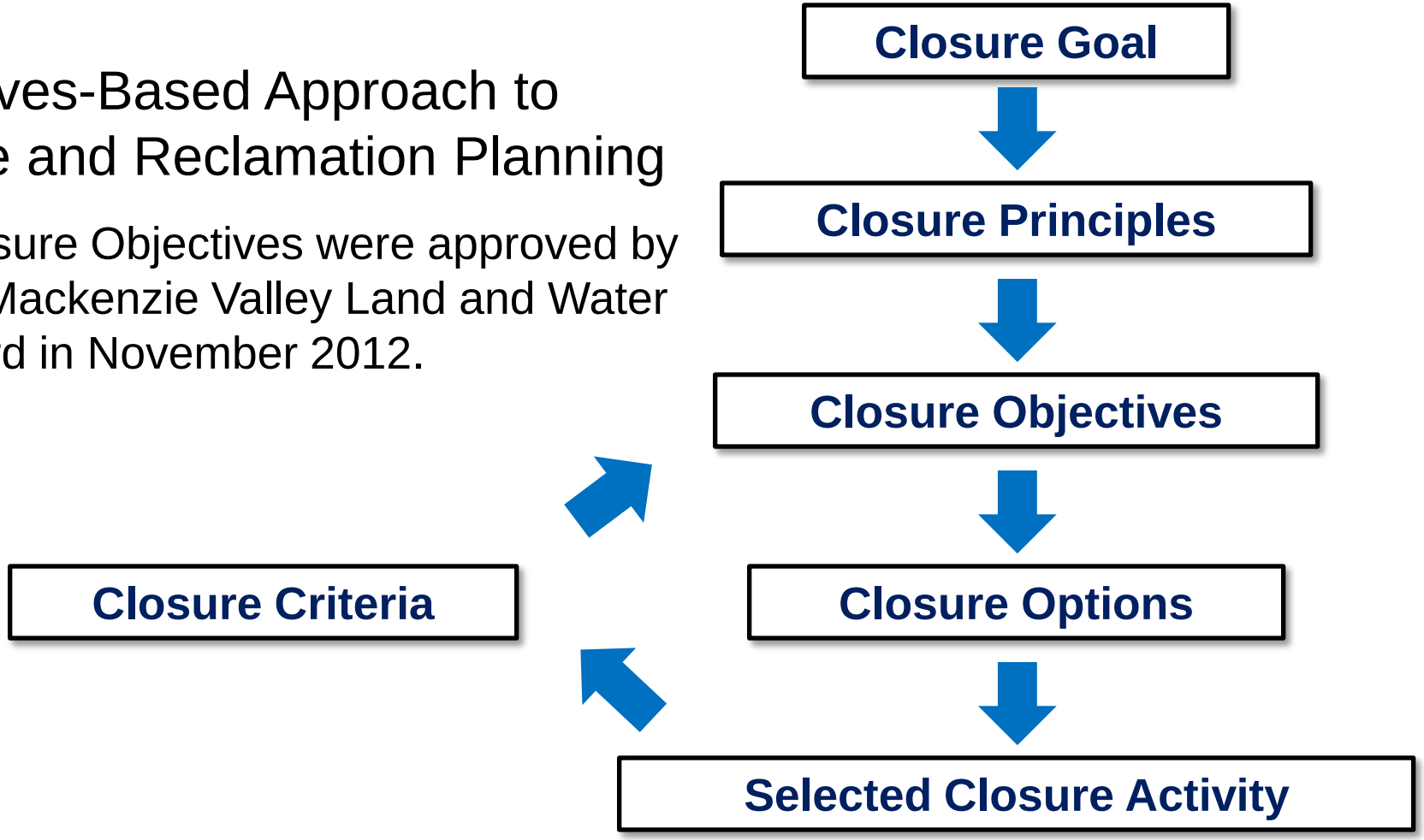
- Current update of the Interim Closure and Reclamation Plan (2013)
  - Methods of engagement to date have included:
    - Stakeholder workshop in spring of 2011
    - Stakeholder review
    - Technical meetings held in September 2011
    - Public hearings in December 2011
    - Stakeholder review of the proposed Closure Objectives in October 2012
      - Closure Objectives approved by the MVLWB on November 22, 2012
    - Community meetings in February 2013
- Upcoming engagement events
  - Technical meetings will be held in March 2013
  - Site visits in summer 2013, fish tasting in September 2013.

Closure Planning Framework

De Beers
GROUP OF COMPANIES

Objectives-Based Approach to Closure and Reclamation Planning

- Closure Objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.



Source: DRAFT Guidelines for Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories released by the Mackenzie Valley Land and Water Board, August 2011.

Site Wide Objectives

De Beers
GROUP OF COMPANIES

Site Wide 1	Dust levels safe for people, vegetation, aquatic life and wildlife.
Site Wide 2	Drainage pathways for surface runoff are physically stable.
Site Wide 3	Surface runoff and seepage water quality that is safe for people, vegetation, aquatic life, and wildlife.
Site Wide 4	Mine areas are physically stable and safe for use by people and wildlife.
Site Wide 5	Landscape features (shape and vegetation) match aesthetics of the surrounding natural area.
Site Wide 6	Safe passage and use for Caribou and other wildlife.
Site Wide 7	Re-vegetation targeted to priority areas.

North Pile

De Beers
GROUP OF COMPANIES

Post closure vision

- The North Pile will be progressively reclaimed during mine operations. Each cell will be capped with a rock cover upon reaching capacity.

North Pile Objectives

De Beers
GROUP OF COMPANIES

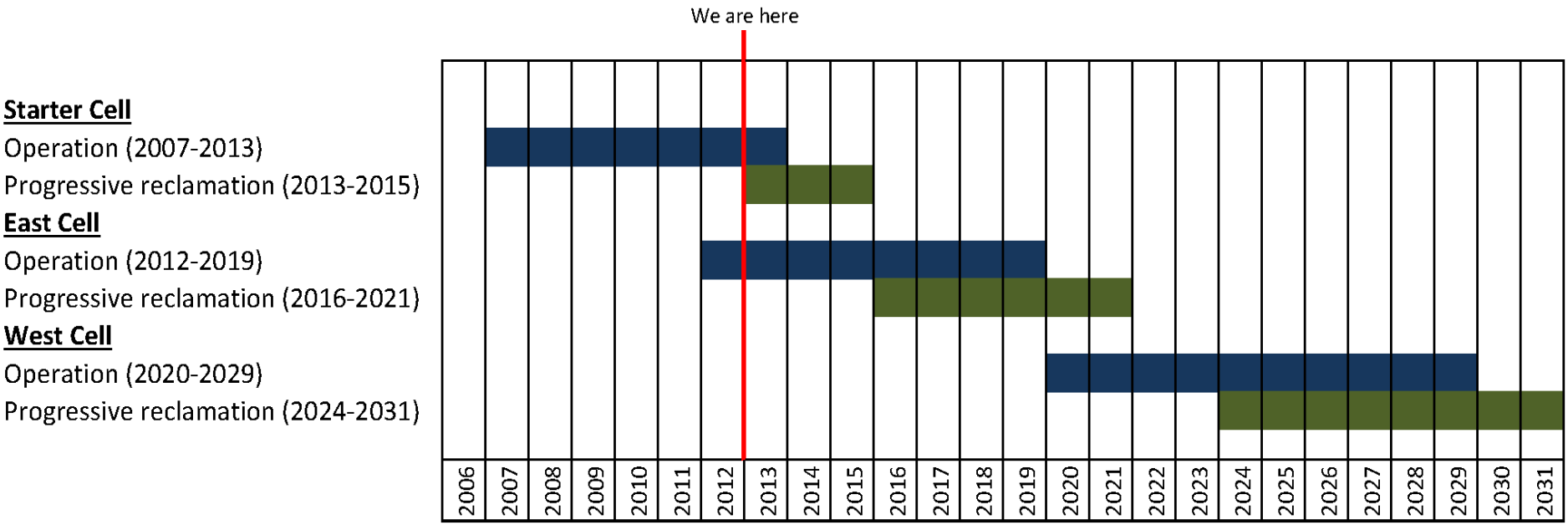
North Pile 1	Prevent processed kimberlite from entering the surrounding terrestrial and aquatic environment
North Pile 2	Physically stable processed kimberlite containment area to limit risk of failure that would affect the safety of people or wildlife.

North Pile

DE BEERS
GROUP OF COMPANIES

Deposition of waste materials

Reclamation activities (cover test pads, final cover construction and instrumentation)



Underground Mine

De Beers
GROUP OF COMPANIES

Post Closure Vision

- The underground mine will be backfilled, flooded and all access points sealed off. All potentially hazardous waste materials will be removed from the underground prior to closure.

Underground Mine Objectives

De Beers
GROUP OF COMPANIES

Underground Mine 1	Flooding of the underground mine will have no impacts to aquatic habitats in source lakes
Underground Mine 2	Underground mine should not contribute to the contamination of ground or surface water.
Underground Mine 3	Underground mine workings are physically stable.

Infrastructure

De Beers
GROUP OF COMPANIES

- Infrastructure subcomponents include:
  - Water Management Structures
  - Process Facilities and Site Infrastructure
  - Roadways and Airstrip
  - Waste Management Facilities
  - Quarries

- Post Closure Vision
  - Removal of all potential hazardous foreign materials and equipment, reshaping of surface materials to establish stable ground and drainage pathways, and revegetation at disturbed areas.

Infrastructure

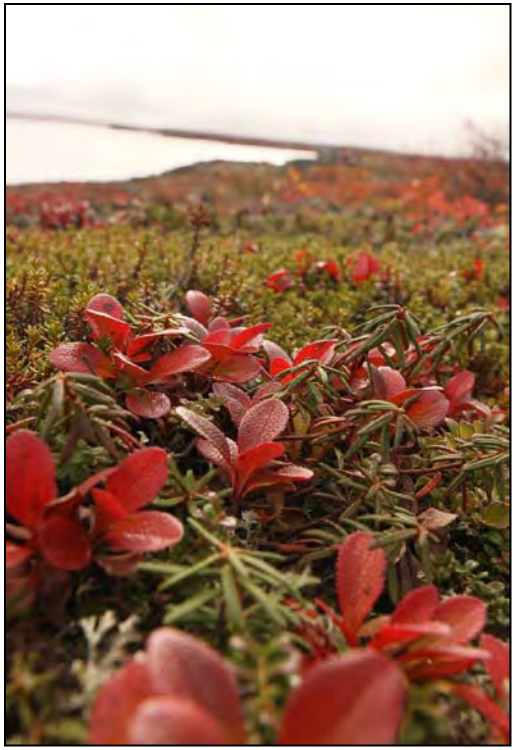
De Beers
GROUP OF COMPANIES

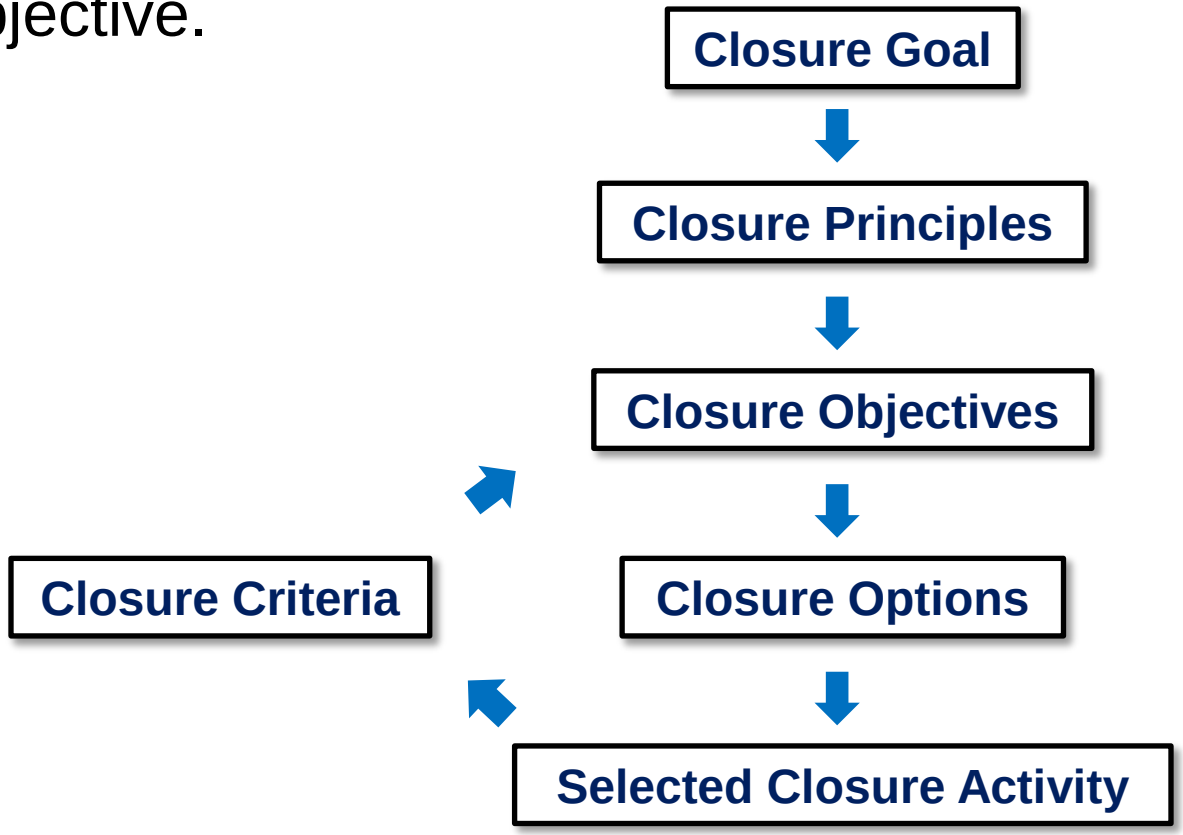
Infrastructure 1	Prevent remaining infrastructure from contaminated land or water
Infrastructure 2	On-site disposal areas are safe for people, wildlife and vegetation.
Infrastructure 3	Contaminated soils and waste disposal areas that cannot contaminate land and water.

Closure Criteria

De Beers
GROUP OF COMPANIES

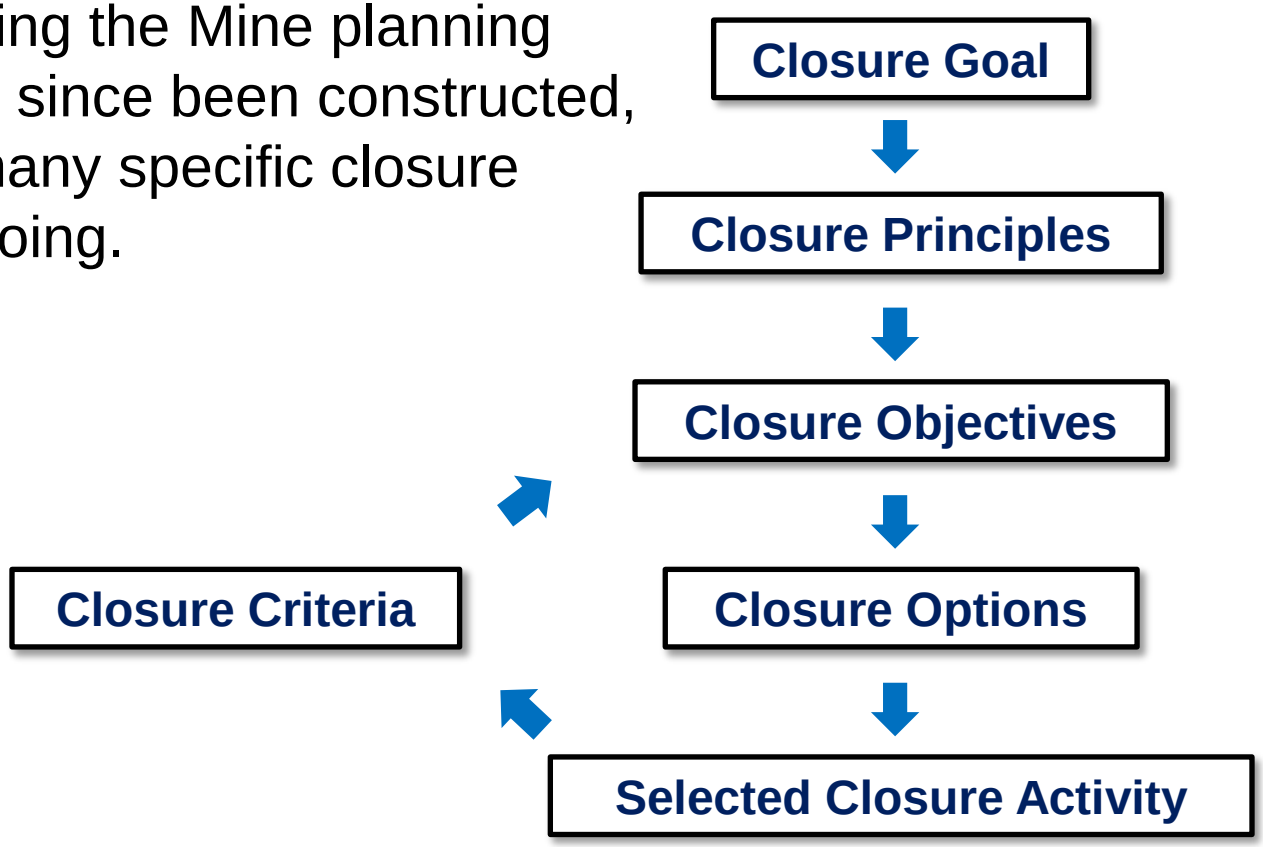
- Closure criteria measure whether the selected closure activity meets a particular closure objective.





Closure Options

- Focus of March 2013 technical meetings.
  - Although some Closure Options were determined during the Mine planning stage and have since been constructed, refinement of many specific closure activities is ongoing.



Reclamation Research Plan

De Beers
GROUP OF COMPANIES

- Aim to resolve uncertainties and answer questions pertaining to environmental risks for closure options or selected closure activities.

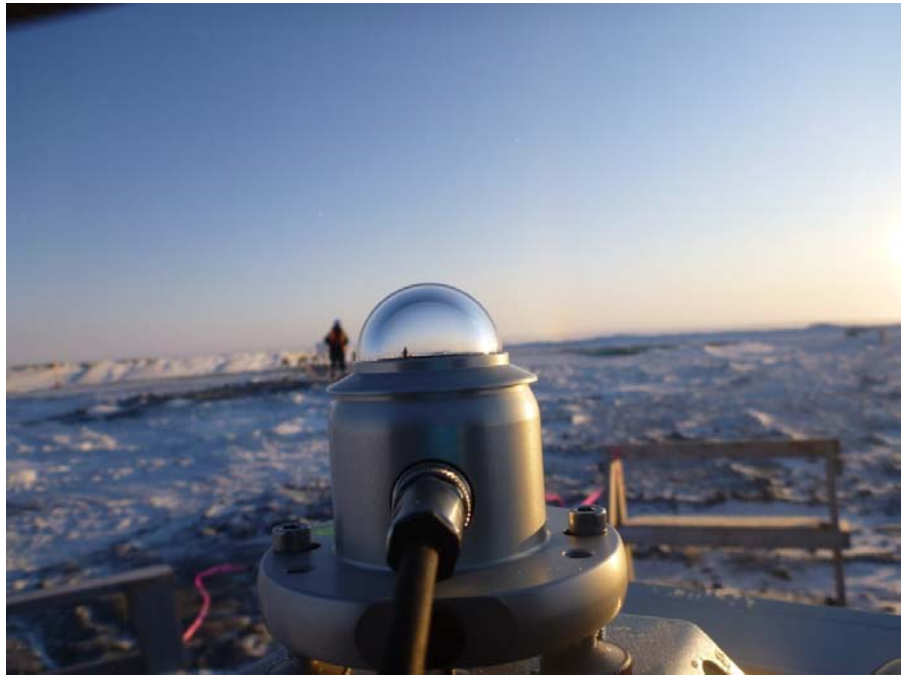
Closure Objective	What is the best closure objective for a particular mine component? Is the objective achievable?
Closure Options	Which of the closure options will best achieve the closure objective?
Selected Closure Activity	What is the best way to implement the selected closure activity?
Closure Criteria	What is the best way to measure whether the selected closure activity meets the closure objective?

Reclamation Research Plan

Reclamation Research Plan

De Beers
GROUP OF COMPANIES

- Ongoing research projects include topics such as:
  - Revegetation
  - Geotechnical Stability of North Pile and Water Control Structures
  - Refinement of North Pile seepage and runoff water quality predictions
  - Geochemical and geotechnical characterization of Processed Kimberlite in Starter Cell.
  - Design of Starter Cell Cover system



Progressive Reclamation

De Beers
GROUP OF COMPANIES

- Due to exclusively underground mining operations, there are limited opportunities at surface for progressive reclamation.
- Completed or ongoing progressive reclamation activities include:
  - Decommissioning and environmental investigation at the Construction Camp Pad Area
  - Remediation of the Ammonium Nitrate Storage Pad
  - Supporting work for the design and construction of the Starter Cell Cover

Future Consultation

De Beers
GROUP OF COMPANIES

- De Beers Canada believes that meaningful engagement and communication regarding activities, programs and developments are necessary.

What do you feel is the best method for discussing closure with communities?

Community Engagement

De Beers
GROUP OF COMPANIES

- Feedback is always welcome!

Closing

De Beers
GROUP OF COMPANIES

- De Beers is currently in the process of revising the Interim Closure and Reclamation Plan
  - Closure Objectives have been approved by the Mackenzie Valley Land and Water Board.
  - Technical Workshop concerning Closure Options and Research will be held in Yellowknife sometime in March 2013.
- This meeting should provide an introduction to closure planning and act as a pre-briefing for the upcoming Technical Workshop.
- Any feedback at this time regarding the Interim Closure and Reclamation Plan, closure objectives or the process would be greatly appreciated!

Thank you for Listening

De Beers
GROUP OF COMPANIES

Contact Us

De Beers
GROUP OF COMPANIES

- Alexandra Hood

  Superintendant, Environment and Permitting; Safety, Health and Environment

  Alexandra.Hood@debeerscanada.com

- Tom Bradbury

  Permitting Coordinator, Safety, Health and Environment

  Tom.Bradbury@debeerscanada.com

- Elizabeth (Sabet) Biscaye

  Superintendent, Community Relations, External and Corporate Affairs

  Elizabeth.Biscaye@debeerscanada.com

DE BEERS
GROUP OF COMPANIES

About the Snap Lake Mine

FAST FACTS

- Located 220 km northeast of Yellowknife
- Owned and operated by De Beers
- $975 million invested to build the Snap Lake Mine between 2005 and 2007
- Began operations in 2008
- Entirely underground operation
- Scheduled operational mine life to 2030
- Mine-site area approximately 500 hectares
- Annual processing capacity (tonnes) 1.1M
- 2011 tonnes treated 814,000
- Annual production capacity (carats) 1.4M
- 2011 carats recovered 881,000
- Investment to end of 2011 ..... $1.9B
- NWT spend to end of 2011 ..... $1.2B
- Aboriginal spend to 2011 ..... $756M
- Corporate social investment in 2011 ..... $3.2M
- 2011 workforce ..... 678 PY
- 2011 Northern workforce ..... 249 PY

DE BEERS
GROUP OF COMPANIES

Interim Closure & Reclamation

Planning closure and reclamation is important to successful operation of the Snap Lake Mine.

WHAT WE HAVE DONE SO FAR:

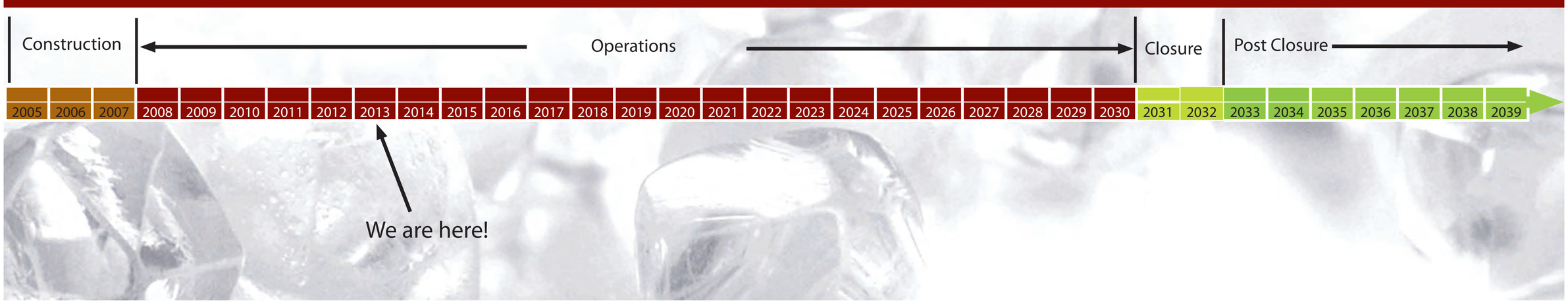
- Preliminary Closure Plan developed in 2003 as part of Environmental Assessment permitting process
- The first Interim Closure and Reclamation Plan (ICRP) was approved by the Mackenzie Valley Land & Water Board in 2006
- Closure objectives were approved by the Mackenzie Valley Land and Water Board in 2012
- De Beers is now updating the ICRP to submit to the Land & Water Board for approval in 2013
- ICRP updated regularly
- Surface soils and organic material collected during construction are stockpiled for use during closure and reclamation
- Construction camp decommissioned and majority of the units removed from site during the 2012 winter road
- Engineering design phase for capping the Starter Cell of the North Pile has commenced
- Progressive reclamation has taken place around the Emulsion Plant, Temporary Sump 4 and North Pile

After the mine's permanent accommodations facility was opened in December 2010, the construction camp was decommissioned. The majority of units were removed from the mine site during the 2012 winter road. During the summer of 2012, environmental sampling on the gravel pad that was beneath the construction camp has confirmed the soil is not contaminated and is within standards.

De Beers
GROUP OF COMPANIES

Interim Closure & Reclamation

SNAP LAKE MINE LIFE



POST CLOSURE MONITORING

De Beers is committed to minimizing the environmental impacts on the Snap Lake site, to reduce the disturbance which must be reclaimed.

By actively reclaiming areas while mining continues, we expect decommissioning the mine infrastructure and active reclamation activities will take two years.

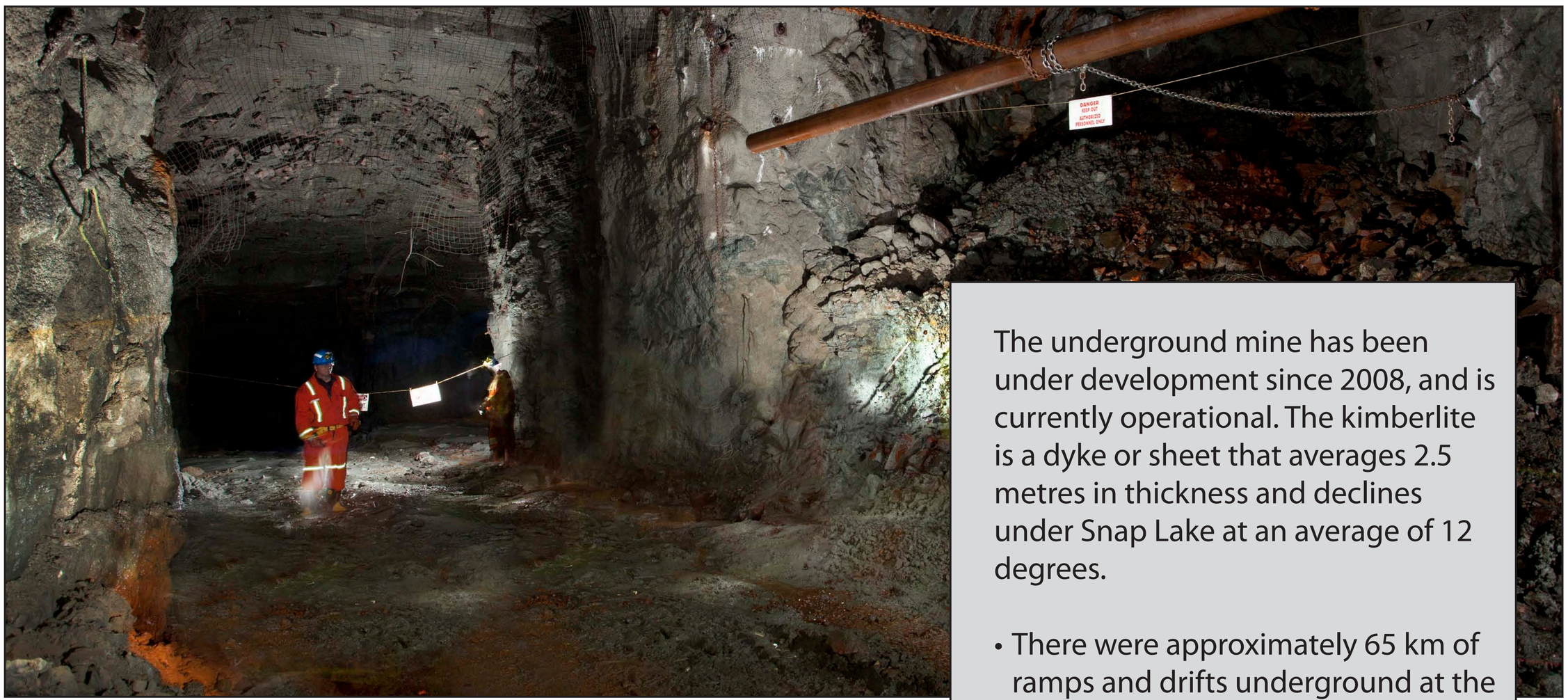
It is important to remember that while the phase of the mine called "closure" is only a two year period, it may take many years for the site to return to a natural state.

During the post-closure phase workers will no longer be based at the site. Periodic site inspections will take place, including:

- Performance monitoring of the North Pile, drainage pathways and revegetation processes
- Aquatic and terrestrial wildlife effects monitoring
- Inspections of engineered structures and areas with environmental risk

De Beers
GROUP OF COMPANIES

Underground Mine



Mined out areas of the underground mine will be filled with processed kimberlite paste.

The underground mine has been under development since 2008, and is currently operational. The kimberlite is a dyke or sheet that averages 2.5 metres in thickness and declines under Snap Lake at an average of 12 degrees.

- There were approximately 65 km of ramps and drifts underground at the end of 2012
- Underground infrastructure includes conveyor, water storage and pumping facilities, crusher, ventilation equipment and electricity distribution system
- At final development, it is expected that the extent of the underground mine will cover an area underground of approximately 387 hectares

CLOSURE AND RECLAMATION PLANS

Closing the underground mine is an important part of the overall plan:

- Many areas of the mine will be filled with a processed kimberlite paste, as part of our progressive reclamation plan
- Unsalvageable and non-hazardous equipment will be left underground
- All hazardous waste will be removed and disposed at an approved facility
- The mine workings will be flooded
- All access points to the underground and all air vents will be sealed to prevent access to the closed underground mine

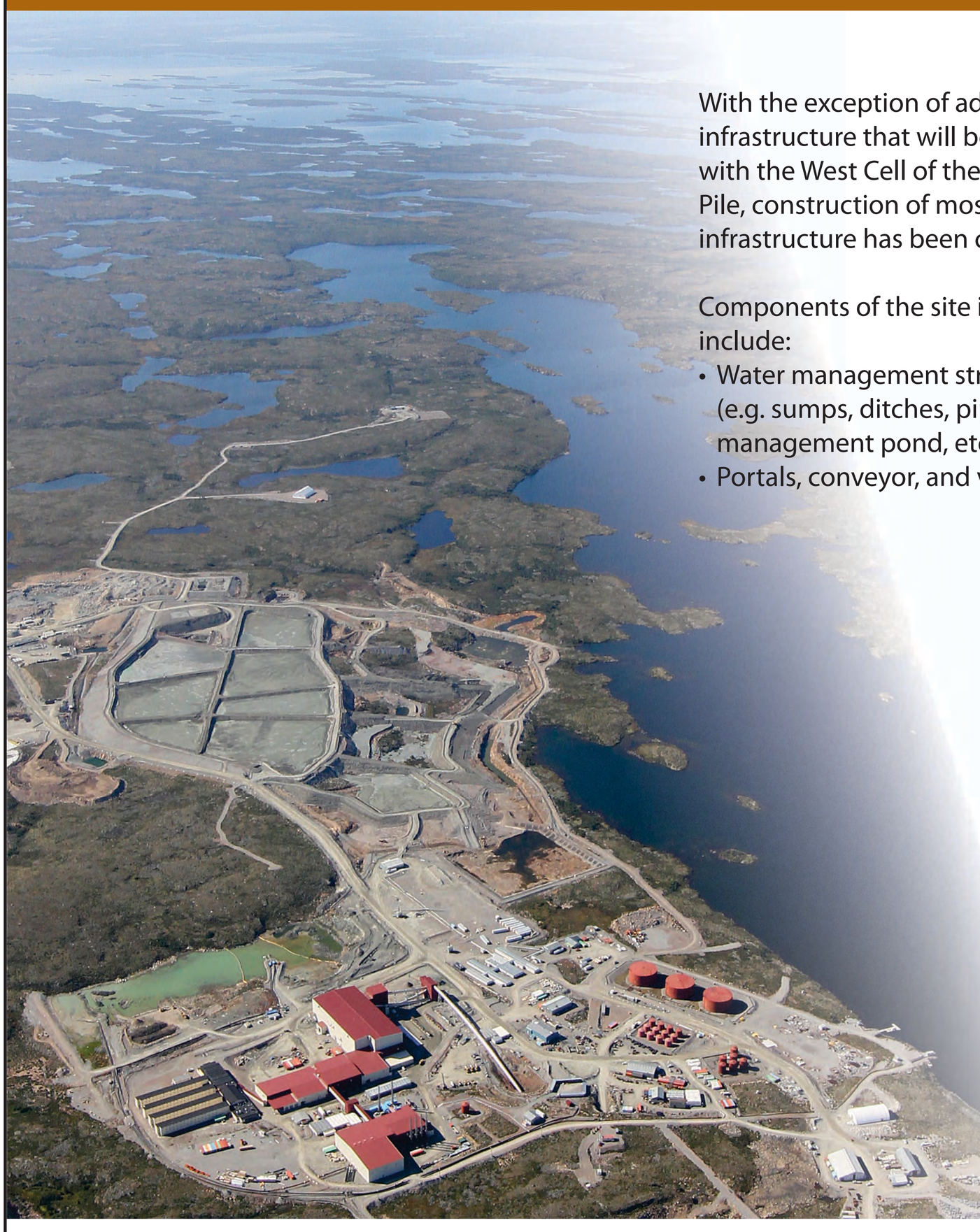
?

Our objective in closing the underground mine, we want to prevent people and animals from entering the underground mine and that water in the flooded and stable mine will not be able to affect ground water or lake water.

Is there anything else that we need to consider?

De Beers
GROUP OF COMPANIES

Infrastructure



With the exception of additional infrastructure that will be associated with the West Cell of the North Pile, construction of most surface infrastructure has been completed.

Components of the site infrastructure include:

- Water management structures (e.g. sumps, ditches, piping, water management pond, etc.)
- Portals, conveyor, and vent for the underground mine workings
- Roadways and an airstrip
- Quarries & laydown areas
- Accommodations, offices, shops & warehouses
- Processing facilities
- Power generation plant & fuel storage
- Emulsion plant/Ammonium Nitrate storage
- Landfarm

CLOSURE AND RECLAMATION PLANS

The Snap Lake Mine covers less than 500 hectares of land, but we are working to return the area to as close as possible to its natural state. When removing infrastructure during closure and reclamation, we propose:

- Demolishing buildings and putting non-salvageable, non-hazardous material in the North Pile and capping it
- Recontouring the land, roads and airstrip to blend with the natural topography and encourage revegetation
- Water management structures will be the last components to be demolished, once monitoring shows that no further water treatment is necessary

?

In decommissioning infrastructure and closing the mine, we will make the mine site safe for people, caribou and other animals, surface runoff and seepage water quality will not impact the land, lake or fish, and the landscape will match the surrounding natural area.

Is there anything else that we need to consider?

DE BEERS
GROUP OF COMPANIES

The North Pile

The North Pile is the surface facility where processed kimberlite, waste rock and non-hazardous inert waste are deposited.

- Starter Cell - construction began in 2005 and is now nearing capacity
- East Cell - construction began in 2010 and is now being used to deposit processed kimberlite and other materials
- West Cell - will be built when the East Cell approaches capacity
- The North Pile will be at least 50 metres from the shore of Snap Lake
- The North Pile is engineered to allow water to seep through its walls into ditches and sumps
- Water collected in the ditches and sumps is pumped to the Water Management Pond to prevent it from reaching Snap Lake without first being treated
- The exterior of the Pile, including the cover, is constructed with clean granite

CLOSURE AND RECLAMATION PLANS

- Progressive reclamation, including capping cells with a rock cover when they are no longer used
- Reshaping the sides the facility to blend into the land
- The final surface of the pile will be graded to be consistent with surround topography
- Maximum height will be no higher than the highest point of land nearby

LEGEND

1. Perimeter Sump 2
2. Perimeter Sump 1
3. Temporary Sump 4
4. IL6 Ditch
5. Perimeter Sump 5
6. Perimeter Sump 4
7. Perimeter Sump 3
8. Water Management Pond

- - Grout Curtain

?

In closure, the North Pile will be stable and processed kimberlite placed in it during mine operations will have no impact on the land or water nearby.

Is there anything else that we need to consider?

De Beers
GROUP OF COMPANIES

Traditional Knowledge

IMPORTANT PERSPECTIVES

We look forward to working with elders and community members to learn from their experience and to incorporate their expertise and Traditional Knowledge into our plans.

Some of the questions we anticipate you can help answer are:

- What can we learn from natural land features to contour the North Pile and other features on the mine site?
- What kinds of plants would you like to see grow here?
- Are there signs we should be looking for after the mine is closed to know if our efforts are working?
- What questions or advice do you have?

De Beers
GROUP OF COMPANIES

Reclamation Research

Engineers examine a sensor that monitors the performance of a trial cover pad on the Snap Lake Mine's North Pile.

NORTH PILE

Work to plan closure and reclamation of the North Pile has been ongoing during the mine's life. This includes:

- Monitoring of waste materials within each cell
- Input from Traditional Knowledge holders
- Rock cover engineering design
- Refinement of predictions concerning seepage/runoff water quantity and quality

Findings from research completed on the Starter Cell will allow for improvements in operation and reclamation of the East and West Cells.

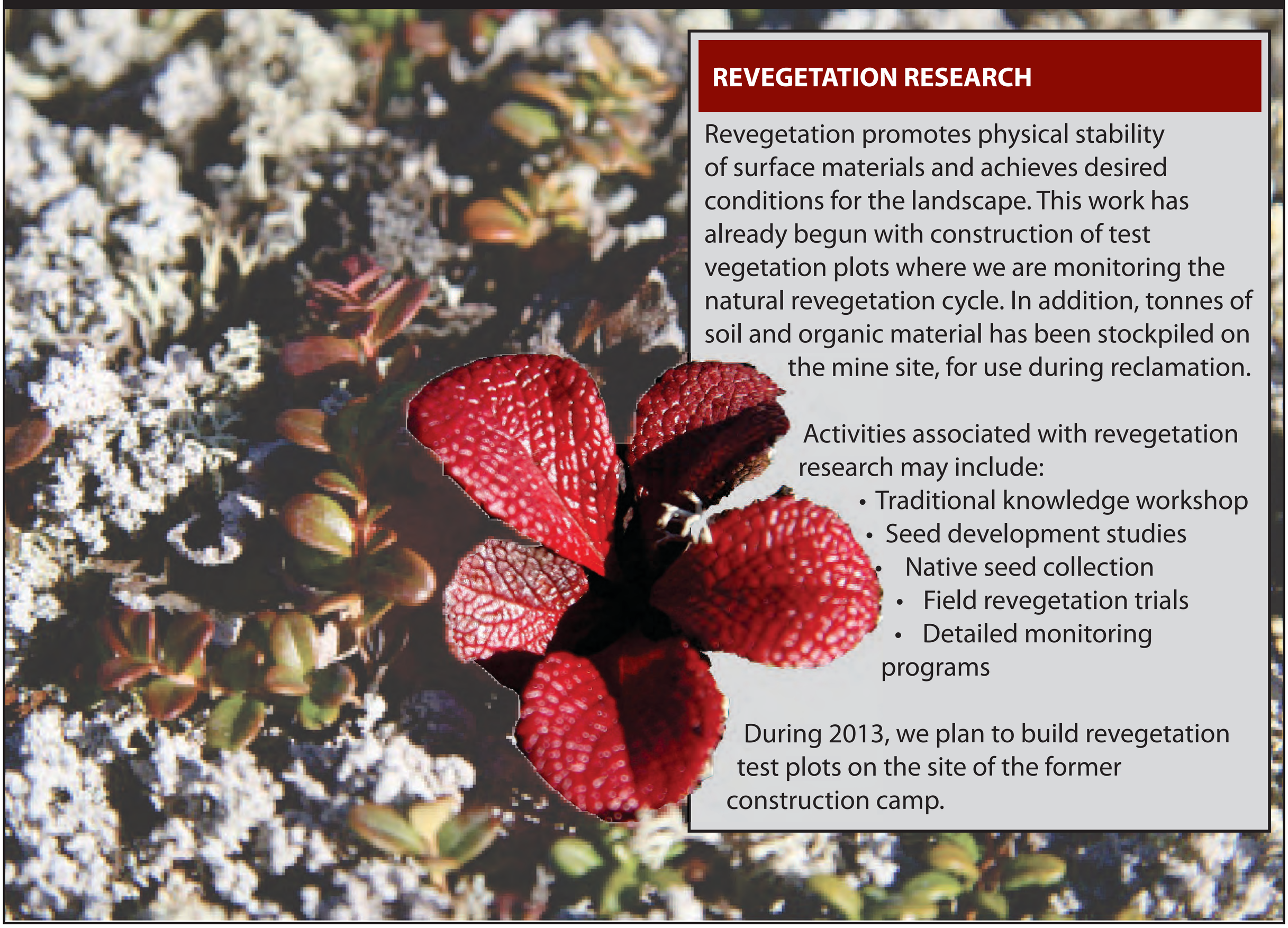
To build on our knowledge, during 2013 we expect to be undertaking a number of research projects, including:

- Ongoing monitoring of temperatures, water levels and water chemistry within the North Pile
- Starter Cell dust control
- Continuing to monitor trial cover pad on Starter Cell

De Beers
GROUP OF COMPANIES

Reclamation Research

A variety of engineering studies and research projects will be completed during the Mine's life to support the Reclamation Research Plan. We do research to improve our understanding of the land, vegetation and animals and how they may be affected by our operations.



REVEGETATION RESEARCH

Revegetation promotes physical stability of surface materials and achieves desired conditions for the landscape. This work has already begun with construction of test vegetation plots where we are monitoring the natural revegetation cycle. In addition, tonnes of soil and organic material has been stockpiled on the mine site, for use during reclamation.

Activities associated with revegetation research may include:

- Traditional knowledge workshop
- Seed development studies
- Native seed collection
- Field revegetation trials
- Detailed monitoring programs

During 2013, we plan to build revegetation test plots on the site of the former construction camp.

De Beers
GROUP OF COMPANIES

Closure Objectives

Part of a herd of caribou cross frozen Snap Lake in early February 2013.

Site Wide Objectives (SW)

These Objectives apply to all aspects of mine closure.

SW1	Dust levels safe for people, vegetation, aquatic life and wildlife.
SW2	Drainage pathways for surface runoff are physically stable.
SW3	Surface runoff and seepage water quality that is safe for people, vegetation, aquatic life and wildlife.
SW4	Mine areas are physically stable and safe for use by people and wildlife.
SW5	Landscape features (shape and vegetation) match aesthetics of the surrounding natural area.
SW6	Safe passage and use for caribou and other wildlife.
SW7	Re-vegetation targeted to priority areas.

De Beers
GROUP OF COMPANIES

Closure Objectives

Underground Objectives (UG)

These objectives apply to specific aspects of the closure of the underground mine that are not directly addressed by the site wide objectives.

UG1 Flooding of the underground mine will have no impactsto aquatic abitats in source lakes.

UG2 Underground mine should not contribute to the contamination of ground or surface water.

UG3 Underground mine workings are physically stable.

Infrastructure Specific Objectives (I)

These objectives apply specifically to all site infrastructure which includes all items not mentioned above, namely: airstrip, roads, water management structures (sumps, ditches, and Water Management Pond), Water Treatment Plant, Buildings, Sewage Treatment Plant, Process Facilities, Quarries, Diffuser and related piping.

I1 Prevent remaining infrastructure from contaminating land or water.

I2 On-site disposal areas are safe for people, wildlife, and vegetation.

I3 Contaminated soils and waste disposal areas that cannot contaminate land and water.

De Beers
GROUP OF COMPANIES

Closure Objectives

North Pile Specific Objectives (NP)

These objectives apply to specific aspects of the closure of the North Pile that are not directly addressed by the site wide objectives. It refers to the entire structure of the North Pile, excluding the associated sumps and water management structures. Those items are addressed under infrastructure.

NP1 Prevent Processed kimberlite (PK) from entering the surrounding terrestrial and aquatic environment.

NP2 Physically stable PK containment area to limit risk of failure that would affect safety of people or wildlife.

An excavator moves a large piece of clean granite as it works on the East Cell of the North Pile at the Snap Lake Mine.

Appendix E

Closure Options and Research Workshop Presentation

March 2013

De Beers
GROUP OF COMPANIES

Closure Options and Research Workshop

March 13, 2013

Introduction

De Beers
GROUP OF COMPANIES

- Review Agenda
  - Housekeeping & safety message
  - Prayer
  - Introductions (hosts and participants)
  - Purpose of the workshop
  - Presentation and discussion of Closure Options
  - Lunch
  - Presentation and discussion of Reclamation Research
  - Next Steps

Objectives

De Beers
GROUP OF COMPANIES

- The objective of this presentation is to provide the proposed closure options and research for discussion and feedback
- Expected outcomes include:
  - A better understanding by stakeholders and community members of:
    - Proposed closure options and activities being evaluated by De Beers, as well as, the proposed topics for reclamation research.
  - A better understanding by De Beers of:
    - Any questions/comments/concerns of stakeholders and community members regarding proposed closure options, selected closure activities, and reclamation research topics.

Presentation Outline

DE BEERS
GROUP OF COMPANIES

- Introduction to De Beers Canada and the Snap Lake Mine
- Overview of Closure Planning
- Progression of Closure and Reclamation Plan
- History of Engagement
- Current Interim Closure and Reclamation Plan Revision
  - Mine components and closure objectives
  - Closure Criteria
  - Options and Research
- Moving Forward

De Beers in Canada

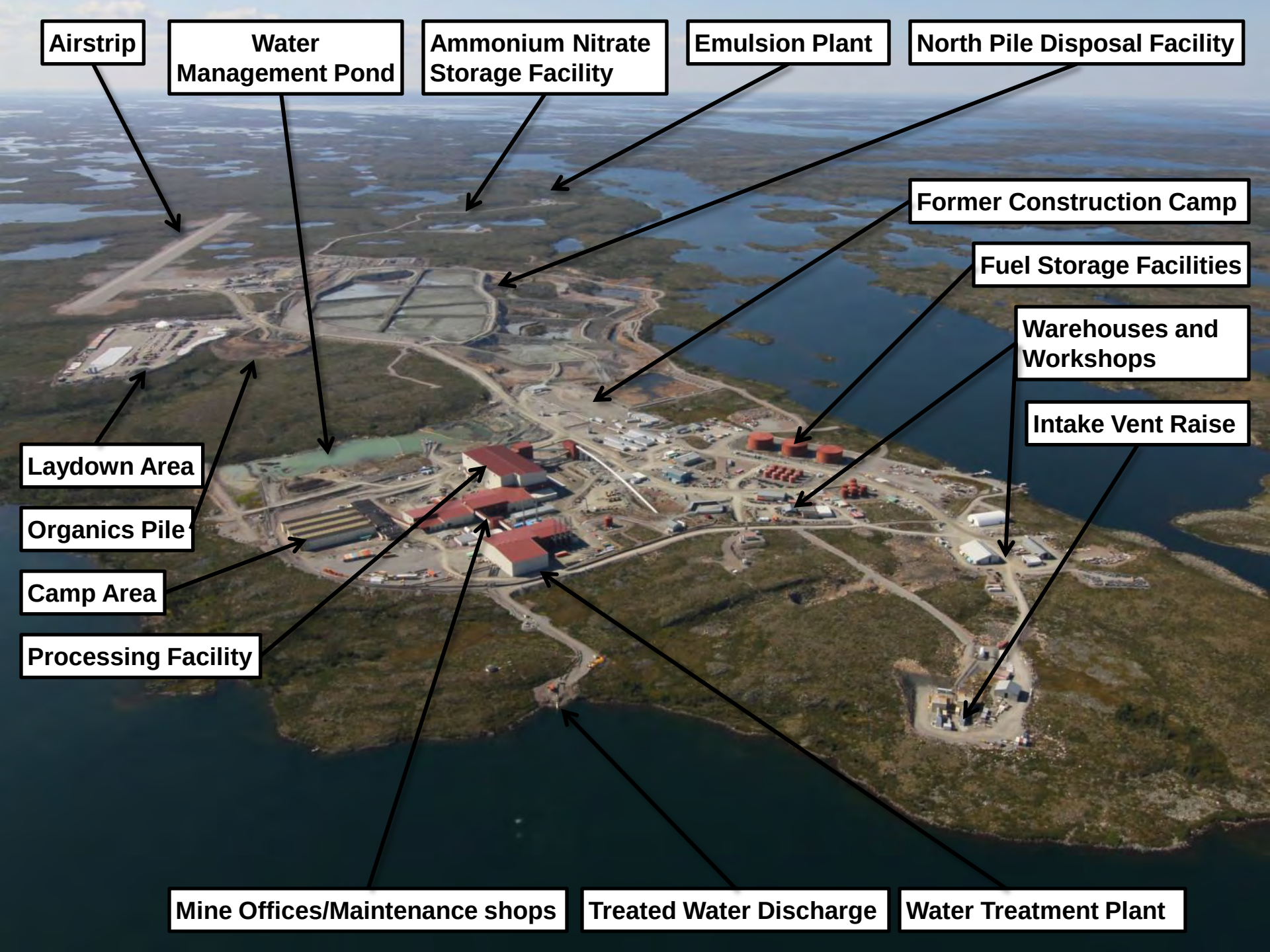
DE BEERS
GROUP OF COMPANIES

Year	Milestone
1961 to present	• Exploration for diamond deposits
2000	• De Beers acquires Winspear Diamonds and Snap Lake Deposit
2004	• Environmental Agreement for Snap Lake Mine • Snap Lake Mine receives Environmental Assessment approval, Type A Water Licence issued
2005	• Construction begins at Snap Lake Mine • Environmental Assessment for Victor Mine approved and construction of that mine begins • Gahcho Kué Project Environmental Assessment process begins
2008	• Snap Lake Mine and Victor Mine commence operations • Global recession
2009	• Global recession continues • Reduction in production and staffing levels at Snap Lake Mine
2010	• Production ramp-up at Snap Lake Mine and increase in staffing • Initiation of work streams required for renewal of Water Licence
2011	• Land Use Permit issued
2012	• Approval of Type A Water Licence to operate • Anglo American purchase of De Beers

Snap Lake Mine Facts

De Beers
GROUP OF COMPANIES

Mine Life	20+ years
Mine site area	> 500 ha
Annual processing capacity	1,100,000 tonnes
Tonnes treated in 2012	810,000 tonnes
Annual production capacity	1,400,000 carats
Carats recovered in 2012	870,000 carats
2012 Workforce	767 PY
2012 Northern Workforce	275 PY
2012 Expenditure	$194 million
2012 Northern Expenditure	$134 million (69% of total)
2012 Aboriginal Expenditure	$52 million (37% of Northern Expenditure)


Airstrip
Water Management Pond
Ammonium Nitrate Storage Facility
Emulsion Plant
North Pile Disposal Facility
Former Construction Camp
Fuel Storage Facilities
Warehouses and Workshops
Intake Vent Raise
Laydown Area
Organics Pile
Camp Area
Processing Facility
Mine Offices/Maintenance shops
Treated Water Discharge
Water Treatment Plant

Closure Planning in the NWT

De Beers
GROUP OF COMPANIES

- Regulatory Policy
  - Developed by AANDC/INAC in 1980s in response to environmental impacts and financial burden to the Canadian public. In 2002, INAC released its *Mine Site Reclamation Policy for the Northwest Territories*.
- Closure and Reclamation Plans
  - Required as a condition of Water Licence issued by Land and Water Boards of the Mackenzie Valley.
- Closure Plan Guidelines
  - Developed by AANDC/INAC in 2000s to standardize process for proponents. The guidelines were revised by AANDC/INAC in partnership with the Land and Water Boards of the Mackenzie Valley in 2011. A finalized version of the guidelines has yet to be released.

Closure Planning in the NWT

DE BEERS
GROUP OF COMPANIES

- De Beers Internal Policies also guide operations and closure planning.
  - Sustainable Development
  - Working with Aboriginal Communities
  - Mineral Waste Management
- Anglo American mine closure planning toolbox
  - The purpose of the toolbox is to ensure that closure planning is progressing at an adequate rate.

Time remaining to scheduled closure				
> 25 years	25-15 years	15-10 years	10-5 years	5-0 years
Preliminary Closure Plan		Draft Closure Plan	Detailed Closure Plan	Final Closure Plan

Source: Anglo American (2007). Sustainable Development Planning and Mine Closure. Toolbox, v1, 2007.

Closure Timeline

DE BEERS
GROUP OF COMPANIES

- Snap Lake Mine is in the early stages of closure planning relative to nearby diamond mines (Ekati and Diavik).
- Final Closure and Reclamation Plan will be completed by 2028.
- Expected years to the end of mining operations are: Ekati - 7 years, Diavik - 9 years, and Snap Lake - 17 years.

Closure and Reclamation Plan

De Beers
GROUP OF COMPANIES

1. Executive Summary
2. Introduction
3. Project environment
4. Project description
5. Requirements for permanent closure and reclamation
6. Progressive reclamation
7. Temporary closure
8. Integrated schedule of activities approaching permanent closure
9. Post-closure site assessment

Progression of the Closure Plan

De Beers
GROUP OF COMPANIES

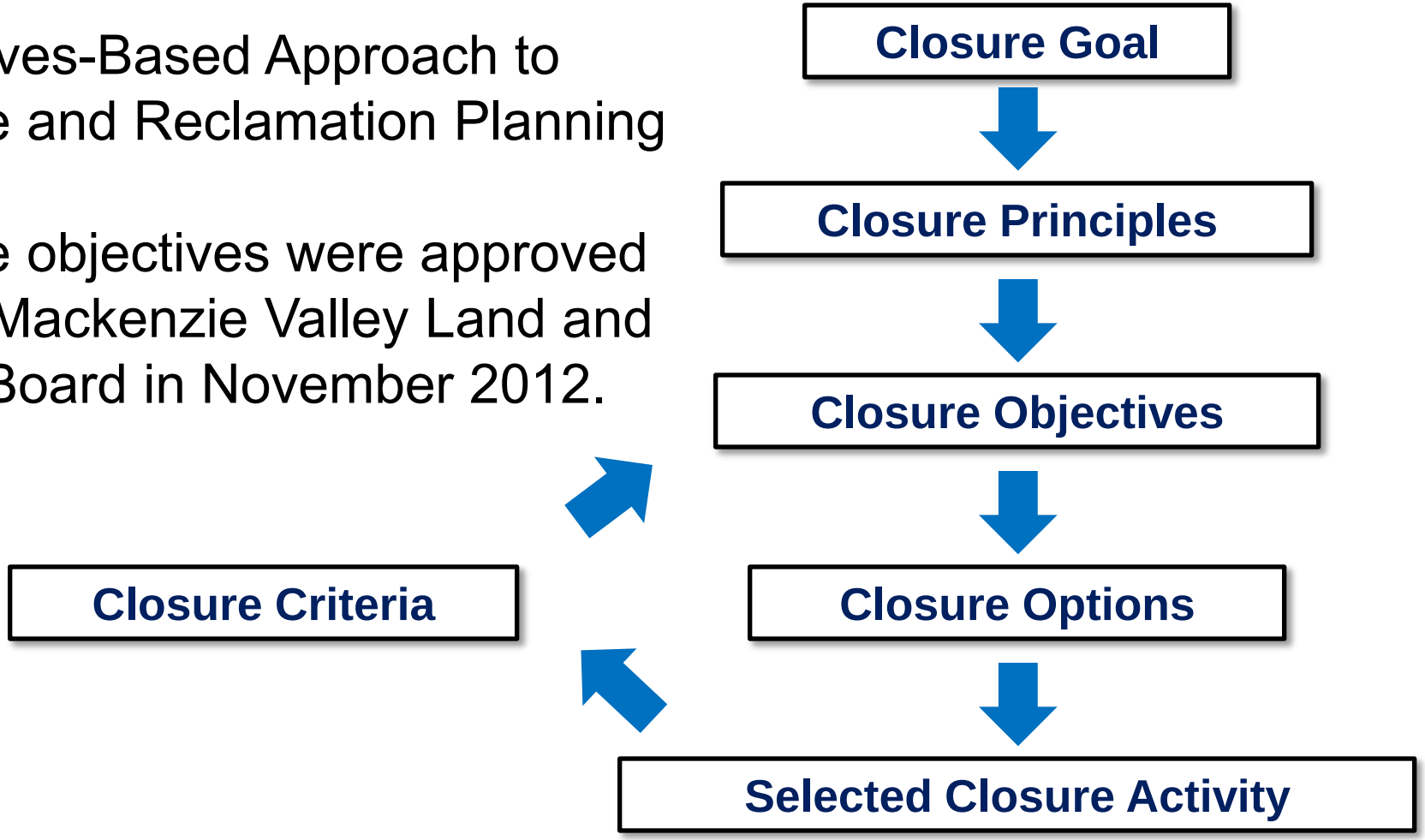
- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as a requirement of the Project Environmental Assessment
- Interim Closure and Reclamation Plan (2006)
  - Prepared as a requirement of the Water Licence MV2001L2-0002
- Interim Closure and Reclamation Plan (2011)
  - Prepared as part of the Water Licence application package
- Interim Closure and Reclamation Plan (2013)
  - Prepared as a requirement of the renewed Water Licence MV2011L2-0004.
  - Revised every 3 years
- Final Closure and Reclamation Plan (at least 2 years before the end of operations)

Closure Planning Framework

De Beers
GROUP OF COMPANIES

Objectives-Based Approach to Closure and Reclamation Planning

Closure objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.



Mine Components

De Beers
GROUP OF COMPANIES

- For closure planning, the mine is separated into four primary mine areas/components:
  - Site Wide
  - North Pile
  - Infrastructure (includes all water management structures)
  - Underground Mine

Site Wide Objectives

De Beers
GROUP OF COMPANIES

Site Wide 1	Dust levels safe for people, vegetation, aquatic life and wildlife.
Site Wide 2	Drainage pathways for surface runoff are physically stable.
Site Wide 3	Surface runoff and seepage water quality that is safe for people, vegetation, aquatic life, and wildlife.
Site Wide 4	Mine areas are physically stable and safe for use by people and wildlife.
Site Wide 5	Landscape features (shape and vegetation) match aesthetics of the surrounding natural area.
Site Wide 6	Safe passage and use for Caribou and other wildlife.
Site Wide 7	Re-vegetation targeted to priority areas.

North Pile Objectives

De Beers
GROUP OF COMPANIES

North Pile 1	Prevent processed kimberlite from entering the surrounding terrestrial and aquatic environment.
North Pile 2	Physically stable processed kimberlite containment area to limit risk of failure that would affect the safety of people or wildlife.

Underground Mine Objectives

De Beers
GROUP OF COMPANIES

Underground Mine 1	Flooding of the underground mine will have no impacts to aquatic habitats in source lakes.
Underground Mine 2	Underground mine should not contribute to the contamination of ground or surface water.
Underground Mine 3	Underground mine workings are physically stable.

Infrastructure

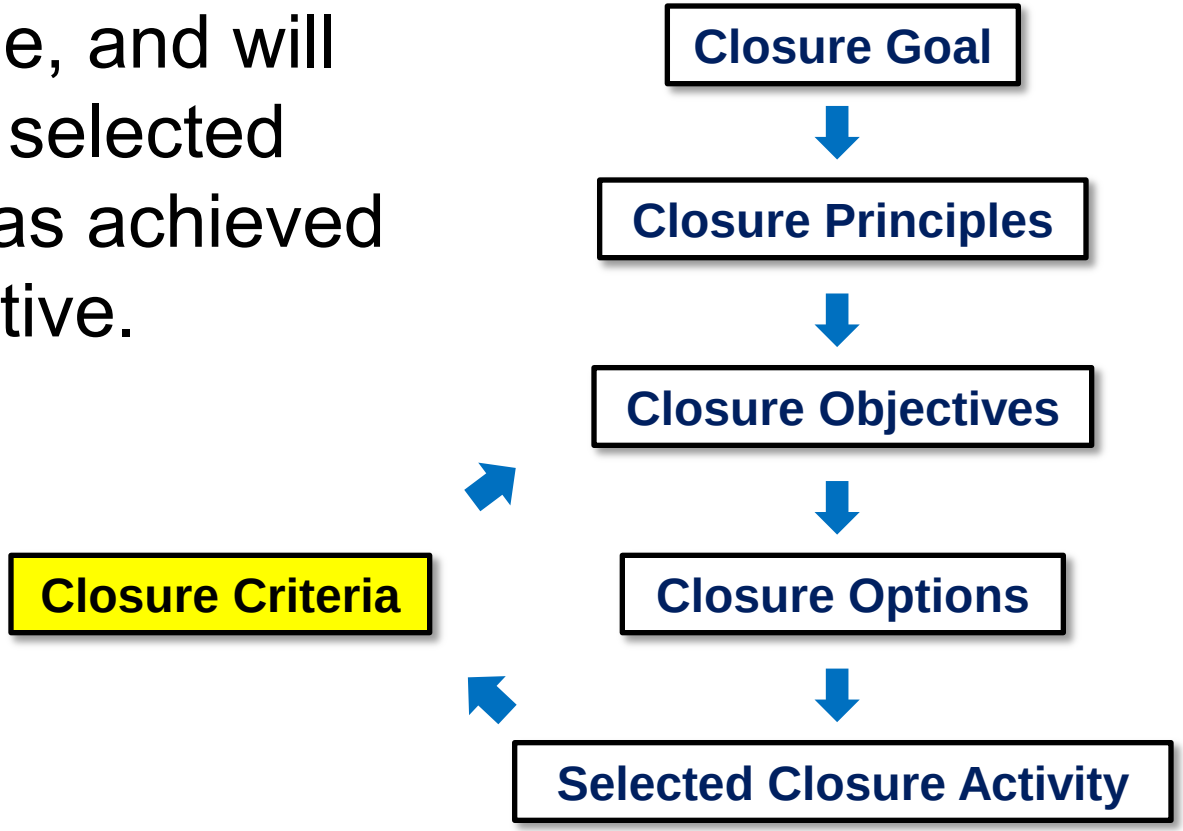
De Beers
GROUP OF COMPANIES

Infrastructure 1	Prevent remaining infrastructure from contaminated land or water.
Infrastructure 2	On-site disposal areas are safe for people, wildlife and vegetation.
Infrastructure 3	Contaminated soils and waste disposal areas that cannot contaminate land and water.

Closure Criteria

De Beers
GROUP OF COMPANIES

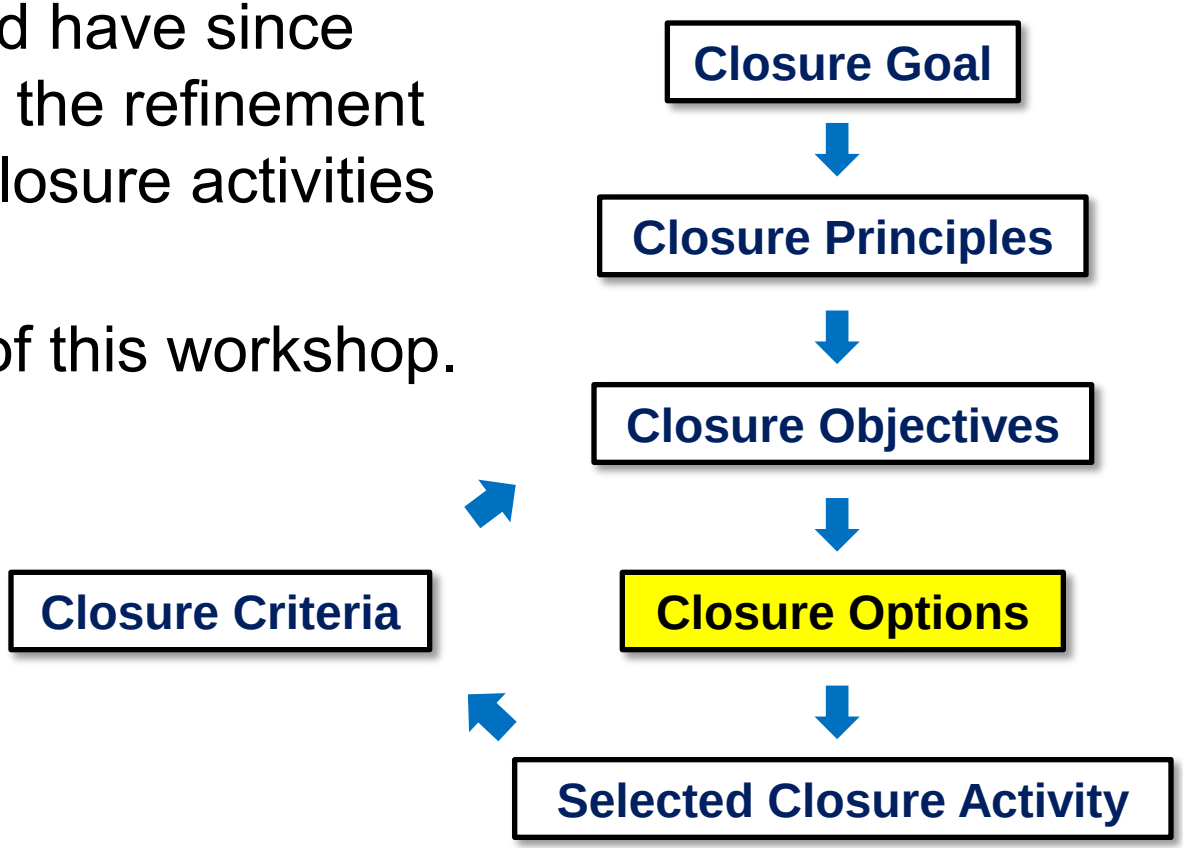
Each closure objective includes an associated closure criteria that is measurable, and will define whether a selected closure activity has achieved the closure objective.



Closure Options

De Beers
GROUP OF COMPANIES

- Although some closure options were determined during the mine planning stage and have since been constructed, the refinement of many specific closure activities is ongoing.
- This is the focus of this workshop.



North Pile

De Beers
GROUP OF COMPANIES

- Closure options presented in the 2003 and 2006 ICRPs
  - Size and shape
    - Short, large footprint
    - **Medium height, medium footprint**
    - Tall, small footprint

Waste Pile Characteristics	Option 1	Option 2	Option 3
Crest Elevation (m)	479	484	497
Height Above Lowest Land Form (m)	35	39	52
Height Above Highest Land Form (m)	-5	0	13
Pile Visibility	Lowest	Moderate	Highest
Foot Print (ha)	126	92	69
Perimeter Length (m)	5,600	4,200	3,200

North Pile

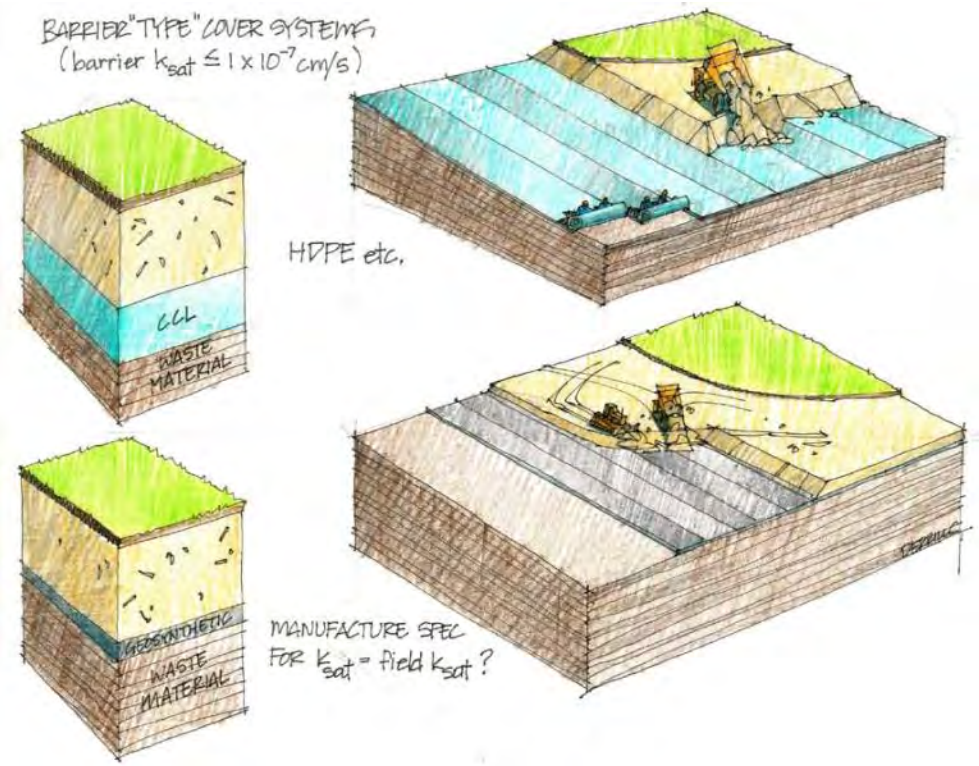
De Beers
GROUP OF COMPANIES

- Proposed closure options
  - Rock cover (type of cover, material gradation and thickness)
  - Final shaping and revegetation

North Pile – Rock Cover

DE BEERS
GROUP OF COMPANIES

- Cover type
  - Erosion protection
  - Store-and-release
  - Enhanced store-and-release
  - Barrier-type
  - Cover systems with engineered layers



- Alternatives analysis
  - Numerical modeling of infiltration, temperature with varying material gradation, cover thickness
    - 0.25 inch minus, 3 inch minus, 6 inch minus
    - 0.3 m thick, 0.5 m thick, 1.0 m thick

North Pile – Final Shaping and Revegetation

De Beers
GROUP OF COMPANIES

- Slope of side embankments options
  - As designed, leave as is
  - Use quarried material to increase/decrease slope based on desired aesthetics
- Revegetation options
  - Apply salvaged organic materials for active revegetation
  - Surface preparation to promote revegetation
  - Leave as is and allow natural recovery

Underground Mine

De Beers
GROUP OF COMPANIES

- Closure options presented in the 2003 and 2006 ICRPs
  - Disposal of processed kimberlite and waste rock
    - Entirely at surface within a disposal facility (North Pile)
    - **Approximately 50% within a disposal facility (North Pile) and 50% backfilled within the underground mine workings**

Infrastructure

De Beers
GROUP OF COMPANIES

- Closure options presented in the 2003 and 2006 ICRPs
  - Disposal options for non-hazardous debris from decommissioned buildings and equipment
  - Reshaping options for roads and the airstrip

Infrastructure

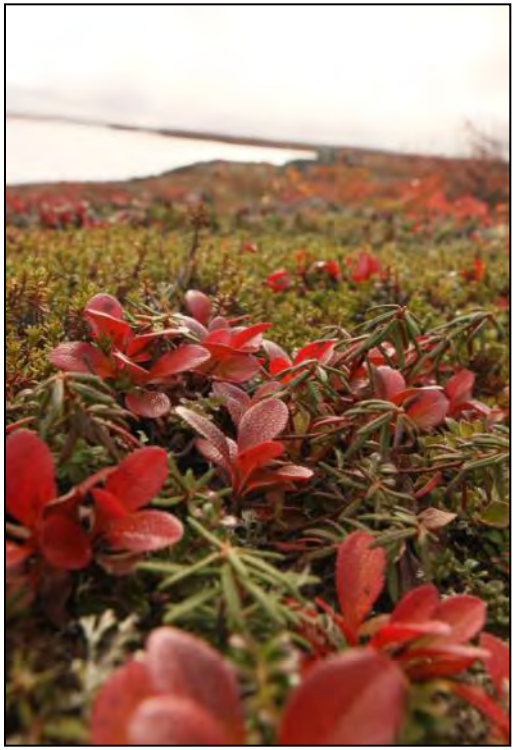
De Beers
GROUP OF COMPANIES

- Disposal options for non-hazardous debris from decommissioned buildings and equipment
  - 100% removal from site
  - Bury within the underground mine and remove all salvageable material from site
  - **Bury within the North Pile and remove salvageable material from site**
- Reshaping options for roads and the airstrips
  - Leave as is
  - **Shape to re-establish natural drainage pathways**

Infrastructure

De Beers
GROUP OF COMPANIES

- Proposed closure options
  - Final reshaping options for pads, laydown areas, sumps and ditches.
    - Leave as is
    - Scarify only
    - Reshape to prevent pooling of surface water and/or establish natural drainage pathways
  - Revegetation options for disturbed areas
    - Surface preparation (scarify, boulder placement, etc.)
    - Active revegetation (topdressing, seeding, tundra sod islands)



Site Wide

De Beers
GROUP OF COMPANIES

- Proposed closure options
  - Reshaping options to ensure safe wildlife passage and use. This will be developed based on input from communities, traditional knowledge and expert review.

Reclamation Research

De Beers
GROUP OF COMPANIES

- Aim to resolve uncertainties and answer questions pertaining to environmental risks for closure options or selected closure activities.

Closure Objective	What is the best closure objective for a particular mine component? Is the objective achievable?
Closure Options	Which of the closure options will best achieve the closure objective?
Selected Closure Activity	What is the best way to implement the selected closure activity?
Closure Criteria	What is the best way to measure whether the selected closure activity meets the closure objective?

Reclamation Research Plan

Reclamation Research – North Pile

De Beers
GROUP OF COMPANIES

- Proposed closure options for the North Pile
  - Rock cover options
  - Final shaping options
  - Revegetation options
- Research projects supporting selection of a rock cover
  - Conceptual engineering design
  - Process kimberlite properties
  - Geotechnical stability and deformation of the North Pile
  - Dust control and monitoring
  - North Pile closure performance
  - Rock cover trial pads

Reclamation Research – North Pile

De Beers Group of Companies

- Research projects supporting selection of final shaping activities.
  - Focus on obtaining input regarding the desired aesthetics for the final landform. Information sources should include:
    - Community engagement
    - Traditional Knowledge
    - Consult with wildlife experts
- Research projects supporting selection of revegetation activities for the North Pile.
  - Potential for phytoextraction of metals by plants
  - Additional topics will be identified following conceptual and detailed design of the rock cover
  - Infrastructure revegetation research is applicable to the North Pile

Reclamation Research – North Pile

De Beers
GROUP OF COMPANIES

- Additional research supporting successful closure of the North Pile will aid in development of closure criteria and refining the assumptions and predictions for closure made during the project environmental assessment. Current topics include:
  - Cryoconcentration of solutes in pore water
  - Processed kimberlite deposition beach slope (paste)

Reclamation Research – Underground Mine

De Beers
GROUP OF COMPANIES

- Selected closure activities for the Underground Mine
  - Disposal of approximately 50% of all processed kimberlite and waste rock is the selected closure activity
- Associated research supporting selected closure activity
  - Development of optimal PK paste recipe for backfilling
- Additional research topics:
  - Refinement of assumptions and predictions for groundwater inflow quantity and quality, and the implications on closure

Reclamation Research - Infrastructure

De Beers
GROUP OF COMPANIES

- Selected closure activities for Infrastructure
  - Disposal of non-hazardous debris deep within the North Pile
  - Grading of roads and airstrip to re-establish natural drainage
- Proposed closure options for Infrastructure
  - Reshaping of pads, laydown areas, sumps and ditches
  - Revegetation of surface materials
- Associated research supporting selection of closure options for Infrastructure areas focuses on:
  - Developing a clear vision for the desired aesthetics of the Infrastructure areas at closure
  - Successful revegetation methods

Reclamation Research – Infrastructure

De Beers
GROUP OF COMPANIES

- Research projects supporting selection of revegetation activities
  - Ongoing
    - Surface Materials Handling Plan
    - Establishment of natural recovery sample plots
  - Planned for 2013
    - Seed Development Plan
    - Construction of rock pad revegetation test pads
    - Organics Pile Management Plan
  - Future years
    - Soil amendments
    - Methods of surface preparation and/or transplanting
    - Progressive reclamation sites

Reclamation Research – Site Wide

De Beers
GROUP OF COMPANIES

- Proposed closure options
  - Reshaping options to ensure safe wildlife passage and use
- Research supporting selection of closure activities will focus on obtaining input regarding the desired aesthetics for the final landform, as well as, potential hazards and attractants. This will be completed through the following:
  - Community engagement
  - Traditional Knowledge
  - Consult with wildlife experts

Reclamation Research – Progressive Reclamation

De Beers
GROUP OF COMPANIES

- Completed or ongoing progressive reclamation activities include:
  - Decommissioning and environmental investigation at the Construction Camp Pad Area
  - Remediation of the Ammonium Nitrate Storage Pad
  - Design of the Starter Cell Cover

Reclamation Research - General

De Beers
GROUP OF COMPANIES

- In addition to stakeholder input and review, it is expected that the Reclamation Research Plan will continue to evolve and be refined based on many information sources external to the project, such as:
  - Review of findings from Diavik and Ekati research programs
  - Review of emerging technologies in the industry
  - Review of lessons learned from closure of other mine sites
  - Review of findings from completed academic research
  - Review of technical guidance documents prepared by federal and territorial departments, as well as, industry best practices and guidelines

Next Steps

De Beers
GROUP OF COMPANIES

- De Beers is currently in the process of revising the Interim Closure and Reclamation Plan
  - Closure Objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.
  - De Beers hosts a Closure Options and Research Workshop held in Yellowknife on March 13, 2013.
  - De Beers submits the Interim Closure and Reclamation Plan (version 3.2) in May, 2013 for stakeholder review.

Closing

De Beers
GROUP OF COMPANIES

Thank you for listening!

Any feedback at this time regarding the selected closure activities, proposed closure options and/or reclamation research would be greatly appreciated!

Contact Us

De Beers
GROUP OF COMPANIES

- Alexandra Hood

  Superintendant, Environment and Permitting; Safety, Health and Environment

  Alexandra.Hood@debeerscanada.com

- Tom Bradbury

  Permitting Coordinator, Safety, Health and Environment

  Tom.Bradbury@debeerscanada.com

- Elizabeth (Sabet) Biscaye

  Superintendent, Community Relations, External and Corporate Affairs

  Elizabeth.Biscaye@debeerscanada.com

Appendix F

Community Workshop Presentations and Posters

Spring 2013

Meeting Overview

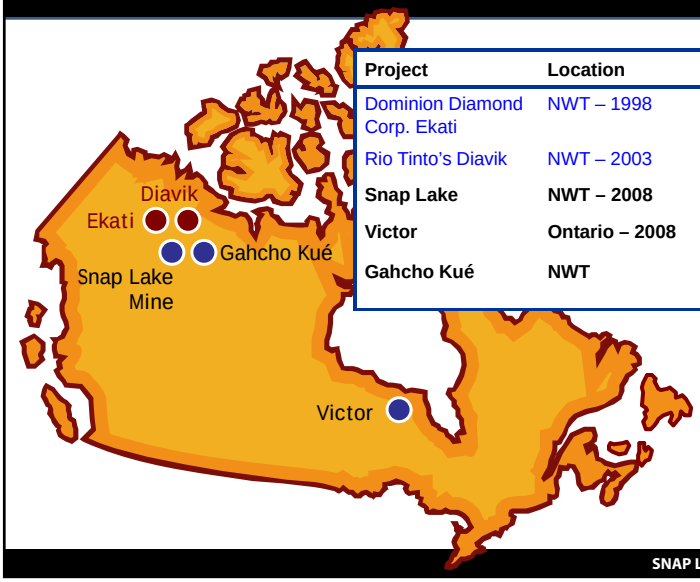
De Beers
GROUP OF COMPANIES

De Beers Update Snap and GK

- Human Resources Initiatives
- Business Opportunities
- Environment & Permitting Overview
- Closure and Reclamation
- Aquatic Effects Monitoring Program

De Beers in Canada

DE BEERS
GROUP OF COMPANIES



Project	Location	Production
Dominion Diamond Corp. Ekati	NWT – 1998	2.5 million carats/2011
Rio Tinto's Diavik	NWT – 2003	6.7 million carats/2011
Snap Lake	**NWT – 2008**	**870,000 carats/2012**
Victor	**Ontario – 2008**	**690,000 carats/2012**
Gahcho Kué	**NWT**	**Environmental Impact Review**

Snap Lake Mine – Quick Facts

DE BEERS
GROUP OF COMPANIES

- Completely underground operation
- 220 km northeast of Yellowknife
- Mining area <500 ha
- 2.5m kimberlite dyke dips beneath Snap Lake 12-15 degrees
- New Land Use Permit issued on February 16, 2011 for 5 years
- New water license issued on June 14, 2012 for 8 years

2012 Water Management Upgrades

DE BEERS
GROUP OF COMPANIES

- Pro-active water management enhancement ongoing
- De-icing of water collection sumps on surface
- 24/7 monitoring of surface water collection sumps
- Flowmeters installed in all lines into the Water Management Pond
- Improvements to Water Treatment Plant
- Increased discharge capacity for treated water
- Community visits by winter road and plane in May to see water management improvements
- No incidents during 2012 spring melt

Gahcho Kué Project

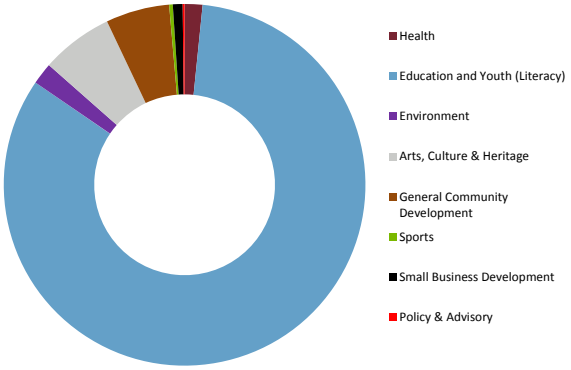
DE BEERS
GROUP OF COMPANIES

- Located at Kennady Lake, 280 km northeast of Yellowknife, 80 km southeast of Snap lake Mine
- Joint Venture – De Beers Canada (51% - operator); Mountain Province Diamonds (49%)
- Open Pit Operation – 5034, Hearne & Tuzo
- $600-$650 million capital cost (2010 NI 43-101 report)
- 2 year construction
- ~11 year life of mine
- 360-380 jobs at full production
- 690 jobs at peak of construction
- Average annual production 4.5 million carats/3 million tonnes

Social Investment

DE BEERS
GROUP OF COMPANIES

- $13.3 million spent on social investment in the Northwest Territories from 2008-2012
- 83% focused on training, education and literacy
- $3.3 million in social investment in 2012



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Socio Economic Agreements

DE BEERS
GROUP OF COMPANIES

- Are follow-up mechanisms to monitor and adaptively manage socio-economic aspects of NWT mining operations
- Are aimed at optimizing the opportunities for mining projects for NWT Residents
- Typically include s:
  - targets and priorities for NWT Resident employment and training
  - targets for expenditure on goods & services with NWT businesses
  - commitments by mining companies to promote and support community health & wellness
  - commitments to promoting and supporting community culture and traditions
  - a requirement to publicly report on fulfillment of commitments and achievement of targets

De Beers signed a Socio -Economic Agreement with the GNWT for Snap Lake – May 18, 2004. The 2012 Annual Report will be issued in May 2013.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

2012 Recruitment Efforts

De Beers
GROUP OF COMPANIES

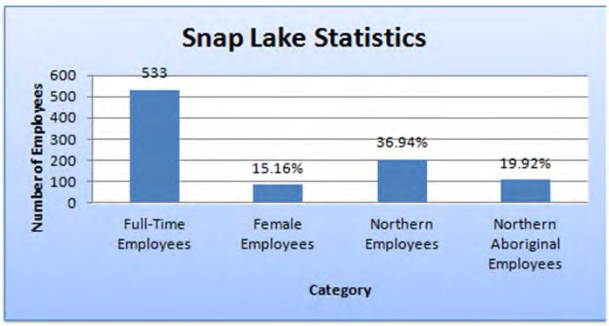
2012 De Beers Recruitment				
Total Competions	Total Applications Received	Total Northern Applicants	Total Northern Aboriginal Applicants	IBA Applicants
78	3,907	1,112	514	345
		Percentage of Total	Percentage of Total	Percentage of Total
		28%	13%	9%
Total Hired	Total Southerners Hired	Total Northerners Hired	Total Northern Northern Aboriginals Hired	IBA Members Hired
93	50	43	23	14
		Percentage of Total Hired	Percentage of Total Hired	Percentage of Total Hired
		46%	25%	15%

Recruitment challenges continue with finding relevant skills and abilities to fill the vacancies at Snap Lake with Northern residents.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Snap Lake Mine Statistics

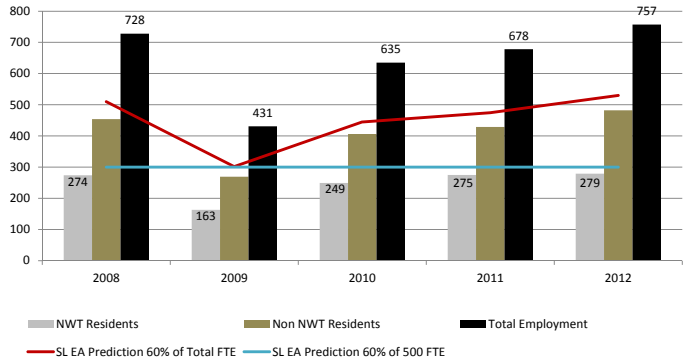
DE BEERS
GROUP OF COMPANIES



*as of May 2013

Snap Lake Mine Employment History

DE BEERS
GROUP OF COMPANIES



- During the Snap Lake Environmental Assessment, De Beers predicted there would be 500 FTE for the Operations Phase and that 60% or 300 would be NWT Residents
- In 2012, De Beers and its contractors employed 757 FTE, of which 36% or 279 were NWT Residents
- In 2012, 61% of the workforce were De Beers employees and 39% were Contractors

NWT Diamond Mine Employment - 2011

DE BEERS
GROUP OF COMPANIES

	Predicted Employees Operations Phase	Actual Employment (December 2011)	# Northern Resident Predicted	Actual Northern Resident Employment	**Northern** Residency Variance (Actual versus Predictions)
BHP Billiton's Ekati Mine	926	1,213	574	650 (54%)	+76
Diavik Diamond Mine	400	1,137	264	642 (56%)	+378
De Beers Snap Lake Mine	500	678	300	249 (37%)	-51
Predicted Total Workforce Requirements	1,826	3,044	1,138	1,541	**+403**

The Good News: *In 12 Years of Diamond Mining in the NWT, 403 more people than industry forecast would be working in our industry are in fact employed. Training and Development has been successful.*

The Challenge: For De Beers and other new mines opening up in the NWT, continued government educational investment in the NWT population that is not currently employed is required.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Social Economic Agreement Training Commitment

DE BEERS
GROUP OF COMPANIES

	SUMMARY			
	Trades Training	Apprenticeship	UG	
Commitment	10	10	20	40
Current Trainees	9	7	5	21
Program Graduates	16	5	18	39
Trainees To Date	24	23	34	81

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Ensuring Northern Residents are Priority

DE BEERS GROUP OF COMPANIES

- Recruitment
  - News/North
  - Jobsnorth.ca
  - Community Postings
  - Website
  - Direct Human Resources Contact Information
- Pick-up points in 11 NWT Communities
- Travel Allowance to get to Pick-up Points
- Partnership with the Mine Training Society
- Northern Allowances
  - NWT Salary Enhancement Benefits
  - Remote Site Allowance

Trades / Apprentices

DE BEERS GROUP OF COMPANIES

- 7 apprentices on track to become journeypersons
- Currently 9 trades trainees
- 5 Underground Mining Trainees
- 11 Females in Underground Miner positions
- Since the mine opened, 39 northerners have graduated from our training programs

Trades / Apprentices (Cont'd)

DE BEERS GROUP OF COMPANIES

- Apprenticeship Program Fully Funded
- Accommodations while in school of choice fully funded
- All trainees & apprentices hired are northern Aboriginal
- Assistance with schooling material from our on site Training Coordinators
- Trades Entrance Exam assistance and preparation through Learning Centre

Workforce Development

DE BEERS GROUP OF COMPANIES

- Work Placements facilitated through MTS
  - 4 Mine Process Operator Trainees joined us in 2013 for work placement experience. One has recently been hired as an Operator Trainee on a full time basis while another's contract was extended for Process Summer Student work.
- Summer Work Placement of 2 Maintenance Helpers
- 2 Aurora College Office Administration work placements in 2012
- Continued support and enrollment of employees in the Northern Leadership Development Program through Aurora College
- High School Career Pathing Workshop May 2013

Mine Training Society Partnership

DE BEERS GROUP OF COMPANIES

- Introduction to Mining (Part 1)
  - 6 week program
  - Hay River, Yellowknife, Fort Smith
  - Start Date: Possible July start
- Underground Miner Training Program (Part 2)
  - 12 week Program
  - Intake Start Date: August 26th
- Mineral Processing Operator Trainee Program
  - 14 weeks
  - Fort Smith
  - Start Date: September 3 – December 6th, 2013 / January 8th 2014

Gahcho Kué Opportunities

DE BEERS GROUP OF COMPANIES

- Up to 690 jobs at peak of construction
- 360-380 jobs available during operations
- Human Resource Strategy developed in 2012
- Labour shortages continue to exist in the NWT
- Mine Training Program (MTS) will continue to be a significant partner in training Northerners for jobs at Gahcho Kué
- $5 million cash and in-kind commitment to MTS "Mining the Future" through 2015
- Mining the Future targets training in a number of areas: Mineral Process Operating Technician; Camp Cook; Cook Apprenticeship; Heavy Equipment Operator; Geoscience Field Assistant; Introduction to Underground Mining; Underground Mining; and General Construction

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

NWT Post Secondary Scholarship Program

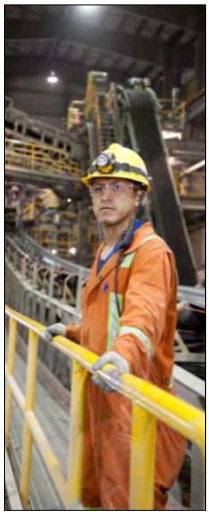
DE BEERS
GROUP OF COMPANIES

- Two kinds of scholarships available to NWT resident students enrolled in or attending post-secondary degree programs
- 15 “lump sum” scholarships worth $2,000 each
- Education Sponsorship worth up to $55,000 over a four-year degree program

Lump Sum Scholarships

DE BEERS
GROUP OF COMPANIES

- Available to NWT students studying in the following degree programs:
- Mine Engineering;
- Mine Geology;
- Finance & Accounting (Commerce);
- Human Resources;
- Occupational Health & Safety;
- Environmental Sciences;
- Metallurgy & Chemical Engineering; and,
- Mechanical & Electrical Engineering



Education Sponsorship

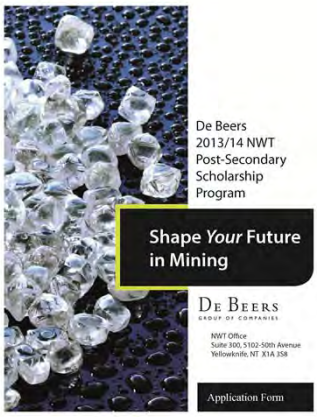
DE BEERS
GROUP OF COMPANIES

- Up to four years of significant financial support on an increasing scale
- Summer employment between school years
- Full-time employment upon completion of degree

How to Apply

DE BEERS
GROUP OF COMPANIES

- Application form online – www.debeersgroup.com/canada
- Two letters of reference
- Awarded on merit, including academic achievement, community service, leadership and extra-curricular activities



Forward Looking…

DE BEERS
GROUP OF COMPANIES

- Continued focus on Northern hires for Snap Lake Mine and upcoming GK hiring
- Continued focus on presence at community career fairs when available
- Partnership with Mine Training Society

Questions?

DE BEERS
GROUP OF COMPANIES

Business Investment

DE BEERS
GROUP OF COMPANIES

Construction and Operations Expenditure January 2005 to December 15, 2012		
	Expenditure to Date	Percent of Expenditure
Total Expenditure YTD	$1,893,410,418	N/A
NWT Portion	$1,322,019,874	69.82%
Aboriginal Portion on NWT Expenditure	$768,013,863	58.09%

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- Based on three pillars of sustainable development;
  - Economic
  - Social
  - Environmental sustainability
- Goods and Services
  - Goods and Services procured from Businesses must meet mining industry service and quality standards
- Long Term Sustainability/Business Capacity
  - Development of long-term sustainability and business capacity will be a fundamental consideration when entering into business relationships with Aboriginal and/or NWT businesses
  - Our work with Aboriginal and/or NWT business will support the development of technical and business skills and capacities that are transferable to other industries

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- De Beers will treat all companies fairly regardless of size
- Contractors
  - All contractors will be required to understand and comply with De Beers' Safety, Health, and Environmental Management Systems
  - All contractors will be required to understand, comply with and report on their success regarding northern hiring priorities

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- Business Registry
  - Develop a Business Registry for Northern and Aboriginal businesses to pre-qualify themselves for business opportunities
- Joint Ventures
  - Identify possible joint venture opportunities for Aboriginal Businesses
- Post Award Analyses
  - Coordinate post-award analyses for unsuccessful Northern and Aboriginal bidders to communicate areas of improvement in the commercial and/or technical aspects of the final evaluation

De Beers Business Registry

DE BEERS
GROUP OF COMPANIES

- June 2013 Re-launch
- Businesses can register
  - Company Info
  - Goods and Services
  - Socio-Economic Commitments
  - Work History
  - Health and Safety
- De Beers Procurement
  - Pre-qualify Businesses
  - Learn of new Business Formation and Joint Ventures

De Beers Business Registry

DE BEERS
GROUP OF COMPANIES

- Current Businesses
- Aboriginal Business Development Arms
- Profiles must be complete
- De Beers will assist those who require assistance to complete Profile online
- **www.debeersgroup.com/canada/businessregistry**

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Snap Lake Opportunities

DE BEERS
GROUP OF COMPANIES

- Consolidation and Expediting -11/30/2013
- Winter Road Construction - 10/31/2013
- Fuel Haul – Winter Road - 8/31/2013
- Catering, Janitorial, Housekeeping - 9/30/2013

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

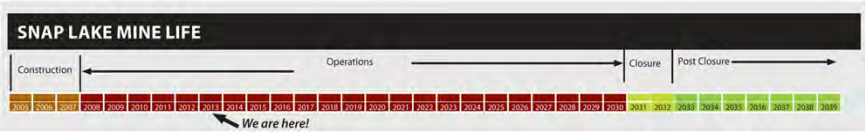
Presentation Overview

DE BEERS
GROUP OF COMPANIES

- Snap Lake & Gahcho Kué Regulatory Update
- Update on Snap Lake Water Management
- Gahcho Kué and Snap Lake Closure and Reclamation
- Gahcho Kué and Snap Lake Aquatic Effects Monitoring
- Demonstrations

Snap Lake Mine - Regulatory

DE BEERS
GROUP OF COMPANIES

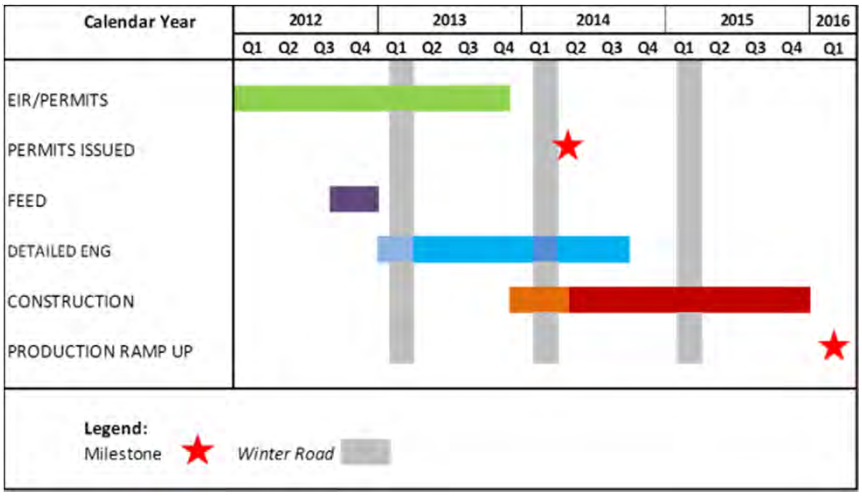


Snap Lake Mine officially opened in July 2008
Water License Amendment approved on June 14, 2012
Aquatic Effects Monitoring Program (AEMP) redesign in progress
- September 9th, 2012 community meeting
- January 24th, 2013 technical session on reevaluation and monitoring
- May 29th, 2013 technical session on Weight of evidence and response framework
- Intent is for Board to approve plan June 20, 2013

Interim Closure and Reclamation Plan (ICRP) process
- February community meetings to discuss Closure
- May 13th, 2013 Technical Session
- Currently revising the ICRP based on feedback
- Board process will commence once submission is complete (likely end of May)

Gahcho Kué – Regulatory Update

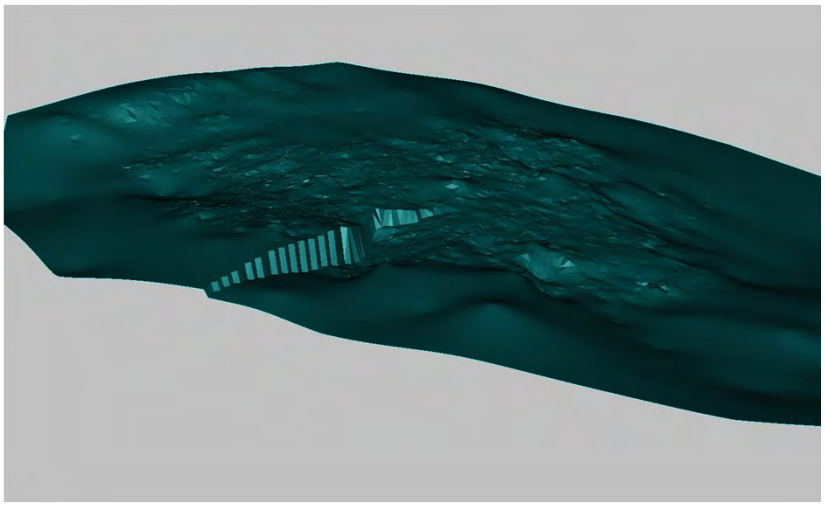
DE BEERS
GROUP OF COMPANIES



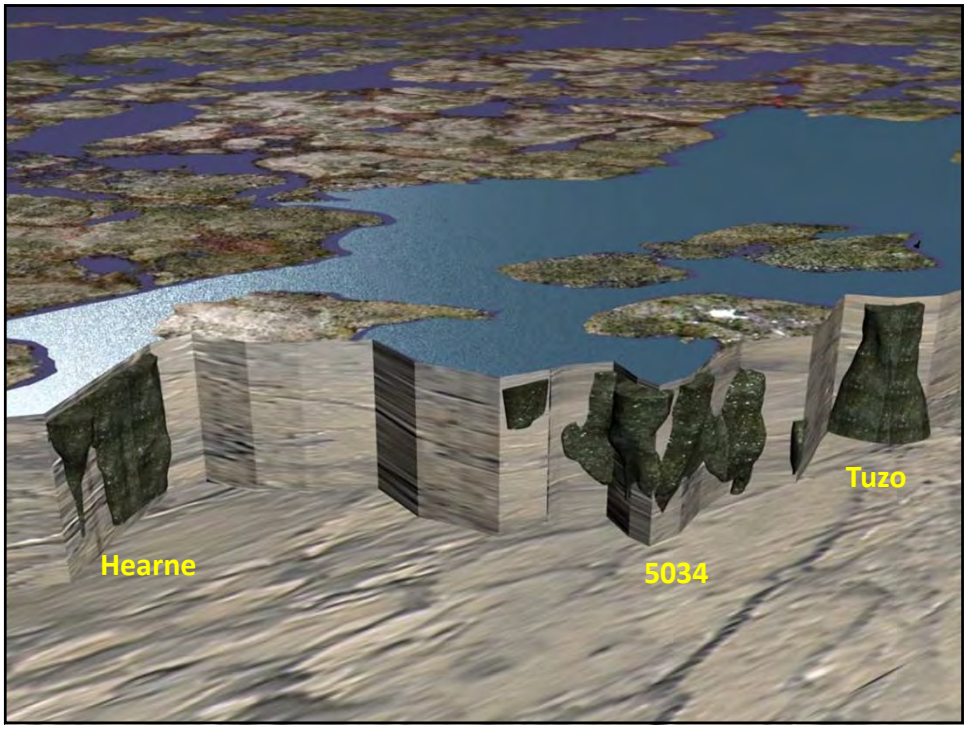
SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Snap Lake Mine - Kimberlites

DE BEERS
GROUP OF COMPANIES



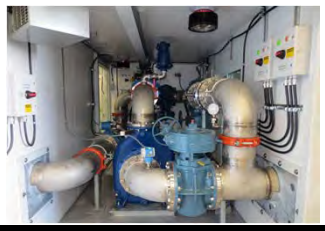
SNAP LAKE MINE | GAHCHO KUÉ PROJECT



Snap Lake Mine Water Management Enhancements

DE BEERS
GROUP OF COMPANIES

- Sump infrastructure upgrade
- Continuous sump monitoring & more mature protocols
- "Flocc tank" pre-clarifying pool
- Debottlenecking & optimization of WTP & TWTP
- Increase of Clean Water System capacity U/G up to 8500 m3/d
- Increased monitoring/testing of bogs and shorelines pre and post freshet.
- Upcoming PS3 repair
- U/G water model updated
- IL6 ditch construction completed



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Spring Freshet – Extra Measures

DE BEERS
GROUP OF COMPANIES

- Increased monitoring
- Monitoring areas where spring freshet is most common
- Increasing discharge to the lake with a second diffuser
- Putting in place extra monitoring at SNP stations
- Monitoring Frequency – Daily
- Sampling Frequency - Weekly

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

SURVEILLANCE NETWORK PROGRAMME SAMPLING STATIONS

Site Operations Update

De Beers
GROUP OF COMPANIES

- Paste
  - Underground paste trials continuing
- Waste Management
  - New incinerator purchased, installation this summer
- North Pile Raise
  - Filling all voids within the starter cell to achieve final pile height

Water License

De Beers
GROUP OF COMPANIES

- Site specific work being carried out in preparation for application
- Update water modeling
  - Surface
  - Underground
- Additional water management enhancements for increased water discharge

Objectives

De Beers
GROUP OF COMPANIES

- The objective of this presentation is to provide the proposed closure options and research for discussion and feedback
- Expected outcomes include:
  - A better understanding by community members of:
    - De Beers approach to community engagement.
    - The closure planning process for the Snap Lake Mine.
  - A better understanding by De Beers of:
    - community member questions and concerns regarding closure planning.
    - community member questions and concerns regarding De Beers community engagement approach.

Presentation Outline

DE BEERS GROUP OF COMPANIES

- Overview of Closure Planning
- Progression of Closure and Reclamation Plan
- History of Engagement
- Current Interim Closure and Red Plan Revision
  - Mine components and closure objectives
  - Closure Criteria
  - Options and Research
- Moving Forward

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Closure Planning in the NWT

DE BEERS GROUP OF COMPANIES

- **Regulatory Policy**
  - Developed by AANDC/INAC in 1980s in response to environmental impacts and financial burden to the Canadian public. In 2002, INAC released its *Mine Site Reclamation Policy for the Northwest Territories*.
- **Closure and Reclamation Plans**
  - Required as a condition of Water Licence issued by Land and Water Boards of the Mackenzie Valley.
- **Closure Plan Guidelines**
  - Developed by AANDC/INAC in 2000s to standardize process for proponents. The guidelines were revised by AANDC/INAC in partnership with the Land and Water Boards of the Mackenzie Valley in 2011. A finalized version of the guidelines has yet to be released.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Closure Planning in the NWT

De Beers
GROUP OF COMPANIES

- De Beers Internal Policies also guide operations and closure planning.
  - Sustainable Development
  - Working with Aboriginal Communities
  - Mineral Waste Management
- Anglo American mine closure planning toolbox
  - The purpose of the toolbox is to ensure that closure planning is progressing at an adequate rate.

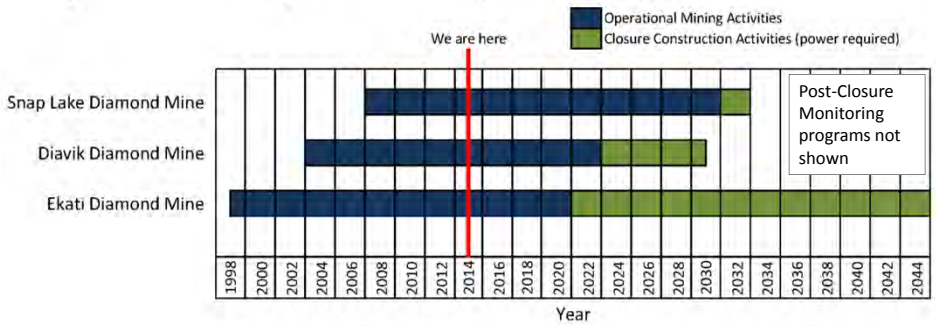
Time remaining to scheduled closure				
> 25 years	25-15 years	15-10 years	10-5 years	5-0 years
Preliminary Closure Plan		Draft Closure Plan	Detailed Closure Plan	Final Closure Plan

Source: Anglo American (2007). Sustainable Development Planning and Mine Closure. Toolbox, v1, 2007.

Closure Timeline

De Beers
GROUP OF COMPANIES

- Snap Lake Mine is in the early stages of closure planning relative to nearby diamond mines (Ekati and Diavik).
- Final Closure and Reclamation Plan will be completed by 2028.
- Expected years to the end of mining operations are: Ekati - 7 years, Diavik - 9 years, and Snap Lake - 17 years.



Community Engagement

De Beers
GROUP OF COMPANIES

- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as part of the Environmental Assessment process
  - Conceptual
- Methods of engagement included:
  - Information sessions in all several communities
  - Open house community meetings
  - One-on-one interviews
  - Guided site tours

Community Engagement

De Beers
GROUP OF COMPANIES

- First Revision of Closure and Reclamation Plan
  - Interim Closure and Reclamation Plan (2006)
    - Requirement of the Water Licence issued by the Mackenzie Valley Land and Water Board.
    - Additional detail regarding closure methods and proposed research included to satisfy conditions of Water Licence and reviewer comments on existing plan.
- The Interim Closure and Reclamation Plan was subject to stakeholder review during the Board approval process.

Community Engagement

DE BEERS
GROUP OF COMPANIES

- Current update of the Interim Closure and Reclamation Plan (2013)
  - Methods of engagement to date have included:
    - Stakeholder workshop in spring of 2011
    - Stakeholder review
    - Technical meetings held in September 2011
    - Public hearings in December 2011
    - Stakeholder review of the proposed Closure Objectives in October 2012
      - Closure Objectives approved by the MVLWB on November 22, 2012
    - Community meetings in February 2013
    - Technical meetings in March
  - Upcoming: Site visits in summer 2013, fish tasting in September 2013.

Closure and Reclamation Plan

DE BEERS
GROUP OF COMPANIES

1. Executive Summary
2. Introduction
3. Project environment
4. Project description
5. Requirements for permanent closure and reclamation
6. Progressive reclamation
7. Temporary closure
8. Integrated schedule of activities approaching permanent closure
9. Post-closure site assessment

Progression of the Closure Plan

DE BEERS GROUP OF COMPANIES

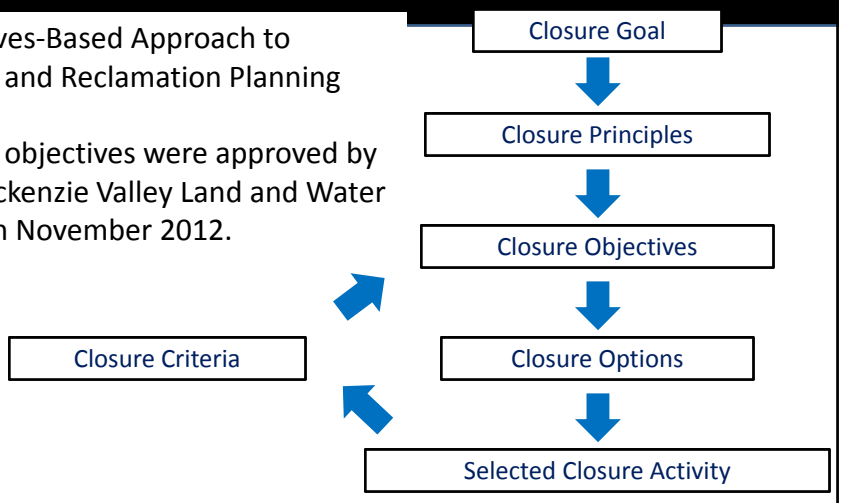
- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as a requirement of the Project Environmental Assessment
- Interim Closure and Reclamation Plan (2006)
  - Prepared as a requirement of the Water Licence MV2001L2-0002
- Interim Closure and Reclamation Plan (2011)
  - Prepared as part of the Water Licence application package
- Interim Closure and Reclamation Plan (2013)
  - Prepared as a requirement of the renewed Water Licence MV2011L2-0004.
  - Revised every 3 years
- Final Closure and Reclamation Plan (at least 2 years before the end of operations)

Closure Planning Framework

DE BEERS GROUP OF COMPANIES

Objectives-Based Approach to Closure and Reclamation Planning

Closure objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.



Research Options and Uncertainties Workshop

DE BEERS
GROUP OF COMPANIES

- March 13 meeting to discuss Research options and uncertainty
  - Required by the MVLWB
- De Beers heard that a “decision road map” would be useful and is currently being developed
- Other comments focused on progressive reclamation/lessons learned from other mine sites
- ICRP to be revised and resubmitted to the MVLWB for stakeholder review
- Board process commences at that time
- Intent is that Closure criteria will be developed as the plan progresses

Current step: Reclamation Research Plan

- Aim to resolve uncertainties and answer questions pertaining to environmental risks for closure options or selected closure activities.

Closure Objective	What is the best closure objective for a particular mine component? Is the objective achievable?
Closure Options	Which of the closure options will best achieve the closure objective?
Selected Closure Activity	What is the best way to implement the selected closure activity?
Closure Criteria	What is the best way to measure whether the selected closure activity meets the closure objective?

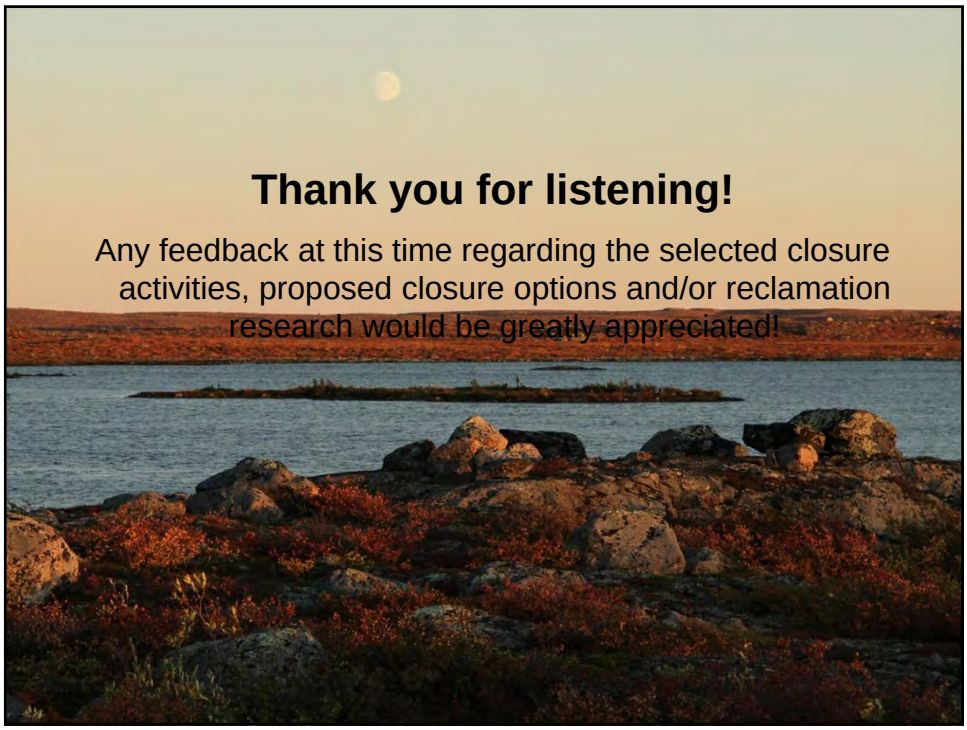
Reclamation Research Plan

Next Steps

DE BEERS
GROUP OF COMPANIES

- De Beers is currently in the process of revising the Interim Closure and Reclamation Plan
  - Closure Objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.
  - De Beers visited communities in February 2013 to discuss closure
  - De Beers hosted a Closure Options and Research Workshop held in Yellowknife on March 13, 2013.
  - De Beers submits the Interim Closure and Reclamation Plan (version 3.2) in June, 2013 for stakeholder review.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT



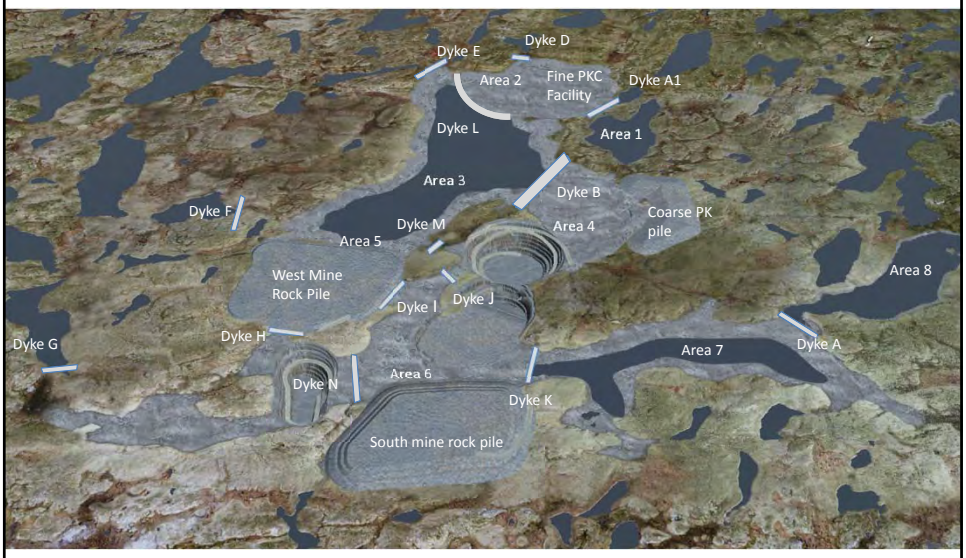
Construction (Year -1)

62

Construction (Year -2)

63

Operation (Year 1-11)



64

Closure (12 to 20+ Years)

65

Gahcho Kué – Closure & Reclamation

DE BEERS GROUP OF COMPANIES

- **Goals and Objectives** of the Conceptual Closure and Reclamation Plan (the Plan)
- **Key concepts** central to the Plan
- **Commitments** associated with the Plan
- **Overview of key activities** and **schedule**
- Conceptual Closure and Reclamation Plan **Summary**

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Goals of the C&R (The Plan)

DE BEERS GROUP OF COMPANIES

- The **overall Goals** of the Conceptual C&R Plan includes:
  - **Minimize the environmental impacts** of operations to the extent practical
  - **Re-establish productive fish and wildlife habitat** as quickly as possible
  - **Create self-sustaining ecosystems**
  - **Achieve post-closure conditions** that do not require maintenance
- The C&R Plan is considered **"conceptual"** at this stage, and will be refined over time.

Long-term Objectives

DE BEERS GROUP OF COMPANIES

Long-term Objectives of the conceptual C&R Plan:

- **Re-establish the natural fish habitat** that maybe lost, altered, or disturbed as a result of the Project
- **Return site conditions to self-sustaining ecosystems** typical in the region
- **Create**, to the extent practical, **final landforms that integrate into the natural landscape**

Short-term Objectives

DE BEERS GROUP OF COMPANIES

- **Short-term Objectives of the Plan**:
  - **Reclaim areas as soon as possible** once they are no longer required
  - **Minimize the risk of erosion/sediment** loss from on-site runoff
  - **Stabilize slopes** to maintain safe working conditions and to aid reclamation activities
  - **Restore natural drainage,** where possible
  - **Establish ground cover** to limit soil erosion and dust production
  - **Maintain** an environmentally safe site

Key Concepts Community and Traditional Knowledge

DE BEERS GROUP OF COMPANIES

- **Community Feedback and Traditional Knowledge**
  - Beginning with the earliest phases of exploration at Kennady Lake, De Beers initiated and maintained contact with the various communities near the Project
  - Based on feedback received during the engagement process, De Beers identified community inputs for reclamation
    - Example: restore Kennady Lake as quickly as possible
  - The Plan was developed to address, to the extent possible, community inputs for reclamation
    - Example: pumping water from Lake N11 during refilling will reduce the time required to fill Kennady Lake from 20 years to 8 or 9 years

Conceptual C&R Plan – Commitments

DE BEERS
GROUP OF COMPANIES

- Use progressive or **ongoing reclamation to minimize** the total amount of area disturbed by the Project activities at any one time
- **Recover as much soil** as practical for use in reclamation activities
- **Undertake reclamation trials** throughout the life of the Project
- **Liaise with other mine operators** in the Canadian Arctic – to share reclamation information/research to apply proven practices

Overview

DE BEERS
GROUP OF COMPANIES

- Re-visit AEMP at Snap Lake and introduction to AEMP at Gahcho Kué
- Key elements of the programs
- Similarities and differences between SL and GK
- Snap Lake re-evaluation- lessons learned and path forward
- Gahcho Kué- where we are at

Overview:

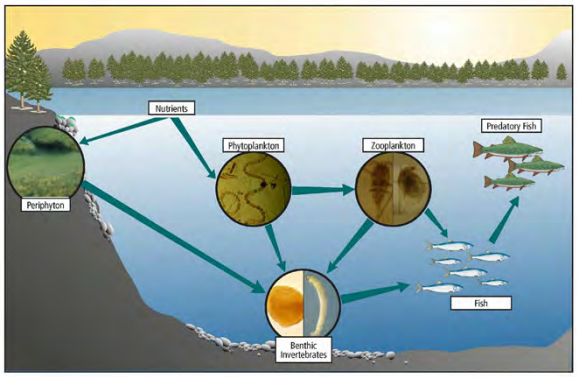
DE BEERS
GROUP OF COMPANIES

Key goals:

The water is safe to drink

The fish are good to eat

Food Web



The AEMP breakdown:

DE BEERS
GROUP OF COMPANIES

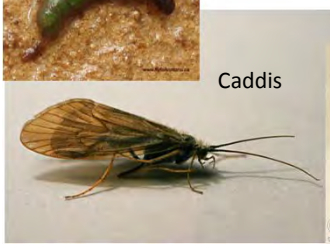
- **Six Core Components**
  - **Benthic Invertebrates**
  - **Fish: health, tissue metals, tasting, community**
  - **Plankton**
  - **Sediment Quality**
  - **Traditional Knowledge (expanded from 2005)**
  - **Water Quality**

***Same for Gahcho Kué with the addition of hydrology

Benthic Invertebrates = Bugs from the lake/stream bottom

DE BEERS
GROUP OF COMPANIES

Caddis



Midge

Stonefly

Mayfly

Water Licence Requirements:

DE BEERS GROUP OF COMPANIES

- **A comprehensive AEMP-**
  - Living and non-living factors- model
  - Predict short and long-term effects
  - Test predictions made
  - Assess and need for additional action
  - Annual report
  - Major re-evaluation every 4 years
  - AEMP Response Plan
    - Significance thresholds
    - Action levels
    - Response

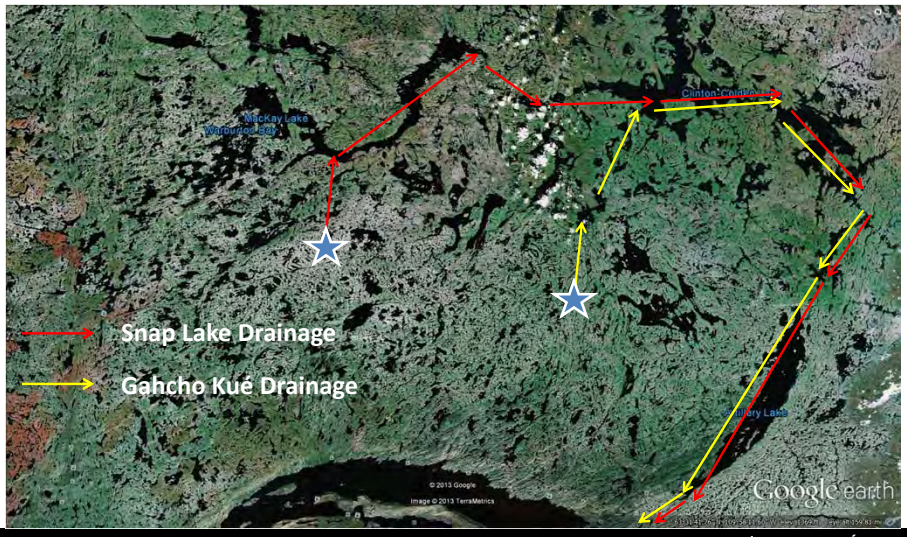
Sampling Methods

DE BEERS GROUP OF COMPANIES

- Sampling methods and data analyses are described and conducted on a component-specific basis- *check out the stations after this presentation*
- Samples collected in field, analyzed in the lab and compared to baseline and reference lakes.

The big picture: watershed

DE BEERS
GROUP OF COMPANIES



The similarities

DE BEERS
GROUP OF COMPANIES

Snap Lake fishes

- Burbot
- Lake Chub
- Slimy Sculpin
- Northern Pike (only Northeast Lake)
- Lake Trout
- Round Whitefish
- Arctic Grayling
- Longnose Sucker

Gahcho Kué fishes

- Burbot
- Lake Chub
- Slimy Sculpin
- Northern Pike
- Lake Trout
- Round Whitefish
- Arctic Grayling
- Longnose Sucker
- Ninespine stickleback

Key differences between Snap Lake and Gahcho Kué

DE BEERS
GROUP OF COMPANIES

- Snap Lake- underground
  Gahcho Kué- open pit
- Snap Lake is largely protected while Kennady Lake must be isolated and de-watered
- GK- downstream monitoring important

AEMP 2005-2011

DE BEERS
GROUP OF COMPANIES

Key Findings

- Design was appropriate (i.e. detected effects)
- As predicted, water quality changing in Snap Lake and downstream lakes = ↑nutrients
- But no evidence that changes are affecting the health of the lake or the drinking water
- Plankton and aquatic bug community changing likely due to nutrient enrichment
- Fish health, fish community and fish taste do not appear to be affected by changes to the water quality

Snap Lake AEMP 2005-2011

DE BEERS GROUP OF COMPANIES

Lessons Learned

Challenges

- Flow rates increased faster than expected
- Northwest arm not appropriate as reference*
- Gradient-style study design not appropriate
- Combining environmental and biology data- (e.g., water temperature affecting fish spawning times)

Successes

- Sample collection successful despite harsh climate
- Water quality models appropriate
- Predictions appear to be appropriate

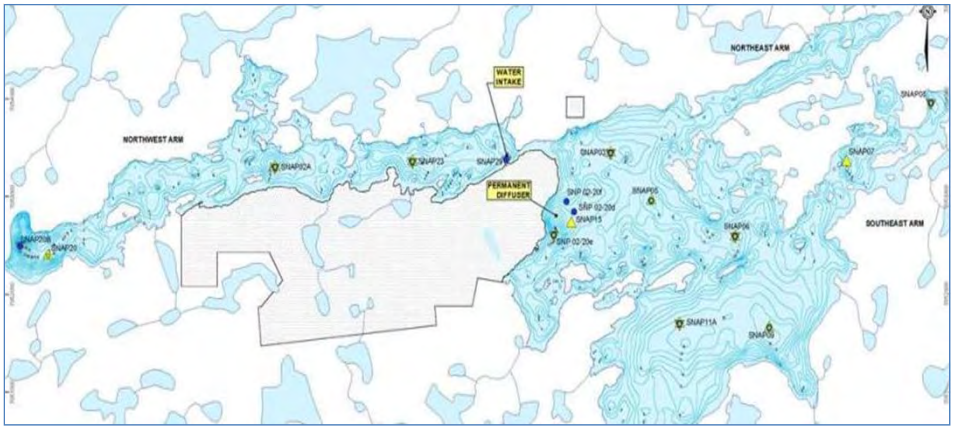
Snap Lake: Sampling Stations

DE BEERS GROUP OF COMPANIES

- In 2005, stations chosen to see if changes occurred ***further away*** from the mine
- In 2013, there is a change to looking at how things are ***changing over time*** and ***downstream***
- Why the change?
  - consistency among components
  - consistency over time
  - More important to compare to reference lakes and downstream conditions
  - Mathematical: enough sampling to see cause and effect

Proposed Monitoring Stations in Snap Lake

DE BEERS
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Proposed Monitoring Stations at Northeast Lake

DE BEERS
GROUP OF COMPANIES

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Proposed Monitoring Locations for Lake 13

DE BEERS
GROUP OF COMPANIES

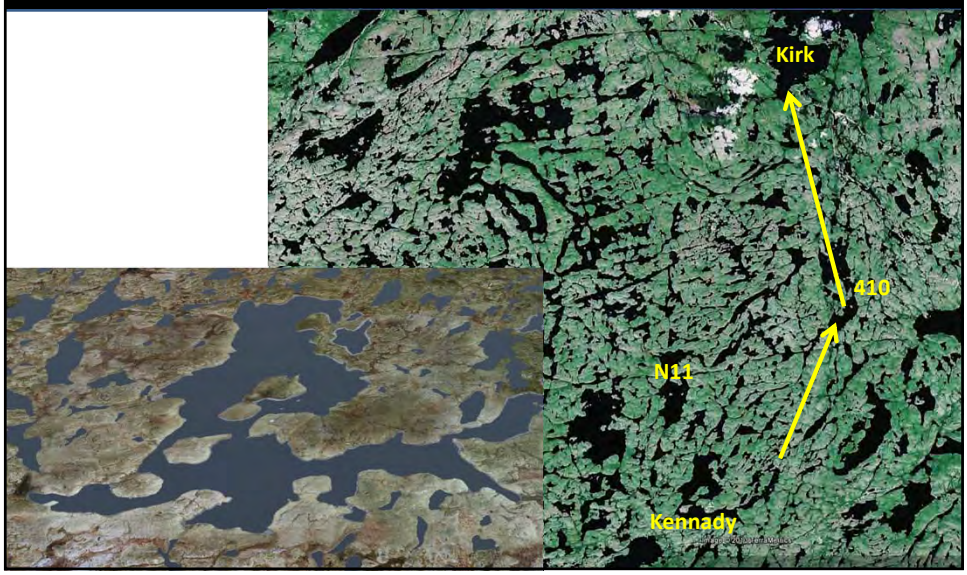
Current Process

DE BEERS
GROUP OF COMPANIES

- Snap Lake is redesigning the AEMP:
  - Sept. 2012- Community Meeting
  - Oct. 2012- 5 year summary (reevaluation) submitted
  - Nov. 2012- Redesign submitted
  - Jan. 2013- Technical Sessions
  - May 2013- Weight of evidence to be discussed
- Monitoring Program approved
- Under water license re-evaluation and redesign is required every *3 years*

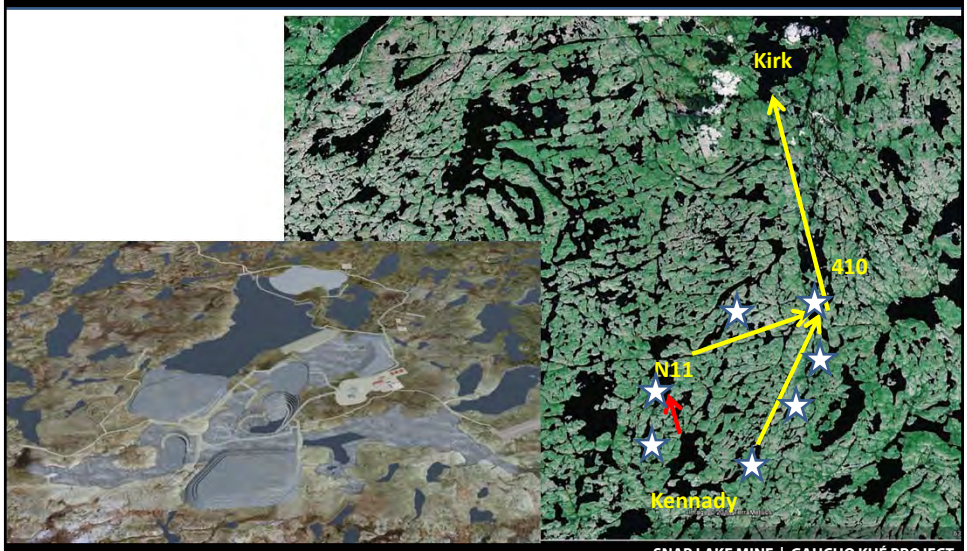
Gahcho Kué: Currently

De Beers
GROUP OF COMPANIES



Gahcho Kué AEMP Phase 1: De-watering/ Construction

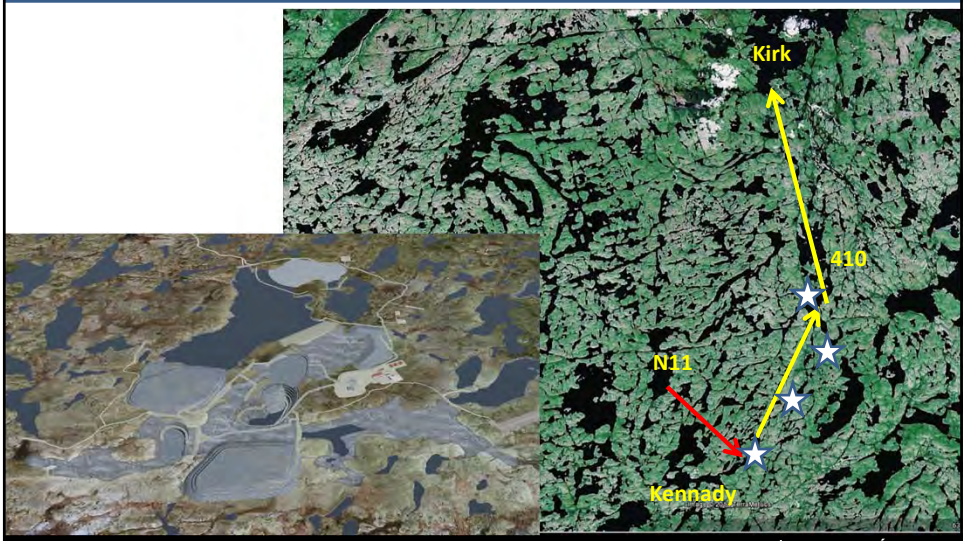
De Beers
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Gahcho Kué AEMP Phase 2: Operations/ Closure

De Beers
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Downstream flow

De Beers
GROUP OF COMPANIES

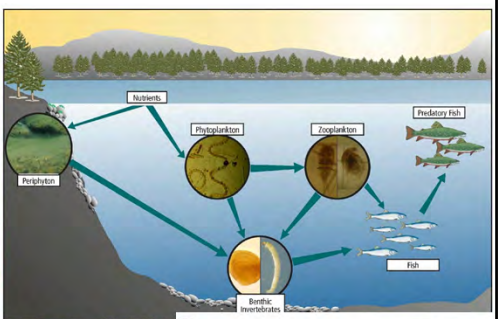
Water will be pumped from Lake N11 to the outflow of Kennady Lake to maintain natural water levels during the spring and summer

The purpose is to protect spawning fishes such as Arctic grayling.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

The challenges with finding good reference lakes

DE BEERS GROUP OF COMPANIES



Baseline and Reference Lakes

DE BEERS GROUP OF COMPANIES

- Snap Lake:
  2 new lakes chosen based on concerns from communities and regulators
- Gahcho Kué: East Lake and Reference Lake 2 & 3
  But we are looking for community advice during site visits in summer 2013.

Special Studies

DE BEERS
GROUP OF COMPANIES

- Occur as needed
- Include research activities that support monitoring
- Focus on development of monitoring methods/ findings and a better understanding of northern lakes/ rivers

- Currently proposed special studies include:
  1. Near shore environment
  2. Picoplankton
  3. Downstream Lakes
  4. Number of lake trout
  5. Food Web Analysis

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Traditional Knowledge

DE BEERS
GROUP OF COMPANIES

– Traditional Knowledge from Environmental Assessment
– Annual Fish Tasting Program
– Input on sampling sites and reference lake selection

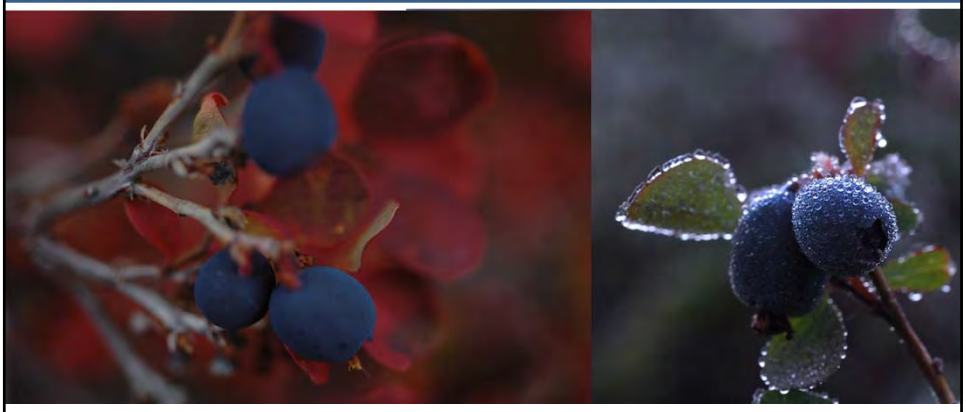
SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Questions/Comments?
SNAP LAKE MINE | GAHCHO KUÉ PROJECT

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Don’t forget the berries during the fish tasting event

DE BEERS
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

NOTE: Some of the slides in the IBA presentation have been deleted from this record to respect confidentiality requirements of the IBA with the Lutsel K'e Dene First Nation.

IBA Presentation Overview

De Beers
GROUP OF COMPANIES

- Purpose
- Overview of the Snap Lake Impact Benefit Agreement
- Update on the implementation of the IBA
- Update on the 2013 Annual Work Plan
- An opportunity for questions & suggestions

Introductions

De Beers
GROUP OF COMPANIES

- Veronica Chisholm, Permitting Manager,
- Tim Harris, Manager, Business Development
- Craig Blackie, Superintendent, Aquatics
- Alex Hood, Superintendent Environment & Permitting
- Sabet Biscaye, Superintendent Community Relations
- Nicole Harris, Sr. Human Resources Coordinator
- Maureen Overliw, Recorder

Training Opportunities in 2013

DE BEERS
GROUP OF COMPANIES

- Partnership with the Mine Training Society to provide work placements – encourage LKDFN members to participate.
- When new apprenticeships open up, HR will work directly with the LKDFN IBA/PA Coordinator to actively seek strong candidates for these positions with the goal of further closing the training and employment gaps.
- Plan to bring the local Aurora College Instructor to site to meet with training staff (2013 Work Plan).

Employment

DE BEERS
GROUP OF COMPANIES

- 2012 STATS

Number of Employees (De Beers & Contractors) working at Snap Lake
January 1 to December 31, 2012

Priority Group	Unskilled	Semi Skilled	Skilled	Professional	Management	TOTAL Active Employees
LKDFN	4	4	0	0	0	8
Total Active Employees	110	319	382	23	76	910
% of total that are LKDFN Members	4%	1%	0	0	0	1%

Employment

De Beers
GROUP OF COMPANIES

- 2013 STATS

Number of Employees (De Beers & Contractors) working at Snap Lake
January 1 to March 31, 2013

Priority Group	Unskilled	Semi Skilled	Skilled	Professional	Management	TOTAL Active Employees
LKDFN	4	5	0	0	0	9
Total Active Employees	121	335	402	23	76	957
% of total that are LKDFN Members	3%	1.5%	0	0	0	1%

Health & Wellness

De Beers
GROUP OF COMPANIES

De Beers Programs

- Drug & Alcohol Policy
- Your Money Matters Course
- Cross Cultural Orientation Course
- Cultural Centre Activities
- De Beers Books in Homes Literacy Program

Health & Wellness

De Beers
GROUP OF COMPANIES

Community Programs and Partnerships

- Men's & Youth Handgames Teams
- Career Pathing Workshop
- Spring Carnival
- National Aboriginal Day Celebrations
- Radio Society
- Community Appreciation
- Work Skills Training – ASETS Program
- School Christmas Party and Year – end barbeque
- Chief & Council Drug & Alcohol Strategic Planning Workshop
- Elders' Christmas Party
- National Addictions Awareness Week Activities

Questions?

De Beers
GROUP OF COMPANIES

MARSI

2012 Recruitment Efforts

De Beers
GROUP OF COMPANIES

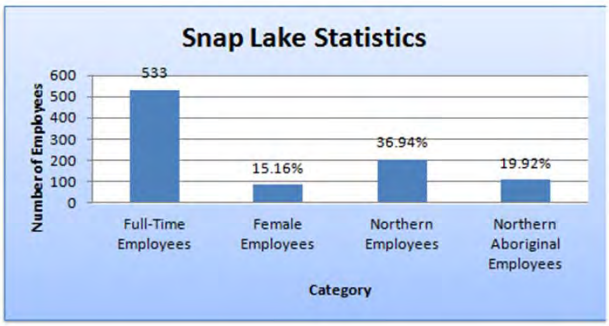
2012 De Beers Recruitment				
Total Competions	Total Applications Received	Total Northern Applicants	Total Northern Aboriginal Applicants	IBA Applicants
78	3,907	1,112	514	345
		Percentage of Total	Percentage of Total	Percentage of Total
		28%	13%	9%
Total Hired	Total Southerners Hired	Total Northerners Hired	Total Northern Northern Aboriginals Hired	IBA Members Hired
93	50	43	23	14
		Percentage of Total Hired	Percentage of Total Hired	Percentage of Total Hired
		46%	25%	15%

2012 Total LKDFN Applicants: 10

Recruitment challenges continue with finding relevant skills and abilities to fill the vacancies at Snap Lake with Northern residents.

Snap Lake Mine Statistics

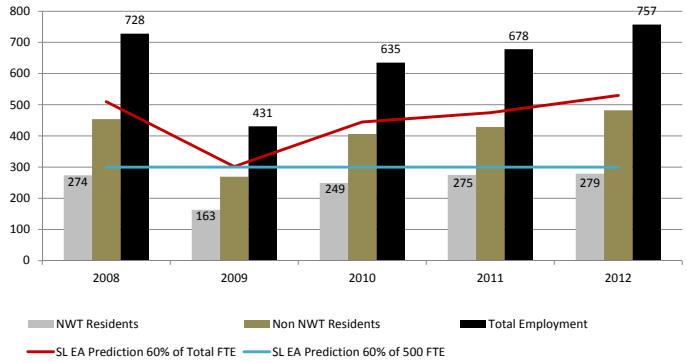
De Beers
GROUP OF COMPANIES



*as of May 2013

Snap Lake Mine Employment History

De Beers
GROUP OF COMPANIES



- During the Snap Lake Environmental Assessment, De Beers predicted there would be 500 FTE for the Operations Phase and that 60% or 300 would be NWT Residents
- In 2012, De Beers and its contractors employed 757 FTE, of which 36% or 279 were NWT Residents
- In 2012, 61% of the workforce were De Beers employees and 39% were Contractors

NWT Diamond Mine Employment - 2011

DE BEERS
GROUP OF COMPANIES

	Predicted Employees Operations Phase	Actual Employment (December 2011)	# Northern Resident Predicted	Actual Northern Resident Employment	**Northern** Residency Variance (Actual versus Predictions)
BHP Billiton's Ekati Mine	926	1,213	574	650 (54%)	+76
Diavik Diamond Mine	400	1,137	264	642 (56%)	+378
De Beers Snap Lake Mine	500	678	300	249 (37%)	-51
Predicted Total Workforce Requirements	1,826	3,044	1,138	1,541	**+403**

The Good News: *In 12 Years of Diamond Mining in the NWT, 403 more people than industry forecast would be working in our industry are in fact employed. Training and Development has been successful.*

The Challenge: For De Beers and other new mines opening up in the NWT, continued government educational investment in the NWT population that is not currently employed is required.

Socio-Economic Agreement Training Commitment

DE BEERS
GROUP OF COMPANIES

	SUMMARY			
	Trades Training	Apprenticeship	UG	
Commitment	10	10	20	40
Current Trainees	9	7	5	21
Program Graduates	16	5	18	39
Trainees To Date	24	23	34	81

Ensuring Northern Residents are Priority

De Beers
GROUP OF COMPANIES

- Recruitment
  - News/North
  - Jobsnorth.ca
  - Community Postings
  - Website
  - Direct Human Resources Contact Information
- Pick-up points in 11 NWT Communities
- Travel Allowance to get to Pick-up Points
- Partnership with the Mine Training Society
- Northern Allowances
  - NWT Salary Enhancement Benefits
  - Remote Site Allowance

Trades / Apprentices

De Beers
GROUP OF COMPANIES

- 7 apprentices on track to become journeypersons
- Currently 9 trades trainees
- 5 Underground Mining Trainees
- 11 Females in Underground Miner positions
- Since the mine opened, 39 northerners have graduated from our training programs

Trades / Apprentices (Cont'd)

De Beers
GROUP OF COMPANIES

- Apprenticeship Program Fully Funded
- Accommodations while in school of choice fully funded
- All trainees & apprentices hired are northern Aboriginal
- Assistance with schooling material from our on site Training Coordinators
- Trades Entrance Exam assistance and preparation through Learning Centre

Workforce Development

De Beers
GROUP OF COMPANIES

- Work Placements facilitated through MTS
  - 4 Mine Process Operator Trainees joined us in 2013 for work placement experience. One has recently been hired as an Operator Trainee on a full time basis while another's contract was extended for Process Summer Student work.
- Summer Work Placement of 2 Maintenance Helpers
- 2 Aurora College Office Administration work placements in 2012
- Continued support and enrollment of employees in the Northern Leadership Development Program through Aurora College
- High School Career Pathing Workshop May 2013

Mine Training Society Partnership

DE BEERS
GROUP OF COMPANIES

- Introduction to Mining (Part 1)
  - 6 week program
  - Hay River, Yellowknife, Fort Smith
  - Start Date: Possible July start
- Underground Miner Training Program (Part 2)
  - 12 week Program
  - Intake Start Date: August 26th
- Mineral Processing Operator Trainee Program
  - 14 weeks
  - Fort Smith
  - Start Date: September 3 – December 6th, 2013 / January 8th 2014

NWT Post Secondary Scholarship Program

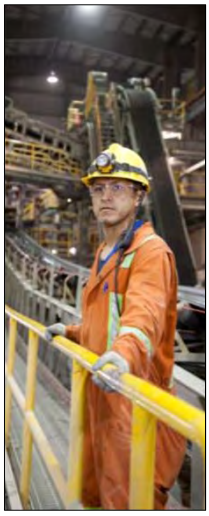
DE BEERS
GROUP OF COMPANIES

- Two kinds of scholarships available to NWT resident students enrolled in or attending post-secondary degree programs
- 15 “lump sum” scholarships worth $2,000 each
- Education Sponsorship worth up to $55,000 over a four-year degree program

Lump Sum Scholarships

De Beers
GROUP OF COMPANIES

- Available to NWT students studying in the following degree programs:
- Mine Engineering;
- Mine Geology;
- Finance & Accounting (Commerce);
- Human Resources;
- Occupational Health & Safety;
- Environmental Sciences;
- Metallurgy & Chemical Engineering; and,
- Mechanical & Electrical Engineering



Education Sponsorship

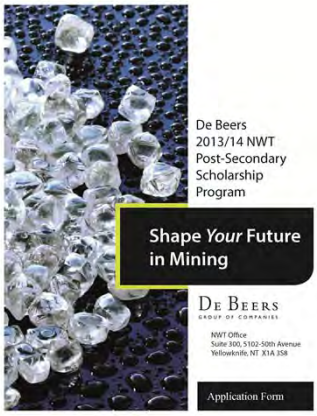
De Beers
GROUP OF COMPANIES

- Up to four years of significant financial support on an increasing scale
- Summer employment between school years
- Full-time employment upon completion of degree

How to Apply

DE BEERS
GROUP OF COMPANIES

- Application form online – www.debeersgroup.com/canada
- Two letters of reference
- Awarded on merit, including academic achievement, community service, leadership and extra-curricular activities



Forward Looking…

DE BEERS
GROUP OF COMPANIES

- Continued focus on IBA and Northern hires for Snap Lake Mine
- Continued focus on presence at community career fairs when available
- Partnership with Mine Training Society

Questions?

De Beers
GROUP OF COMPANIES

De Beers
GROUP OF COMPANIES

Community Workshops
Business Initiatives

Snap Lake Mine Update

Business Investment

De Beers
GROUP OF COMPANIES

Construction and Operations Expenditure January 2005 to December 15, 2012		
	Expenditure to Date	Percent of Expenditure
Total Expenditure YTD	$1,893,410,418	N/A
NWT Portion	$1,322,019,874	69.82%
Aboriginal Portion on NWT Expenditure	$768,013,863	58.09%

De Beers Business Policy

De Beers
GROUP OF COMPANIES

- Based on three pillars of sustainable development;
  - Economic
  - Social
  - Environmental sustainability
- Goods and Services
  - Goods and Services procured from Businesses must meet mining industry service and quality standards
- Long Term Sustainability/Business Capacity
  - Development of long-term sustainability and business capacity will be a fundamental consideration when entering into business relationships with Aboriginal and/or NWT businesses
  - Our work with Aboriginal and/or NWT business will support the development of technical and business skills and capacities that are transferable to other industries

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- De Beers will treat all companies fairly regardless of size
- Contractors
  - All contractors will be required to understand and comply with De Beers' Safety, Health, and Environmental Management Systems
  - All contractors will be required to understand, comply with and report on their success regarding northern hiring priorities

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- Business Registry
  - Develop a Business Registry for Northern and Aboriginal businesses to pre-qualify themselves for business opportunities
- Joint Ventures
  - Identify possible joint venture opportunities for Aboriginal Businesses
- Post Award Analyses
  - Coordinate post-award analyses for unsuccessful Northern and Aboriginal bidders to communicate areas of improvement in the commercial and/or technical aspects of the final evaluation

De Beers Business Registry

DE BEERS
GROUP OF COMPANIES

- June 2013 Re-launch
- Businesses can register
  - Company Info
  - Goods and Services
  - Socio-Economic Commitments
  - Work History
  - Health and Safety
- De Beers Procurement
  - Pre-qualify Businesses
  - Learn of new Business Formation and Joint Ventures

De Beers Business Registry

DE BEERS
GROUP OF COMPANIES

- Current Businesses
- Aboriginal Business Development Arms
- Profiles must be complete
- De Beers will assist those who require assistance to complete Profile online
- **www.debeersgroup.com/canada/businessregistry**

Snap Lake Opportunities

De Beers
GROUP OF COMPANIES

- Consolidation and Expediting -11/30/2013
- Winter Road Construction - 10/31/2013
- Fuel Haul – Winter Road - 8/31/2013
- Catering, Janitorial, Housekeeping - 9/30/2013

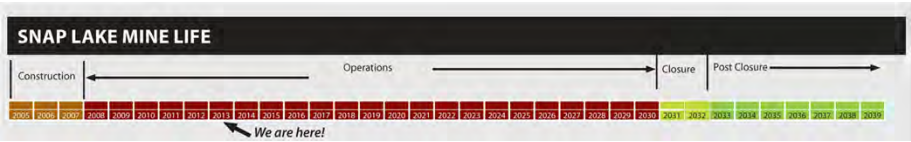
Presentation Overview

DE BEERS GROUP OF COMPANIES

- Snap Lake Regulatory Update
- Update on Snap Lake Water Management
- Snap Lake Closure and Reclamation
- Snap Lake Aquatic Effects Monitoring
- Demonstrations

Snap Lake Mine - Regulatory

DE BEERS GROUP OF COMPANIES

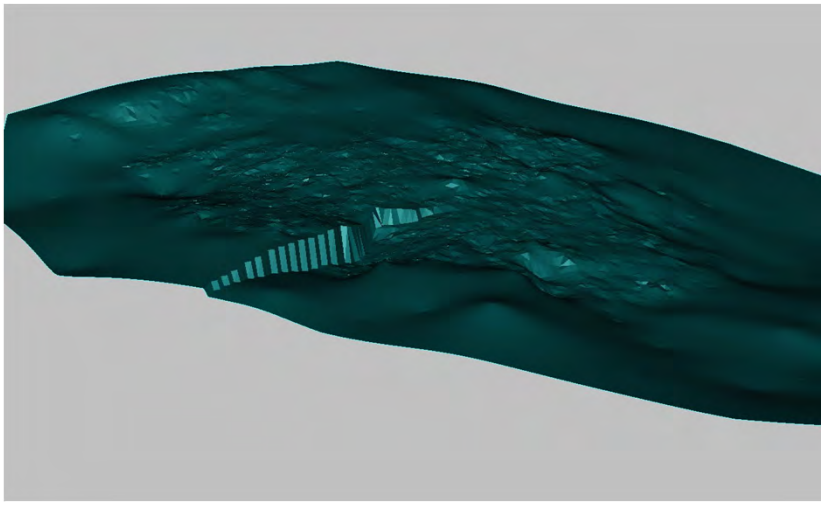


Snap Lake Mine officially opened in July 2008
Water License Amendment approved on June 14, 2012
Aquatic Effects Monitoring Program (AEMP) redesign in progress
- September 9th, 2012 community meeting
- January 24th, 2013 technical session on reevaluation and monitoring
- May 29th, 2013 technical session on Weight of evidence and response framework
- Intent is for Board to approve plan June 20, 2013

Interim Closure and Reclamation Plan (ICRP) process
- February community meetings to discuss Closure
- May 13th, 2013 Technical Session
- Currently revising the ICRP based on feedback
- Board process will commence once submission is complete (likely end of May)

Snap Lake Mine - Kimberlites

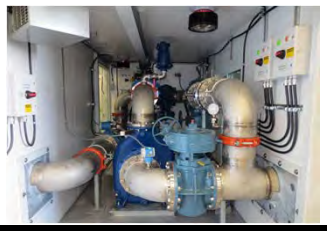
De Beers
GROUP OF COMPANIES



Snap Lake Mine Water Management Enhancements

De Beers
GROUP OF COMPANIES

- Sump infrastructure upgrade
- Continuous sump monitoring & more mature protocols
- “Flocc tank” pre-clarifying pool
- Debottlenecking & optimization of WTP & TWTP
- Increase of Clean Water System capacity U/G up to 8500 m3/d
- Increased monitoring/testing of bogs and shorelines pre and post freshet.
- Upcoming PS3 repair
- U/G water model updated
- IL6 ditch construction completed



Spring Freshet – Extra Measures

DE BEERS
GROUP OF COMPANIES

- Increased monitoring
- Monitoring areas where spring freshet is most common
- Increasing discharge to the lake with a second diffuser
- Putting in place extra monitoring at SNP stations
- Monitoring Frequency – Daily
- Sampling Frequency - Weekly

SURVEILLANCE NETWORK PROGRAMME SAMPLING STATIONS

Site Operations Update

De Beers
GROUP OF COMPANIES

- Paste
  - Underground paste trials continuing
- Waste Management
  - New incinerator purchased, installation this summer
- North Pile Raise
  - Filling all voids within the starter cell to achieve final pile height

Water License

De Beers
GROUP OF COMPANIES

- Site specific work being carried out in preparation for application
- Update water modeling
  - Surface
  - Underground
- Additional water management enhancements for increased water discharge

Objectives

De Beers
GROUP OF COMPANIES

- The objective of this presentation is to provide the proposed closure options and research for discussion and feedback
- Expected outcomes include:
  - A better understanding by community members of:
    - De Beers approach to community engagement.
    - The closure planning process for the Snap Lake Mine.
  - A better understanding by De Beers of:
    - community member questions and concerns regarding closure planning.
    - community member questions and concerns regarding De Beers community engagement approach.

Presentation Outline

DE BEERS
GROUP OF COMPANIES

- Overview of Closure Planning
- Progression of Closure and Reclamation Plan
- History of Engagement
- Current Interim Closure and Red Plan Revision
  - Mine components and closure objectives
  - Closure Criteria
  - Options and Research
- Moving Forward

Closure Planning in the NWT

DE BEERS
GROUP OF COMPANIES

- **Regulatory Policy**
  - Developed by AANDC/INAC in 1980s in response to environmental impacts and financial burden to the Canadian public. In 2002, INAC released its *Mine Site Reclamation Policy for the Northwest Territories*.
- **Closure and Reclamation Plans**
  - Required as a condition of Water Licence issued by Land and Water Boards of the Mackenzie Valley.
- **Closure Plan Guidelines**
  - Developed by AANDC/INAC in 2000s to standardize process for proponents. The guidelines were revised by AANDC/INAC in partnership with the Land and Water Boards of the Mackenzie Valley in 2011. A finalized version of the guidelines has yet to be released.

Closure Planning in the NWT

De Beers
GROUP OF COMPANIES

- De Beers Internal Policies also guide operations and closure planning.
  - Sustainable Development
  - Working with Aboriginal Communities
  - Mineral Waste Management
- Anglo American mine closure planning toolbox
  - The purpose of the toolbox is to ensure that closure planning is progressing at an adequate rate.

Time remaining to scheduled closure				
> 25 years	25-15 years	15-10 years	10-5 years	5-0 years
Preliminary Closure Plan		Draft Closure Plan	Detailed Closure Plan	Final Closure Plan

Source: Anglo American (2007). Sustainable Development Planning and Mine Closure. Toolbox, v1, 2007.

Closure Timeline

De Beers
GROUP OF COMPANIES

- Snap Lake Mine is in the early stages of closure planning relative to nearby diamond mines (Ekati and Diavik).
- Final Closure and Reclamation Plan will be completed by 2028.
- Expected years to the end of mining operations are: Ekati - 7 years, Diavik - 9 years, and Snap Lake - 17 years.

Community Engagement

De Beers
GROUP OF COMPANIES

- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as part of the Environmental Assessment process
  - Conceptual
- Methods of engagement included:
  - Information sessions in all several communities
  - Open house community meetings
  - One-on-one interviews
  - Guided site tours

Community Engagement

De Beers
GROUP OF COMPANIES

- First Revision of Closure and Reclamation Plan
  - Interim Closure and Reclamation Plan (2006)
    - Requirement of the Water Licence issued by the Mackenzie Valley Land and Water Board.
    - Additional detail regarding closure methods and proposed research included to satisfy conditions of Water Licence and reviewer comments on existing plan.
- The Interim Closure and Reclamation Plan was subject to stakeholder review during the Board approval process.

Community Engagement

DE BEERS
GROUP OF COMPANIES

- Current update of the Interim Closure and Reclamation Plan (2013)
  - Methods of engagement to date have included:
    - Stakeholder workshop in spring of 2011
    - Stakeholder review
    - Technical meetings held in September 2011
    - Public hearings in December 2011
    - Stakeholder review of the proposed Closure Objectives in October 2012
      - Closure Objectives approved by the MVLWB on November 22, 2012
    - Community meetings in February 2013
    - Technical meetings in March
  - Upcoming: Site visits in summer 2013, fish tasting in September 2013.

Closure and Reclamation Plan

DE BEERS
GROUP OF COMPANIES

1. Executive Summary
2. Introduction
3. Project environment
4. Project description
5. Requirements for permanent closure and reclamation
6. Progressive reclamation
7. Temporary closure
8. Integrated schedule of activities approaching permanent closure
9. Post-closure site assessment

Progression of the Closure Plan

De Beers Group of Companies

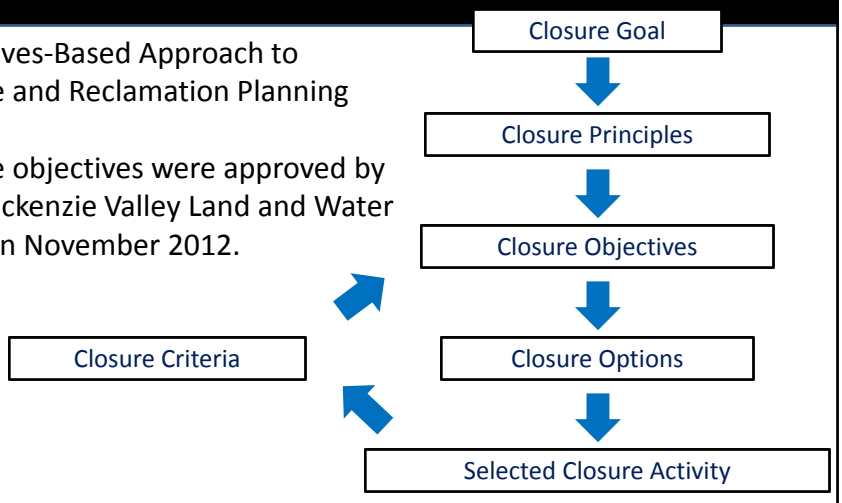
- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as a requirement of the Project Environmental Assessment
- Interim Closure and Reclamation Plan (2006)
  - Prepared as a requirement of the Water Licence MV2001L2-0002
- Interim Closure and Reclamation Plan (2011)
  - Prepared as part of the Water Licence application package
- Interim Closure and Reclamation Plan (2013)
  - Prepared as a requirement of the renewed Water Licence MV2011L2-0004.
  - Revised every 3 years
- Final Closure and Reclamation Plan (at least 2 years before the end of operations)

Closure Planning Framework

De Beers Group of Companies

Objectives-Based Approach to Closure and Reclamation Planning

Closure objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.



Research Options and Uncertainties Workshop

De Beers
GROUP OF COMPANIES

- March 13 meeting to discuss Research options and uncertainty
  - Required by the MVLWB
- De Beers heard that a “decision road map” would be useful and is currently being developed
- Other comments focused on progressive reclamation/lessons learned from other mine sites
- ICRP to be revised and resubmitted to the MVLWB for stakeholder review
- Board process commences at that time
- Intent is that Closure criteria will be developed as the plan progresses

Current step: Reclamation Research Plan

- Aim to resolve uncertainties and answer questions pertaining to environmental risks for closure options or selected closure activities.

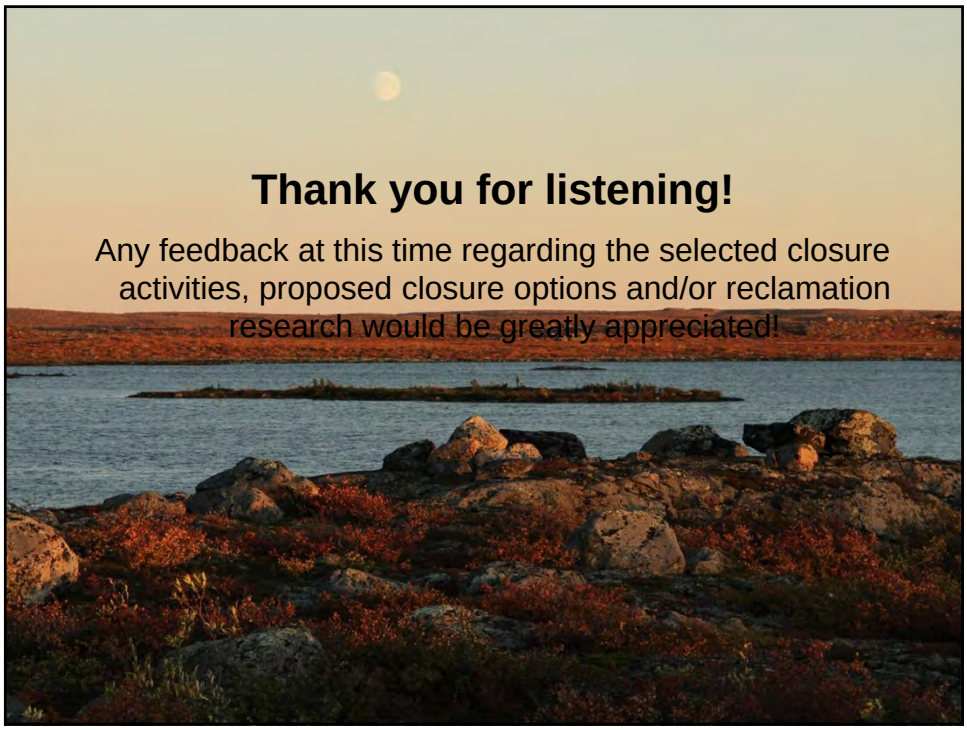
Closure Objective	What is the best closure objective for a particular mine component? Is the objective achievable?
Closure Options	Which of the closure options will best achieve the closure objective?
Selected Closure Activity	What is the best way to implement the selected closure activity?
Closure Criteria	What is the best way to measure whether the selected closure activity meets the closure objective?

Reclamation Research Plan

Next Steps

DE BEERS
GROUP OF COMPANIES

- De Beers is currently in the process of revising the Interim Closure and Reclamation Plan
  - Closure Objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.
  - De Beers visited communities in February 2013 to discuss closure
  - De Beers hosted a Closure Options and Research Workshop held in Yellowknife on March 13, 2013.
  - De Beers submits the Interim Closure and Reclamation Plan (version 3.2) in June, 2013 for stakeholder review.



Overview

De Beers
GROUP OF COMPANIES

- Re-visit AEMP at Snap Lake
- Key elements of the programs
- Snap Lake re-evaluation- lessons learned and path forward

Overview:

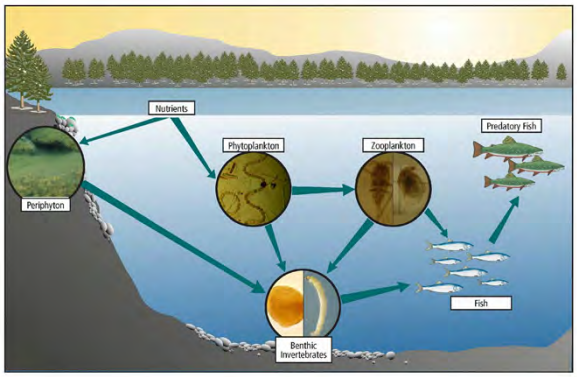
De Beers
GROUP OF COMPANIES

Key goals:

The water is safe to drink

The fish are good to eat

Food Web



The AEMP breakdown:

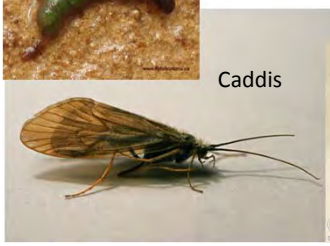
De Beers
GROUP OF COMPANIES

- **Six Core Components**
  - **Benthic Invertebrates**
  - **Fish: health, tissue metals, tasting, community**
  - **Plankton**
  - **Sediment Quality**
  - **Traditional Knowledge (expanded from 2005)**
  - **Water Quality**

Benthic Invertebrates = Bugs from the lake/stream bottom

De Beers
GROUP OF COMPANIES

Caddis



Midge

Stonefly

Mayfly

Water Licence Requirements:

De Beers
GROUP OF COMPANIES

- **A comprehensive AEMP**
  - Living and non-living factors- model
  - Predict short and long-term effects
  - Test predictions made
  - Assess and need for additional action
  - Annual report
  - Major re-evaluation every 4 years
  - AEMP Response Plan
    - Significance thresholds
    - Action levels
    - Response

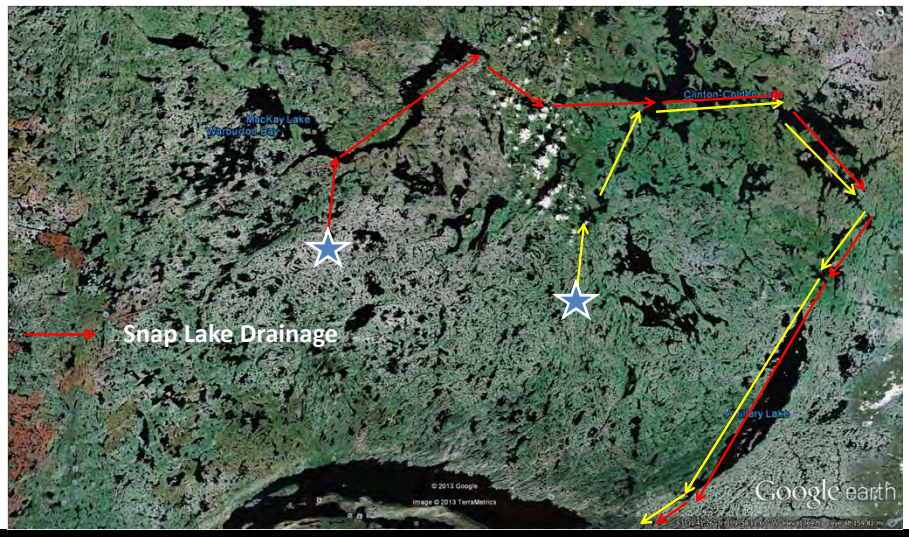
Sampling Methods

De Beers
GROUP OF COMPANIES

- Sampling methods and data analyses are described and conducted on a component-specific basis- *check out the stations after this presentation*
- Samples collected in field, analyzed in the lab and compared to baseline and reference lakes.

The big picture: watershed

De Beers
GROUP OF COMPANIES



Snap Lake Fishes

De Beers
GROUP OF COMPANIES

Snap Lake fishes

- Burbot
- Lake Chub
- Slimy Sculpin
- Northern Pike (only Northeast Lake)
- Lake Trout
- Round Whitefish
- Arctic Grayling
- Longnose Sucker

AEMP 2005-2011

De Beers
GROUP OF COMPANIES

Key Findings

- Design was appropriate (i.e. detected effects)
- As predicted, water quality changing in Snap Lake and downstream lakes = ↑nutrients
- But no evidence that changes are affecting the health of the lake or the drinking water
- Plankton and aquatic bug community changing likely due to nutrient enrichment
- Fish health, fish community and fish taste do not appear to be affected by changes to the water quality

Snap Lake AEMP 2005-2011

DE BEERS GROUP OF COMPANIES

Lessons Learned

Challenges

- Flow rates increased faster than expected
- Northwest arm not appropriate as reference*
- Gradient-style study design not appropriate
- Combining environmental and biology data- (e.g., water temperature affecting fish spawning times)

Successes

- Sample collection successful despite harsh climate
- Water quality models appropriate
- Predictions appear to be appropriate

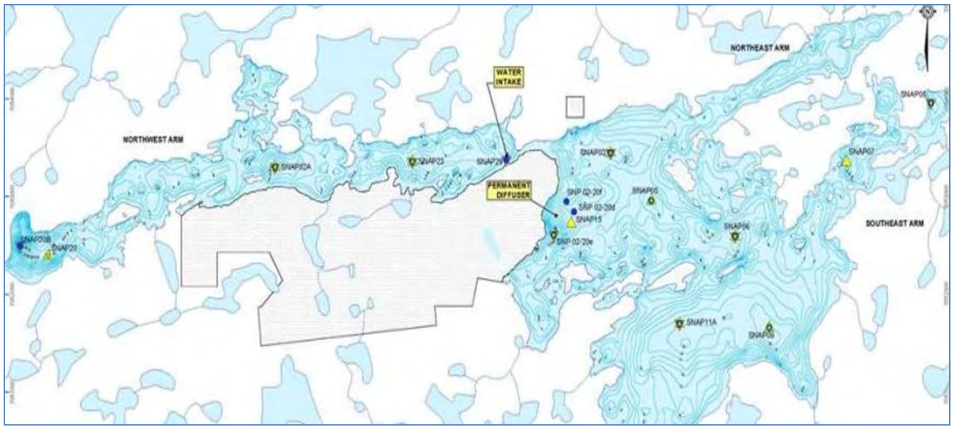
Snap Lake: Sampling Stations

DE BEERS GROUP OF COMPANIES

- In 2005, stations chosen to see if changes occurred ***further away*** from the mine
- In 2013, there is a change to looking at how things are ***changing over time*** and ***downstream***
- Why the change?
  - consistency among components
  - consistency over time
  - More important to compare to reference lakes and downstream conditions
  - Mathematical: enough sampling to see cause and effect

Proposed Monitoring Stations in Snap Lake

De Beers
GROUP OF COMPANIES



Proposed Monitoring Stations at Northeast Lake

De Beers
GROUP OF COMPANIES

Proposed Monitoring Locations for Lake 13

De Beers
GROUP OF COMPANIES

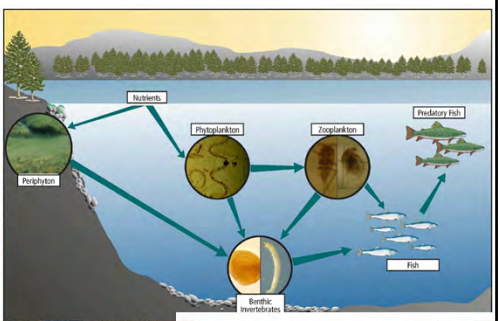
Current Process

De Beers
GROUP OF COMPANIES

- Snap Lake is redesigning the AEMP:
  - Sept. 2012- Community Meeting
  - Oct. 2012- 5 year summary (reevaluation) submitted
  - Nov. 2012- Redesign submitted
  - Jan. 2013- Technical Sessions
  - May 2013- Weight of evidence to be discussed
- Monitoring Program approved
- Under water license re-evaluation and redesign is required every *3 years*

The challenges with finding good reference lakes

De Beers
GROUP OF COMPANIES



Baseline and Reference Lakes

De Beers
GROUP OF COMPANIES

- Snap Lake:
  2 new lakes chosen based on concerns from communities and regulators

Special Studies

DE BEERS
GROUP OF COMPANIES

- Occur as needed
- Include research activities that support monitoring
- Focus on development of monitoring methods/ findings and a better understanding of northern lakes/ rivers

- Currently proposed special studies include:
  1. Near shore environment
  2. Picoplankton
  3. Downstream Lakes
  4. Number of lake trout
  5. Food Web Analysis

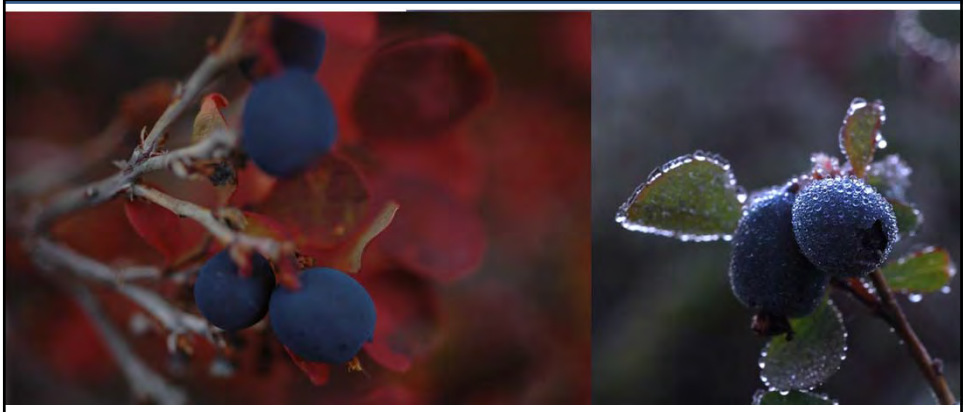
Traditional Knowledge

DE BEERS
GROUP OF COMPANIES

– Traditional Knowledge from Environmental Assessment
– Annual Fish Tasting Program
– Input on sampling sites and reference lake selection

Don’t forget the berries during the fish tasting event

De Beers
GROUP OF COMPANIES



Questions/Comments?

Meeting Overview

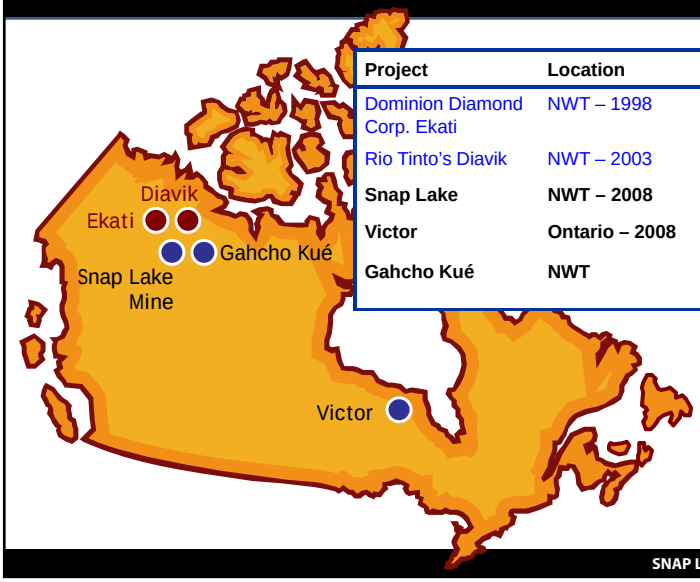
De Beers
GROUP OF COMPANIES

De Beers Update Snap and GK

- Human Resources Initiatives
- Business Opportunities
- Environment & Permitting Overview
- Closure and Reclamation
- Aquatic Effects Monitoring Program

De Beers in Canada

De Beers
GROUP OF COMPANIES



Project	Location	Production
Dominion Diamond Corp. Ekati	NWT – 1998	2.5 million carats/2011
Rio Tinto's Diavik	NWT – 2003	6.7 million carats/2011
Snap Lake	**NWT – 2008**	**870,000 carats/2012**
Victor	**Ontario – 2008**	**690,000 carats/2012**
Gahcho Kué	**NWT**	**Environmental Impact Review**

Snap Lake Mine – Quick Facts

De Beers
GROUP OF COMPANIES

- Completely underground operation
- 220 km northeast of Yellowknife
- Mining area <500 ha
- 2.5m kimberlite dyke dips beneath Snap Lake 12-15 degrees
- New Land Use Permit issued on February 16, 2011 for 5 years
- New water license issued on June 14, 2012 for 8 years

2012 Water Management Upgrades

DE BEERS
GROUP OF COMPANIES

- Pro-active water management enhancement ongoing
- De-icing of water collection sumps on surface
- 24/7 monitoring of surface water collection sumps
- Flowmeters installed in all lines into the Water Management Pond
- Improvements to Water Treatment Plant
- Increased discharge capacity for treated water
- Community visits by winter road and plane in May to see water management improvements
- No incidents during 2012 spring melt

Gahcho Kué Project

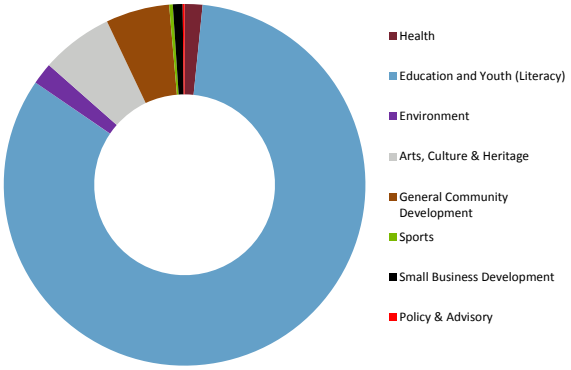
DE BEERS
GROUP OF COMPANIES

- Located at Kennady Lake, 280 km northeast of Yellowknife, 80 km southeast of Snap lake Mine
- Joint Venture – De Beers Canada (51% - operator); Mountain Province Diamonds (49%)
- Open Pit Operation – 5034, Hearne & Tuzo
- $600-$650 million capital cost (2010 NI 43-101 report)
- 2 year construction
- ~11 year life of mine
- 360-380 jobs at full production
- 690 jobs at peak of construction
- Average annual production 4.5 million carats/3 million tonnes

Social Investment

DE BEERS
GROUP OF COMPANIES

- $13.3 million spent on social investment in the Northwest Territories from 2008-2012
- 83% focused on training, education and literacy
- $3.3 million in social investment in 2012

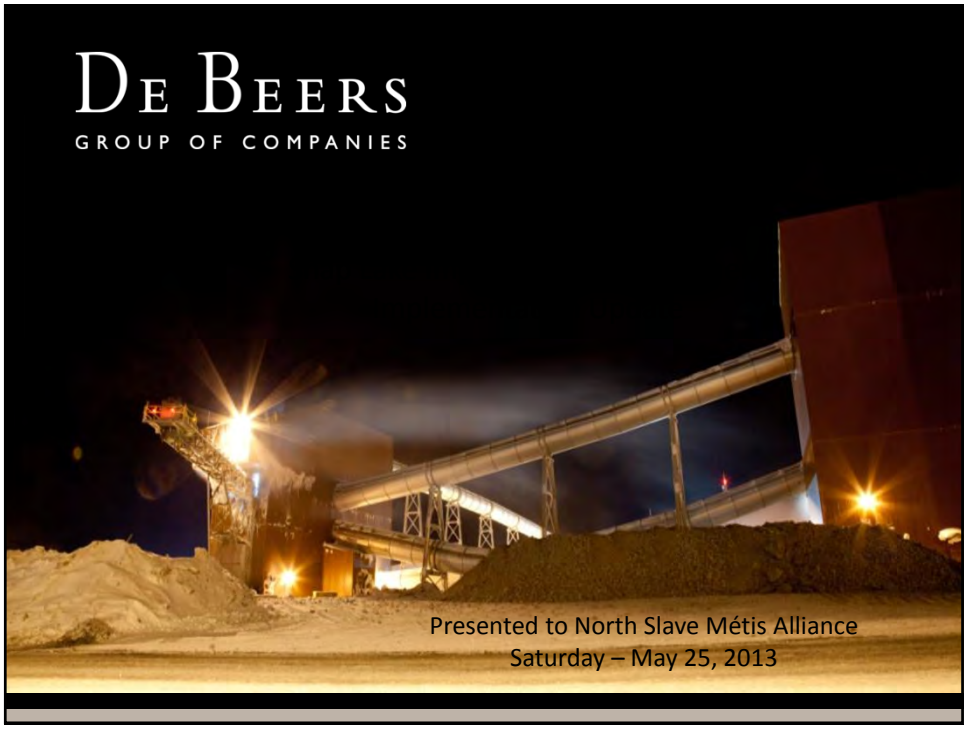


Socio Economic Agreements

DE BEERS
GROUP OF COMPANIES

- Are follow-up mechanisms to monitor and adaptively manage socio-economic aspects of NWT mining operations
- Are aimed at optimizing the opportunities for mining projects for NWT Residents
- Typically include s:
  - targets and priorities for NWT Resident employment and training
  - targets for expenditure on goods & services with NWT businesses
  - commitments by mining companies to promote and support community health & wellness
  - commitments to promoting and supporting community culture and traditions
  - a requirement to publicly report on fulfillment of commitments and achievement of targets

De Beers signed a Socio -Economic Agreement with the GNWT for Snap Lake – May 18, 2004. The 2012 Annual Report will be issued in May 2013.



NOTE: Some of the slides in the IBA presentation have been deleted from this record to respect confidentiality requirements of the IBA with the North Slave Métis Alliance.

Training & Employment

DE BEERS
GROUP OF COMPANIES

Health and Wellness at Snap Lake

- Cross Cultural Orientation Course
- Drug and Alcohol Policy
- Snap Lake Cultural Centre Activities
- $25,000 investment in fitness equipment in 2012
- Focus on completing employee medicals to ensure fitness for work

Questions?

DE BEERS

2012 Recruitment Efforts

De Beers
GROUP OF COMPANIES

2012 De Beers Recruitment				
Total Competions	Total Applications Received	Total Northern Applicants	Total Northern Aboriginal Applicants	IBA Applicants
78	3,907	1,112	514	345
		Percentage of Total	Percentage of Total	Percentage of Total
		28%	13%	9%
Total Hired	Total Southerners Hired	Total Northerners Hired	Total Northern Northern Aboriginals Hired	IBA Members Hired
93	50	43	23	14
		Percentage of Total Hired	Percentage of Total Hired	Percentage of Total Hired
		46%	25%	15%

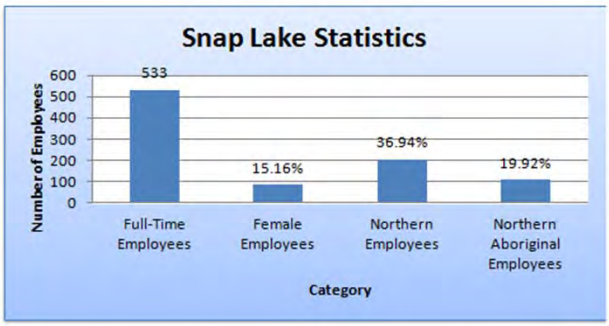
2012 Total NSMA Applicants: 6

Recruitment challenges continue with finding relevant skills and abilities to fill the vacancies at Snap Lake with Northern residents.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Snap Lake Mine Statistics

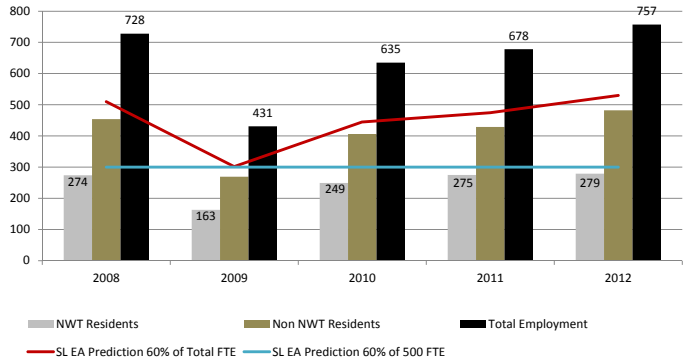
DE BEERS
GROUP OF COMPANIES



*as of May 2013

Snap Lake Mine Employment History

DE BEERS
GROUP OF COMPANIES



- During the Snap Lake Environmental Assessment, De Beers predicted there would be 500 FTE for the Operations Phase and that 60% or 300 would be NWT Residents
- In 2012, De Beers and its contractors employed 757 FTE, of which 36% or 279 were NWT Residents
- In 2012, 61% of the workforce were De Beers employees and 39% were Contractors

NWT Diamond Mine Employment - 2011

DE BEERS GROUP OF COMPANIES

	Predicted Employees Operations Phase	Actual Employment (December 2011)	# Northern Resident Predicted	Actual Northern Resident Employment	**Northern** Residency Variance (Actual versus Predictions)
BHP Billiton's Ekati Mine	926	1,213	574	650 (54%)	+76
Diavik Diamond Mine	400	1,137	264	642 (56%)	+378
De Beers Snap Lake Mine	500	678	300	249 (37%)	-51
Predicted Total Workforce Requirements	1,826	3,044	1,138	1,541	**+403**

The Good News: *In 12 Years of Diamond Mining in the NWT, 403 more people than industry forecast would be working in our industry are in fact employed. Training and Development has been successful.*

The Challenge: For De Beers and other new mines opening up in the NWT, continued government educational investment in the NWT population that is not currently employed is required.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Ensuring Northern Residents are Priority

DE BEERS GROUP OF COMPANIES

- Recruitment
  - News/North
  - Jobsnorth.ca
  - Community Postings
  - Website
  - Direct Human Resources Contact Information
- Pick-up points in 11 NWT Communities
- Travel Allowance to get to Pick-up Points
- Partnership with the Mine Training Society
- Northern Allowances
  - NWT Salary Enhancement Benefits
  - Remote Site Allowance

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Trades / Apprentices

De Beers
GROUP OF COMPANIES

- 7 apprentices on track to become journeypersons
- Currently 9 trades trainees
- 5 Underground Mining Trainees
- 11 Females in Underground Miner positions
- Since the mine opened, 39 northerners have graduated from our training programs

Trades / Apprentices (Cont'd)

De Beers
GROUP OF COMPANIES

- Apprenticeship Program Fully Funded
- Accommodations while in school of choice fully funded
- All trainees & apprentices hired are northern Aboriginal
- Assistance with schooling material from our on site Training Coordinators
- Trades Entrance Exam assistance and preparation through Learning Centre

Workforce Development

DE BEERS
GROUP OF COMPANIES

- Work Placements facilitated through MTS
  - 4 Mine Process Operator Trainees joined us in 2013 for work placement experience. One has recently been hired as an Operator Trainee on a full time basis while another's contract was extended for Process Summer Student work.
- Summer Work Placement of 2 Maintenance Helpers
- 2 Aurora College Office Administration work placements in 2012
- Continued support and enrollment of employees in the Northern Leadership Development Program through Aurora College
- High School Career Pathing Workshop May 2013

Mine Training Society Partnership

DE BEERS
GROUP OF COMPANIES

- Introduction to Mining (Part 1)
  - 6 week program
  - Hay River, Yellowknife, Fort Smith
  - Start Date: Possible July start
- Underground Miner Training Program (Part 2)
  - 12 week Program
  - Intake Start Date: August 26th
- Mineral Processing Operator Trainee Program
  - 14 weeks
  - Fort Smith
  - Start Date: September 3 – December 6th, 2013 / January 8th 2014

Gahcho Kué Opportunities

DE BEERS
GROUP OF COMPANIES

- Up to 690 jobs at peak of construction
- 360-380 jobs available during operations
- Human Resource Strategy developed in 2012
- Labour shortages continue to exist in the NWT
- Mine Training Program (MTS) will continue to be a significant partner in training Northerners for jobs at Gahcho Kué
- $5 million cash and in-kind commitment to MTS "Mining the Future" through 2015
- Mining the Future targets training in a number of areas: Mineral Process Operating Technician; Camp Cook; Cook Apprenticeship; Heavy Equipment Operator; Geoscience Field Assistant; Mining; and General Construction

NWT Post Secondary Scholarship Program

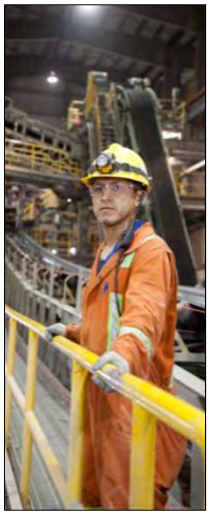
DE BEERS
GROUP OF COMPANIES

- Two kinds of scholarships available to NWT resident students enrolled in or attending post-secondary degree programs
- 15 "lump sum" scholarships worth $2,000 each
- Education Sponsorship worth up to $55,000 over a four-year degree program

Lump Sum Scholarships

De Beers
GROUP OF COMPANIES

- Available to NWT students studying in the following degree programs:
- Mine Engineering;
- Mine Geology;
- Finance & Accounting (Commerce);
- Human Resources;
- Occupational Health & Safety;
- Environmental Sciences;
- Metallurgy & Chemical Engineering; and,
- Mechanical & Electrical Engineering



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Education Sponsorship

De Beers
GROUP OF COMPANIES

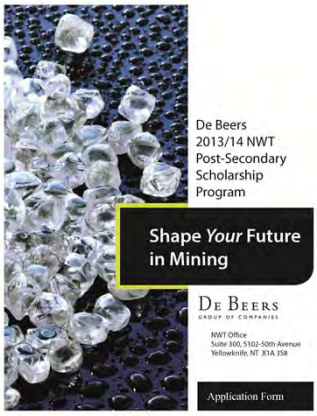
- Up to four years of significant financial support on an increasing scale
- Summer employment between school years
- Full-time employment upon completion of degree

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

How to Apply

DE BEERS
GROUP OF COMPANIES

- Application form online – www.debeersgroup.com/canada
- Two letters of reference
- Awarded on merit, including academic achievement, community service, leadership and extra-curricular activities



Forward Looking…

DE BEERS
GROUP OF COMPANIES

- Continued focus on Northern hires for Snap Lake Mine and upcoming GK hiring
- Continued focus on presence at community career fairs when available
- Partnership with Mine Training Society

Questions?

De Beers
GROUP OF COMPANIES

Business Investment

De Beers
GROUP OF COMPANIES

Construction and Operations Expenditure

January 2005 to December 15, 2012

	Expenditure to Date	Percent of Expenditure
Total Expenditure YTD	$1,893,410,418	N/A
NWT Portion	$1,322,019,874	69.82%
Aboriginal Portion on NWT Expenditure	$768,013,863	58.09%

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- Based on three pillars of sustainable development;
  - Economic
  - Social
  - Environmental sustainability
- Goods and Services
  - Goods and Services procured from Businesses must meet mining industry service and quality standards
- Long Term Sustainability/Business Capacity
  - Development of long-term sustainability and business capacity will be a fundamental consideration when entering into business relationships with Aboriginal and/or NWT businesses
  - Our work with Aboriginal and/or NWT business will support the development of technical and business skills and capacities that are transferable to other industries

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- De Beers will treat all companies fairly regardless of size
- Contractors
  - All contractors will be required to understand and comply with De Beers' Safety, Health, and Environmental Management Systems
  - All contractors will be required to understand, comply with and report on their success regarding northern hiring priorities

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- Business Registry
  - Develop a Business Registry for Northern and Aboriginal businesses to pre-qualify themselves for business opportunities
- Joint Ventures
  - Identify possible joint venture opportunities for Aboriginal Businesses
- Post Award Analyses
  - Coordinate post-award analyses for unsuccessful Northern and Aboriginal bidders to communicate areas of improvement in the commercial and/or technical aspects of the final evaluation

De Beers Business Registry

DE BEERS
GROUP OF COMPANIES

- June 2013 Re-launch
- Businesses can register
  - Company Info
  - Goods and Services
  - Socio-Economic Commitments
  - Work History
  - Health and Safety
- De Beers Procurement
  - Pre-qualify Businesses
  - Learn of new Business Formation and Joint Ventures

De Beers Business Registry

DE BEERS
GROUP OF COMPANIES

- Current Businesses
- Aboriginal Business Development Arms
- Profiles must be complete
- De Beers will assist those who require assistance to complete Profile online
- **www.debeersgroup.com/canada/businessregistry**

Snap Lake Opportunities

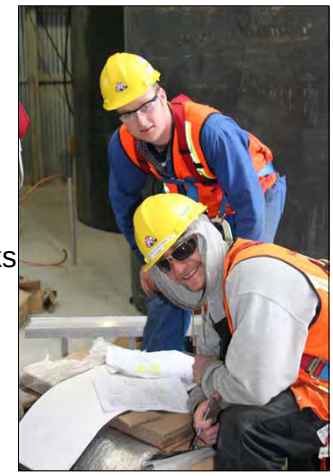
DE BEERS
GROUP OF COMPANIES

- Consolidation and Expediting -11/30/2013
- Winter Road Construction - 10/31/2013
- Fuel Haul – Winter Road - 8/31/2013
- Catering, Janitorial, Housekeeping - 9/30/2013

Gahcho Kue Opportunities – Construction

DE BEERS
GROUP OF COMPANIES

- General Contractor
- Civil Construction & Production Fleet
- Light Vehicles
- Initial Earthworks & Maintenance
- Liner Installations
- Construction and Erection of Fuel Tanks
- Accommodations Complex
- Communications & IT
- Fire Protection & Alarm
- Security Monitoring



General Contractor

DE BEERS
GROUP OF COMPANIES

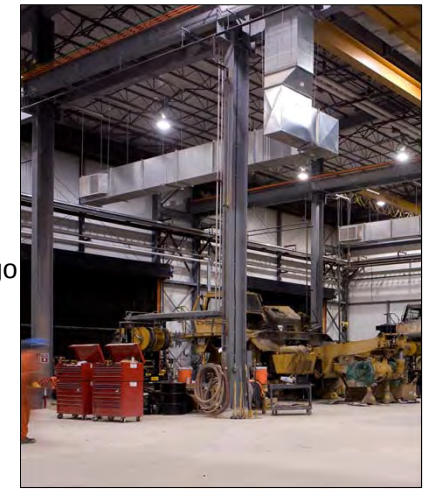
- Will include:
  - Concrete works
  - Structural Steel
  - Mechanical
  - Electrical/Instrumentation
  - Emulsion Plant

-Crushing
-Fuel Tank Piping
-Process Plant
-Power Plant
-Truck Shop
-Surface Utility Piping

Gahcho Kue Required Services Construction & Operations

DE BEERS
GROUP OF COMPANIES

- Tire Supply & Maintenance
- Explosives
- Winter Road Construction
- Camp Catering & Janitorial
- Fuel Supply & Lubricants
- Air Transport – Passenger & Cargo
- Freight Transport
- Fuel Transport
- Medical Services



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Permitting and Environment Snap Lake Mine & Gahcho Kué

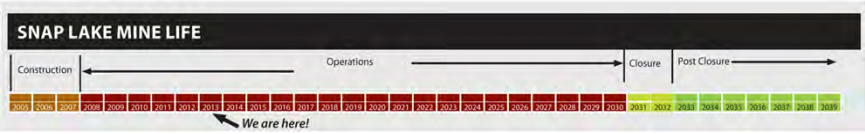
Presentation Overview

DE BEERS
GROUP OF COMPANIES

- Snap Lake & Gahcho Kué Regulatory Update
- Update on Snap Lake Water Management
- Gahcho Kué and Snap Lake Closure and Reclamation
- Gahcho Kué and Snap Lake Aquatic Effects Monitoring
- Demonstrations

Snap Lake Mine - Regulatory

DE BEERS
GROUP OF COMPANIES

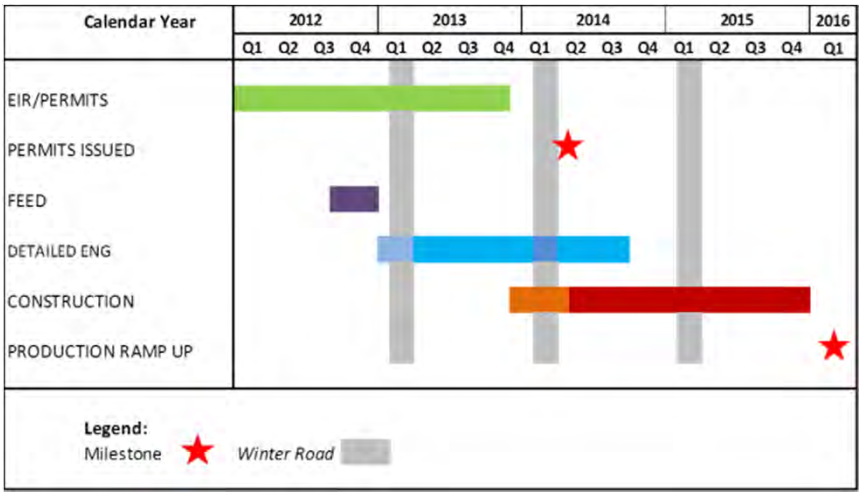


Snap Lake Mine officially opened in July 2008
Water License Amendment approved on June 14, 2012
Aquatic Effects Monitoring Program (AEMP) redesign in progress
- September 9th, 2012 community meeting
- January 24th, 2013 technical session on reevaluation and monitoring
- May 29th, 2013 technical session on Weight of evidence and response framework
- Intent is for Board to approve plan June 20, 2013

Interim Closure and Reclamation Plan (ICRP) process
- February community meetings to discuss Closure
- May 13th, 2013 Technical Session
- Currently revising the ICRP based on feedback
- Board process will commence once submission is complete (likely end of May)

Gahcho Kué – Regulatory Update

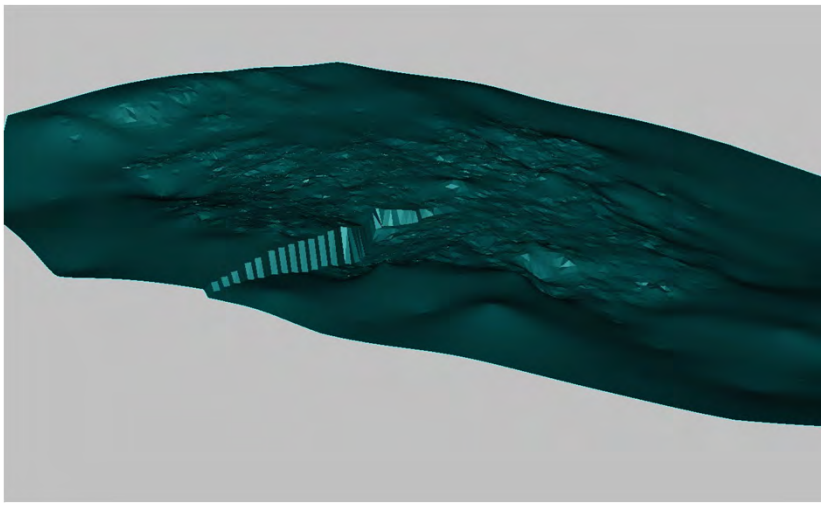
De Beers
GROUP OF COMPANIES



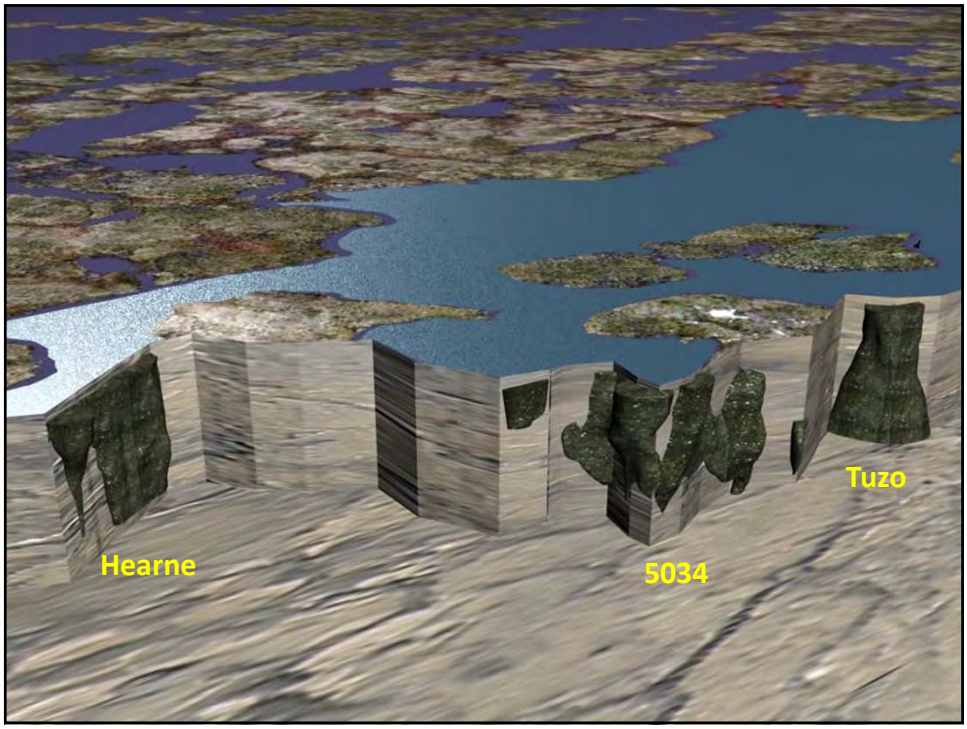
SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Snap Lake Mine - Kimberlites

De Beers
GROUP OF COMPANIES



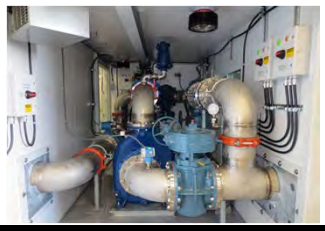
SNAP LAKE MINE | GAHCHO KUÉ PROJECT



Snap Lake Mine Water Management Enhancements

DE BEERS
GROUP OF COMPANIES

- Sump infrastructure upgrade
- Continuous sump monitoring & more mature protocols
- "Flocc tank" pre-clarifying pool
- Debottlenecking & optimization of WTP & TWTP
- Increase of Clean Water System capacity U/G up to 8500 m3/d
- Increased monitoring/testing of bogs and shorelines pre and post freshet.
- Upcoming PS3 repair
- U/G water model updated
- IL6 ditch construction completed



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Spring Freshet – Extra Measures

DE BEERS
GROUP OF COMPANIES

- Increased monitoring
- Monitoring areas where spring freshet is most common
- Increasing discharge to the lake with a second diffuser
- Putting in place extra monitoring at SNP stations
- Monitoring Frequency – Daily
- Sampling Frequency - Weekly

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

SURVEILLANCE NETWORK PROGRAMME SAMPLING STATIONS

Site Operations Update

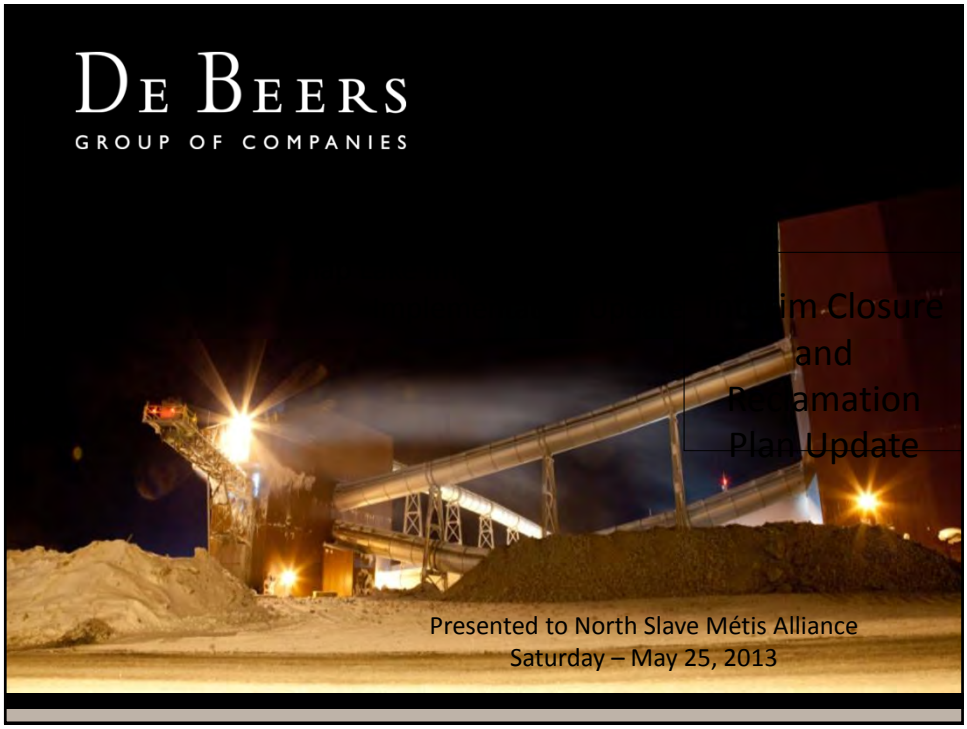
De Beers
GROUP OF COMPANIES

- Paste
  - Underground paste trials continuing
- Waste Management
  - New incinerator purchased, installation this summer
- North Pile Raise
  - Filling all voids within the starter cell to achieve final pile height

Water License

De Beers
GROUP OF COMPANIES

- Site specific work being carried out in preparation for application
- Update water modeling
  - Surface
  - Underground
- Additional water management enhancements for increased water discharge



Objectives

De Beers
GROUP OF COMPANIES

- The objective of this presentation is to provide the proposed closure options and research for discussion and feedback
- Expected outcomes include:
  - A better understanding by community members of:
    - De Beers approach to community engagement.
    - The closure planning process for the Snap Lake Mine.
  - A better understanding by De Beers of:
    - community member questions and concerns regarding closure planning.
    - community member questions and concerns regarding De Beers community engagement approach.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Presentation Outline

DE BEERS GROUP OF COMPANIES

- Overview of Closure Planning
- Progression of Closure and Reclamation Plan
- History of Engagement
- Current Interim Closure and Red Plan Revision
  - Mine components and closure objectives
  - Closure Criteria
  - Options and Research
- Moving Forward

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Closure Planning in the NWT

DE BEERS GROUP OF COMPANIES

- **Regulatory Policy**
  - Developed by AANDC/INAC in 1980s in response to environmental impacts and financial burden to the Canadian public. In 2002, INAC released its *Mine Site Reclamation Policy for the Northwest Territories*.
- **Closure and Reclamation Plans**
  - Required as a condition of Water Licence issued by Land and Water Boards of the Mackenzie Valley.
- **Closure Plan Guidelines**
  - Developed by AANDC/INAC in 2000s to standardize process for proponents. The guidelines were revised by AANDC/INAC in partnership with the Land and Water Boards of the Mackenzie Valley in 2011. A finalized version of the guidelines has yet to be released.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Closure Planning in the NWT

DE BEERS GROUP OF COMPANIES

- De Beers Internal Policies also guide operations and closure planning.
  - Sustainable Development
  - Working with Aboriginal Communities
  - Mineral Waste Management
- Anglo American mine closure planning toolbox
  - The purpose of the toolbox is to ensure that closure planning is progressing at an adequate rate.

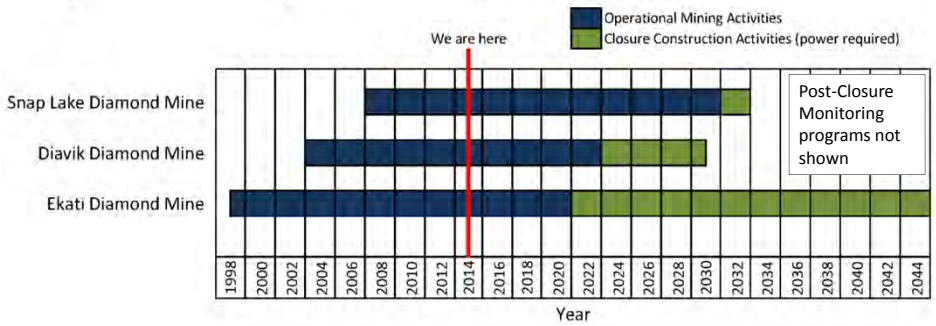
Time remaining to scheduled closure				
> 25 years	25-15 years	15-10 years	10-5 years	5-0 years
Preliminary Closure Plan		Draft Closure Plan	Detailed Closure Plan	Final Closure Plan

Source: Anglo American (2007). Sustainable Development Planning and Mine Closure. Toolbox, v1, 2007.

Closure Timeline

DE BEERS GROUP OF COMPANIES

- Snap Lake Mine is in the early stages of closure planning relative to nearby diamond mines (Ekati and Diavik).
- Final Closure and Reclamation Plan will be completed by 2028.
- Expected years to the end of mining operations are: Ekati - 7 years, Diavik - 9 years, and Snap Lake - 17 years.



Community Engagement

De Beers
GROUP OF COMPANIES

- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as part of the Environmental Assessment process
  - Conceptual
- Methods of engagement included:
  - Information sessions in all several communities
  - Open house community meetings
  - One-on-one interviews
  - Guided site tours

Community Engagement

De Beers
GROUP OF COMPANIES

- First Revision of Closure and Reclamation Plan
  - Interim Closure and Reclamation Plan (2006)
    - Requirement of the Water Licence issued by the Mackenzie Valley Land and Water Board.
    - Additional detail regarding closure methods and proposed research included to satisfy conditions of Water Licence and reviewer comments on existing plan.
- The Interim Closure and Reclamation Plan was subject to stakeholder review during the Board approval process.

Community Engagement

DE BEERS GROUP OF COMPANIES

- Current update of the Interim Closure and Reclamation Plan (2013)
  - Methods of engagement to date have included:
    - Stakeholder workshop in spring of 2011
    - Stakeholder review
    - Technical meetings held in September 2011
    - Public hearings in December 2011
    - Stakeholder review of the proposed Closure Objectives in October 2012
      - Closure Objectives approved by the MVLWB on November 22, 2012
    - Community meetings in February 2013
    - Technical meetings in March
  - Upcoming: Site visits in summer 2013, fish tasting in September 2013.

Closure and Reclamation Plan

DE BEERS GROUP OF COMPANIES

1. Executive Summary
2. Introduction
3. Project environment
4. Project description
5. Requirements for permanent closure and reclamation
6. Progressive reclamation
7. Temporary closure
8. Integrated schedule of activities approaching permanent closure
9. Post-closure site assessment

Progression of the Closure Plan

DE BEERS GROUP OF COMPANIES

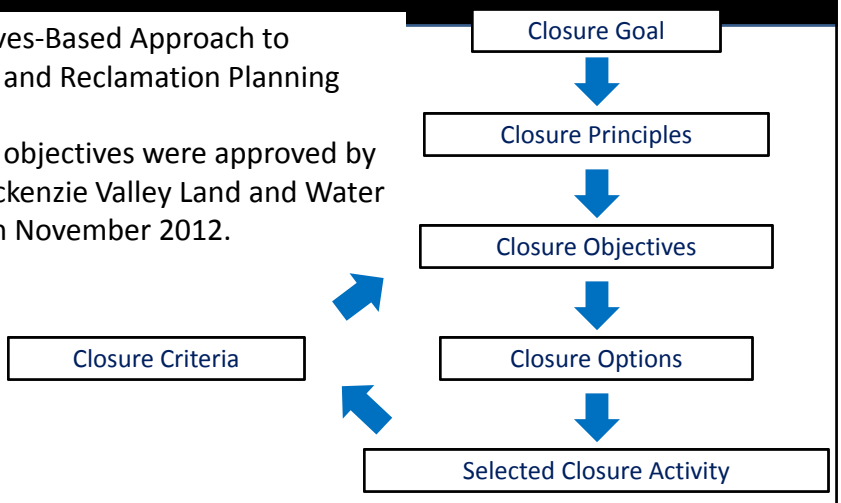
- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as a requirement of the Project Environmental Assessment
- Interim Closure and Reclamation Plan (2006)
  - Prepared as a requirement of the Water Licence MV2001L2-0002
- Interim Closure and Reclamation Plan (2011)
  - Prepared as part of the Water Licence application package
- Interim Closure and Reclamation Plan (2013)
  - Prepared as a requirement of the renewed Water Licence MV2011L2-0004.
  - Revised every 3 years
- Final Closure and Reclamation Plan (at least 2 years before the end of operations)

Closure Planning Framework

DE BEERS GROUP OF COMPANIES

Objectives-Based Approach to Closure and Reclamation Planning

Closure objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.



Research Options and Uncertainties Workshop

DE BEERS
GROUP OF COMPANIES

- March 13 meeting to discuss Research options and uncertainty
  - Required by the MVLWB
- De Beers heard that a “decision road map” would be useful and is currently being developed
- Other comments focused on progressive reclamation/lessons learned from other mine sites
- ICRP to be revised and resubmitted to the MVLWB for stakeholder review
- Board process commences at that time
- Intent is that Closure criteria will be developed as the plan progresses

Current step: Reclamation Research Plan

- Aim to resolve uncertainties and answer questions pertaining to environmental risks for closure options or selected closure activities.

Closure Objective	What is the best closure objective for a particular mine component? Is the objective achievable?
Closure Options	Which of the closure options will best achieve the closure objective?
Selected Closure Activity	What is the best way to implement the selected closure activity?
Closure Criteria	What is the best way to measure whether the selected closure activity meets the closure objective?

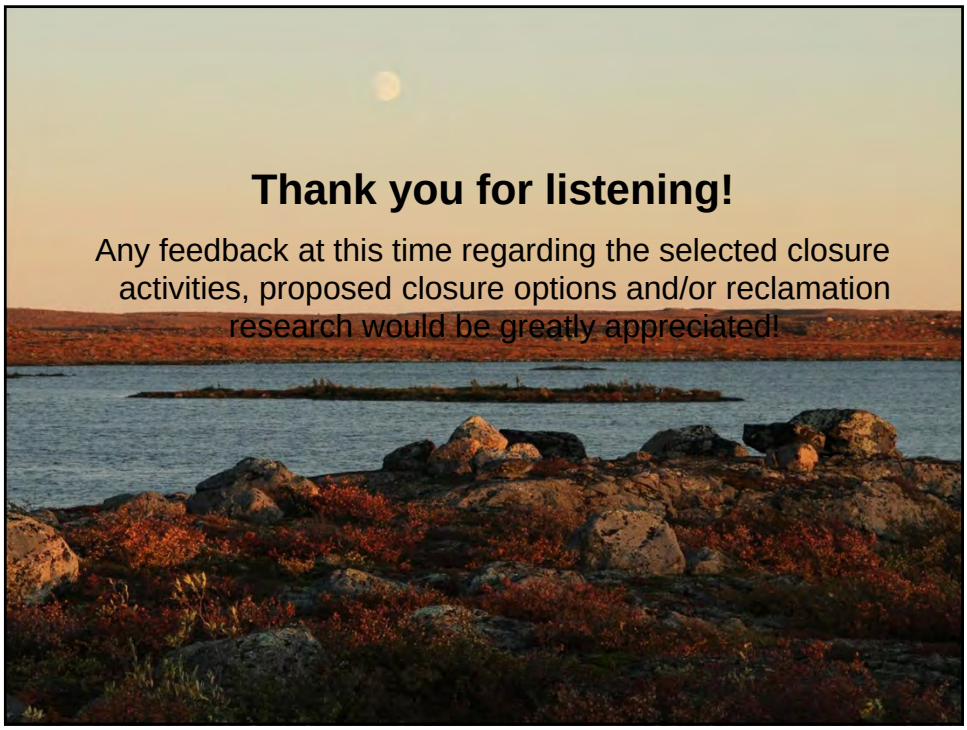
Reclamation Research Plan

Next Steps

DE BEERS
GROUP OF COMPANIES

- De Beers is currently in the process of revising the Interim Closure and Reclamation Plan
  - Closure Objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.
  - De Beers visited communities in February 2013 to discuss closure
  - De Beers hosted a Closure Options and Research Workshop held in Yellowknife on March 13, 2013.
  - De Beers submits the Interim Closure and Reclamation Plan (version 3.2) in June, 2013 for stakeholder review.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT



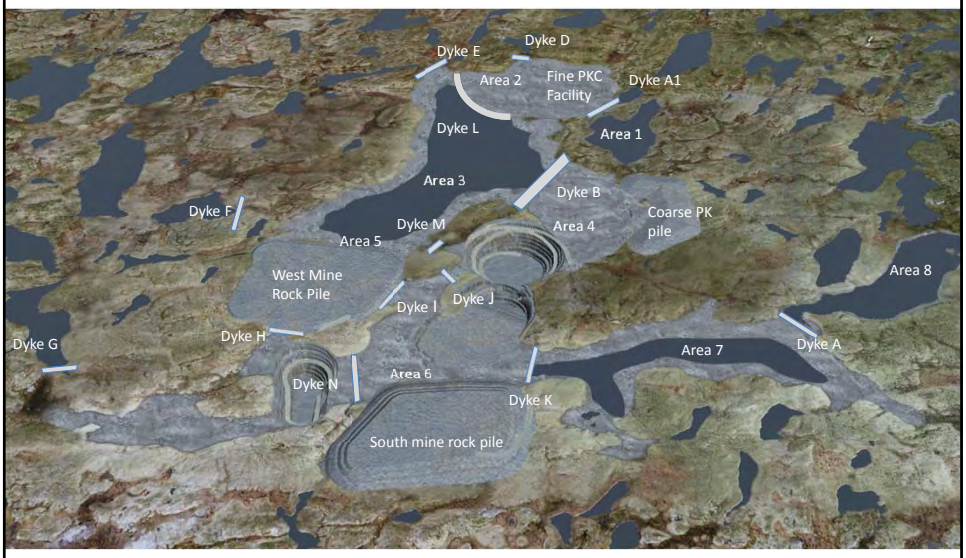
Construction (Year -1)

68

Construction (Year -2)

69

Operation (Year 1-11)



70

Closure (12 to 20+ Years)

71

Gahcho Kué – Closure & Reclamation

De Beers
GROUP OF COMPANIES

- **Goals and Objectives** of the Conceptual Closure and Reclamation Plan (the Plan)
- **Key concepts** central to the Plan
- **Commitments** associated with the Plan
- **Overview of key activities** and **schedule**
- Conceptual Closure and Reclamation Plan **Summary**

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Goals of the C&R (The Plan)

DE BEERS GROUP OF COMPANIES

- The **overall Goals** of the Conceptual C&R Plan includes:
  - **Minimize the environmental impacts** of operations to the extent practical
  - **Re-establish productive fish and wildlife habitat** as quickly as possible
  - **Create self-sustaining ecosystems**
  - **Achieve post-closure conditions** that do not require maintenance
- The C&R Plan is considered **"conceptual"** at this stage, and will be refined over time.

Long-term Objectives

DE BEERS GROUP OF COMPANIES

Long-term Objectives of the conceptual C&R Plan:

- **Re-establish the natural fish habitat** that maybe lost, altered, or disturbed as a result of the Project
- **Return site conditions to self-sustaining ecosystems** typical in the region
- **Create**, to the extent practical, **final landforms that integrate into the natural landscape**

Short-term Objectives

DE BEERS GROUP OF COMPANIES

- **Short-term Objectives of the Plan**:
  - **Reclaim areas as soon as possible** once they are no longer required
  - **Minimize the risk of erosion/sediment** loss from on-site runoff
  - **Stabilize slopes** to maintain safe working conditions and to aid reclamation activities
  - **Restore natural drainage,** where possible
  - **Establish ground cover** to limit soil erosion and dust production
  - **Maintain** an environmentally safe site

Key Concepts Community and Traditional Knowledge

DE BEERS GROUP OF COMPANIES

- **Community Feedback and Traditional Knowledge**
  - Beginning with the earliest phases of exploration at Kennady Lake, De Beers initiated and maintained contact with the various communities near the Project
  - Based on feedback received during the engagement process, De Beers identified community inputs for reclamation
    - Example: restore Kennady Lake as quickly as possible
  - The Plan was developed to address, to the extent possible, community inputs for reclamation
    - Example: pumping water from Lake N11 during refilling will reduce the time required to fill Kennady Lake from 20 years to 8 or 9 years

Conceptual C&R Plan – Commitments

DE BEERS
GROUP OF COMPANIES

- Use progressive or **ongoing reclamation to minimize** the total amount of area disturbed by the Project activities at any one time
- **Recover as much soil** as practical for use in reclamation activities
- **Undertake reclamation trials** throughout the life of the Project
- **Liaise with other mine operators** in the Canadian Arctic – to share reclamation information/research to apply proven practices

Overview

DE BEERS
GROUP OF COMPANIES

- Re-visit AEMP at Snap Lake and introduction to AEMP at Gahcho Kué
- Key elements of the programs
- Similarities and differences between SL and GK
- Snap Lake re-evaluation- lessons learned and path forward
- Gahcho Kué- where we are at

Overview:

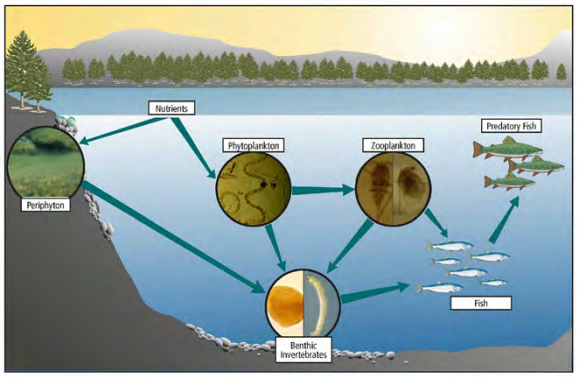
DE BEERS
GROUP OF COMPANIES

Key goals:

The water is safe to drink

The fish are good to eat

Food Web



The AEMP breakdown:

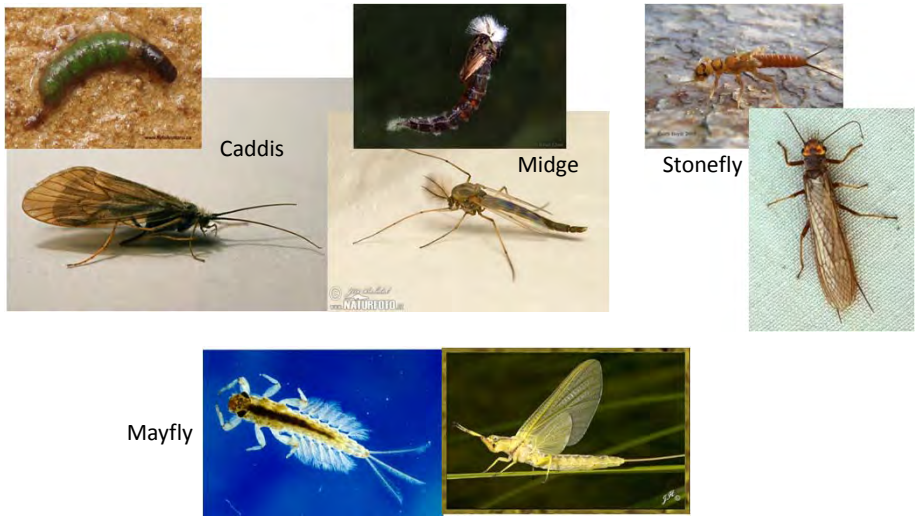
DE BEERS
GROUP OF COMPANIES

- **Six Core Components**
  - **Benthic Invertebrates**
  - **Fish: health, tissue metals, tasting, community**
  - **Plankton**
  - **Sediment Quality**
  - **Traditional Knowledge (expanded from 2005)**
  - **Water Quality**

***Same for Gahcho Kué with the addition of hydrology

Benthic Invertebrates = Bugs from the lake/stream bottom

DE BEERS
GROUP OF COMPANIES



Water Licence Requirements:

DE BEERS GROUP OF COMPANIES

- **A comprehensive AEMP-**
  - Living and non-living factors- model
  - Predict short and long-term effects
  - Test predictions made
  - Assess and need for additional action
  - Annual report
  - Major re-evaluation every 4 years
  - AEMP Response Plan
    - Significance thresholds
    - Action levels
    - Response

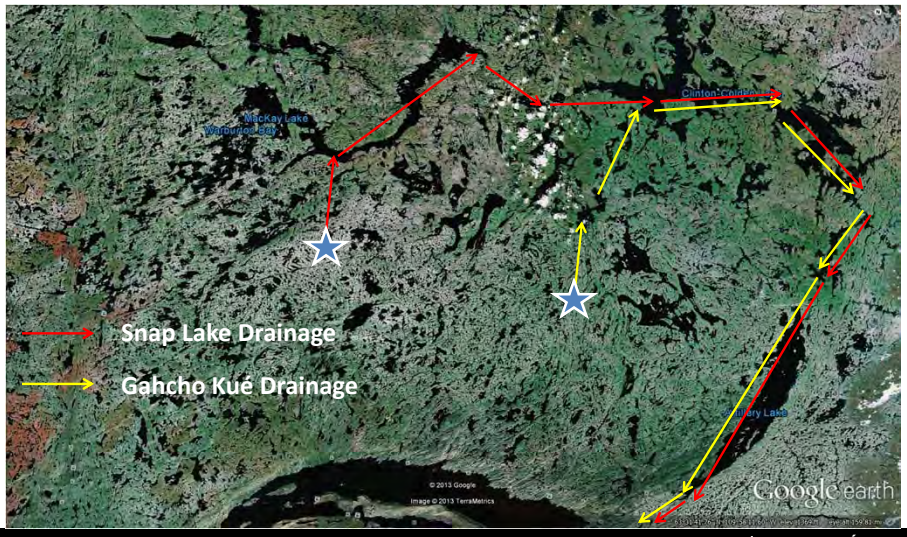
Sampling Methods

DE BEERS GROUP OF COMPANIES

- Sampling methods and data analyses are described and conducted on a component-specific basis- *check out the stations after this presentation*
- Samples collected in field, analyzed in the lab and compared to baseline and reference lakes.

The big picture: watershed

DE BEERS
GROUP OF COMPANIES



The similarities

DE BEERS
GROUP OF COMPANIES

Snap Lake fishes

- Burbot
- Lake Chub
- Slimy Sculpin
- Northern Pike (only Northeast Lake)
- Lake Trout
- Round Whitefish
- Arctic Grayling
- Longnose Sucker

Gahcho Kué fishes

- Burbot
- Lake Chub
- Slimy Sculpin
- Northern Pike
- Lake Trout
- Round Whitefish
- Arctic Grayling
- Longnose Sucker
- Ninespine stickleback

Key differences between Snap Lake and Gahcho Kué

DE BEERS GROUP OF COMPANIES

- Snap Lake- underground
  Gahcho Kué- open pit
- Snap Lake is largely protected while Kennady Lake must be isolated and de-watered
- GK- downstream monitoring important

AEMP 2005-2011

DE BEERS GROUP OF COMPANIES

Key Findings

- Design was appropriate (i.e. detected effects)
- As predicted, water quality changing in Snap Lake and downstream lakes = ↑nutrients
- But no evidence that changes are affecting the health of the lake or the drinking water
- Plankton and aquatic bug community changing likely due to nutrient enrichment
- Fish health, fish community and fish taste do not appear to be affected by changes to the water quality

Snap Lake AEMP 2005-2011

DE BEERS GROUP OF COMPANIES

Lessons Learned

Challenges

- Flow rates increased faster than expected
- Northwest arm not appropriate as reference*
- Gradient-style study design not appropriate
- Combining environmental and biology data- (e.g., water temperature affecting fish spawning times)

Successes

- Sample collection successful despite harsh climate
- Water quality models appropriate
- Predictions appear to be appropriate

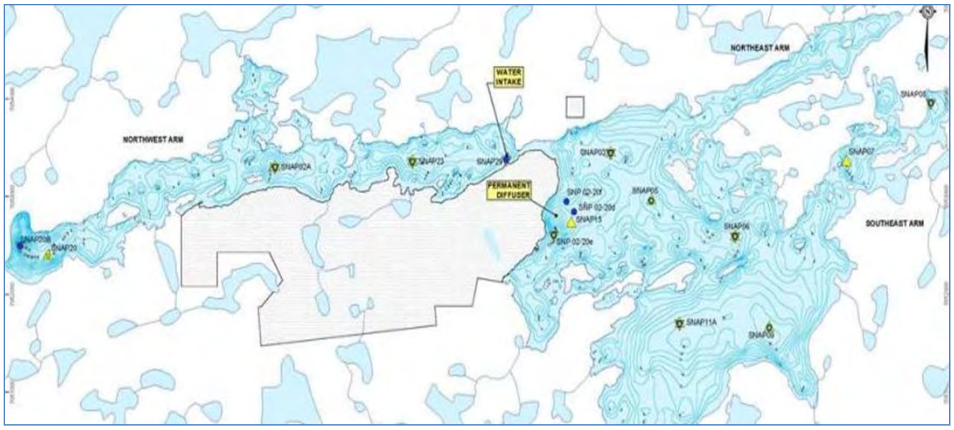
Snap Lake: Sampling Stations

DE BEERS GROUP OF COMPANIES

- In 2005, stations chosen to see if changes occurred ***further away*** from the mine
- In 2013, there is a change to looking at how things are ***changing over time*** and ***downstream***
- Why the change?
  - consistency among components
  - consistency over time
  - More important to compare to reference lakes and downstream conditions
  - Mathematical: enough sampling to see cause and effect

Proposed Monitoring Stations in Snap Lake

DE BEERS
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Proposed Monitoring Stations at Northeast Lake

DE BEERS
GROUP OF COMPANIES

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Proposed Monitoring Locations for Lake 13

DE BEERS
GROUP OF COMPANIES

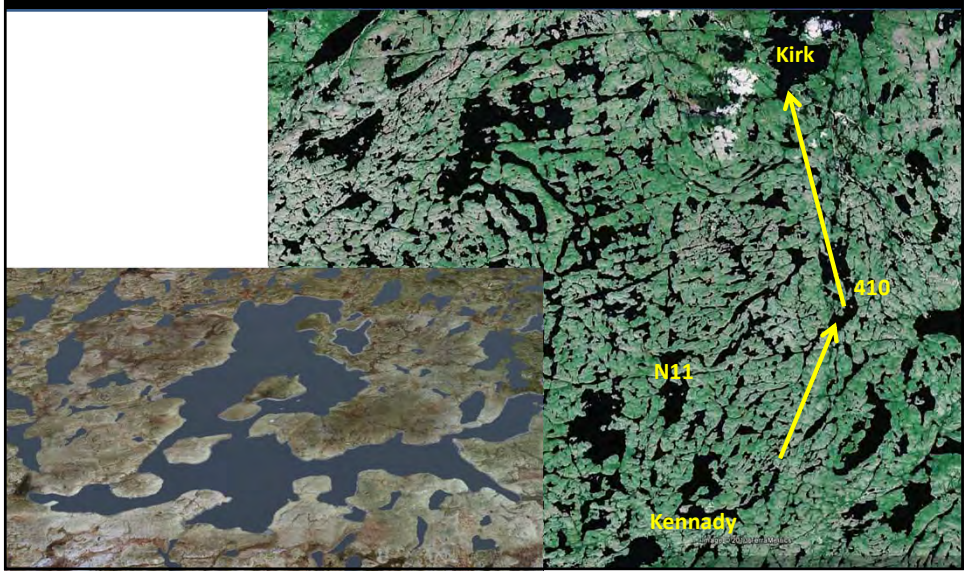
Current Process

DE BEERS
GROUP OF COMPANIES

- Snap Lake is redesigning the AEMP:
  - Sept. 2012- Community Meeting
  - Oct. 2012- 5 year summary (reevaluation) submitted
  - Nov. 2012- Redesign submitted
  - Jan. 2013- Technical Sessions
  - May 2013- Weight of evidence to be discussed
- Monitoring Program approved
- Under water license re-evaluation and redesign is required every *3 years*

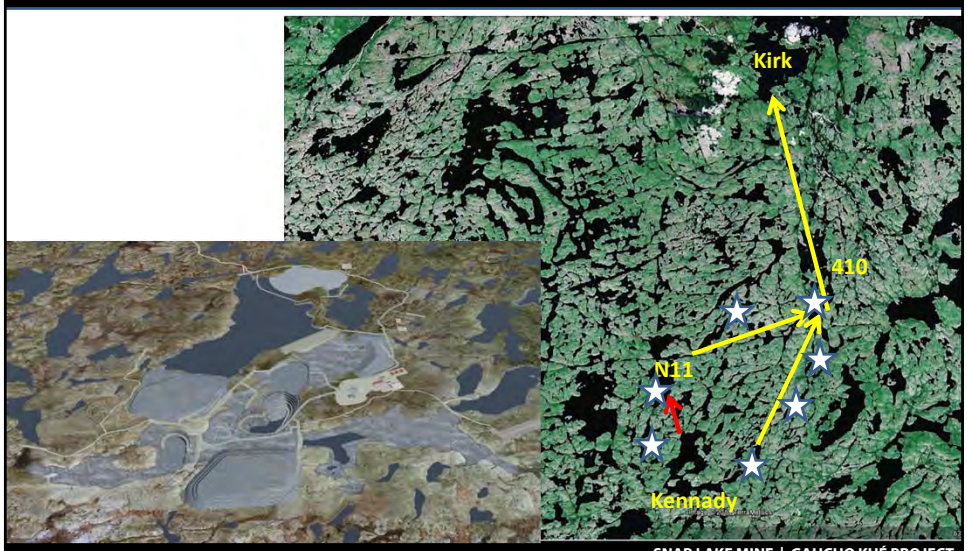
Gahcho Kué: Currently

De Beers
GROUP OF COMPANIES



Gahcho Kué AEMP Phase 1: De-watering/ Construction

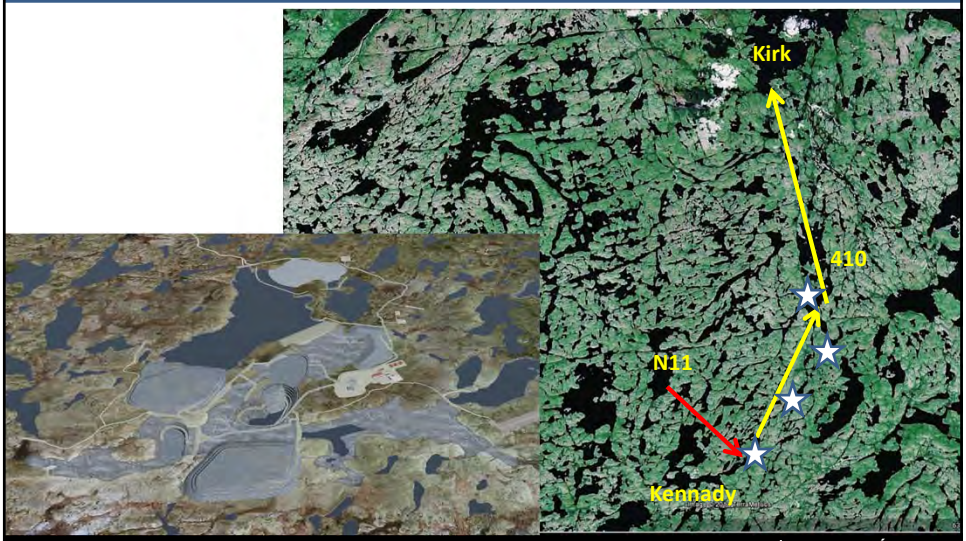
De Beers
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Gahcho Kué AEMP Phase 2: Operations/ Closure

De Beers
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Downstream flow

De Beers
GROUP OF COMPANIES

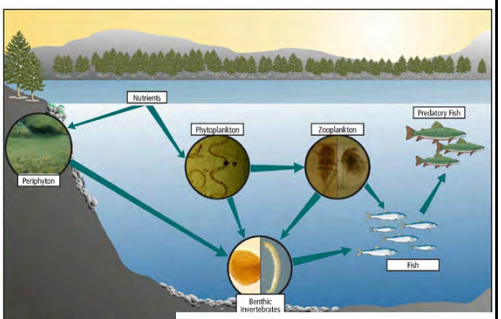
Water will be pumped from Lake N11 to the outflow of Kennady Lake to maintain natural water levels during the spring and summer

The purpose is to protect spawning fishes such as Arctic grayling.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

The challenges with finding good reference lakes

DE BEERS GROUP OF COMPANIES



Baseline and Reference Lakes

DE BEERS GROUP OF COMPANIES

- Snap Lake:
  2 new lakes chosen based on concerns from communities and regulators
- Gahcho Kué: East Lake and Reference Lake 2 & 3
  But we are looking for community advice during site visits in summer 2013.

Special Studies

DE BEERS
GROUP OF COMPANIES

- Occur as needed
- Include research activities that support monitoring
- Focus on development of monitoring methods/ findings and a better understanding of northern lakes/ rivers

- Currently proposed special studies include:
  1. Near shore environment
  2. Picoplankton
  3. Downstream Lakes
  4. Number of lake trout
  5. Food Web Analysis

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Traditional Knowledge

DE BEERS
GROUP OF COMPANIES

– Traditional Knowledge from Environmental Assessment
– Annual Fish Tasting Program
– Input on sampling sites and reference lake selection

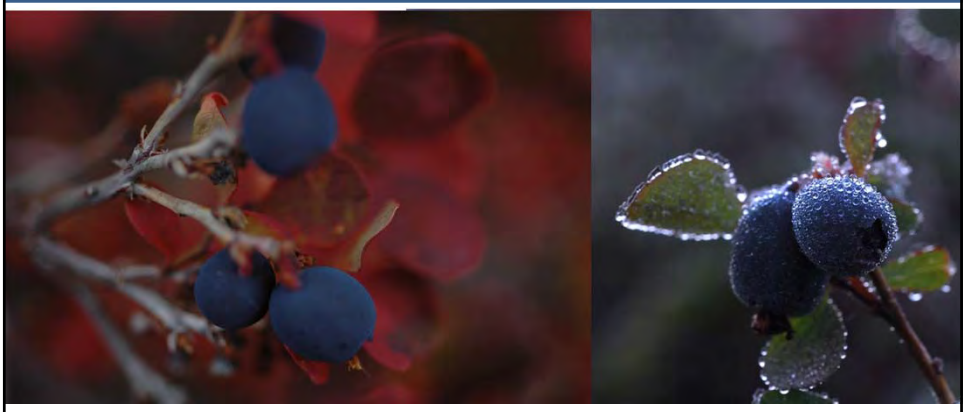
SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Questions/Comments?
SNAP LAKE MINE | GAHCHO KUÉ PROJECT

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Don’t forget the berries during the fish tasting event

DE BEERS
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Meeting Overview

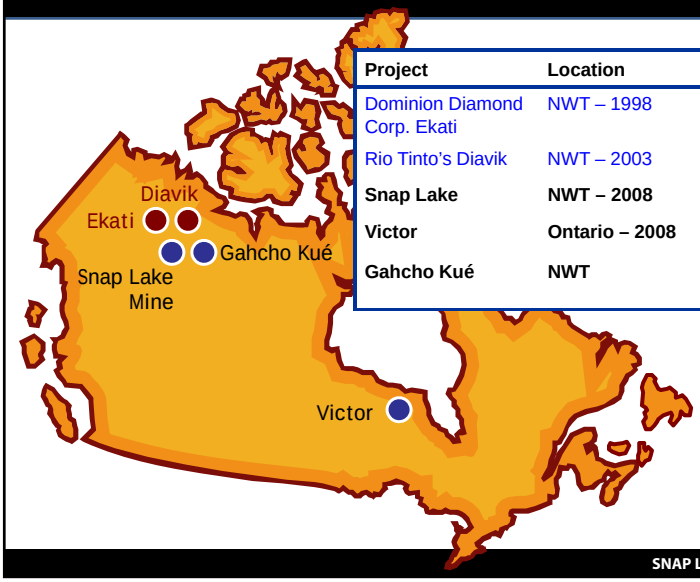
De Beers
GROUP OF COMPANIES

De Beers Update Snap and GK

- Human Resources Initiatives
- Business Opportunities
- Environment & Permitting Overview
  - Snap Lake Water Management
  - Aquatic Effects Monitoring Program
  - Closure and Reclamation

De Beers in Canada

DE BEERS
GROUP OF COMPANIES



Project	Location	Production
Dominion Diamond Corp. Ekati	NWT – 1998	2.5 million carats/2011
Rio Tinto's Diavik	NWT – 2003	6.7 million carats/2011
Snap Lake	**NWT – 2008**	**870,000 carats/2012**
Victor	**Ontario – 2008**	**690,000 carats/2012**
Gahcho Kué	**NWT**	**Environmental Impact Review**

Snap Lake Mine – Quick Facts

DE BEERS
GROUP OF COMPANIES

- Located at Snap Lake**, 220 km northeast of Yellowknife**
- Completely **underground operation**
- Mining area <500 ha
- 2.5m kimberlite dyke dips **beneath Snap Lake** 12-15 degrees
- New Land Use Permit issued on February 16, 2011 for 5 years
- New Water License issued on June 14, 2012 for 8 years

Snap Lake Mine
Water Management Upgrades

DE BEERS
GROUP OF COMPANIES

- Pro-active water management enhancement ongoing
- Focused on source, containment, and treatment before being released
- No incidents during 2013 spring melt

Gahcho Kué Project

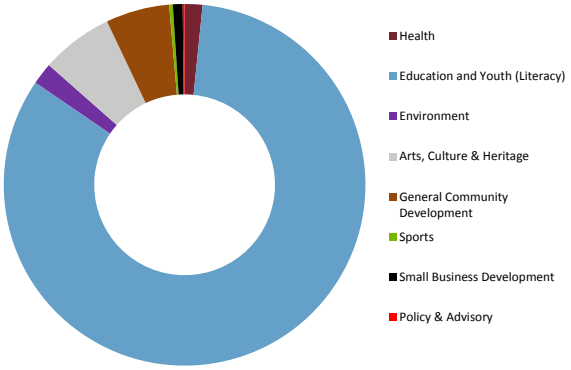
DE BEERS
GROUP OF COMPANIES

- **Located at Kennady Lake**, 280 km northeast of Yellowknife, 80 km southeast of Snap lake Mine
- **Joint Venture** – De Beers Canada (51% - operator); Mountain Province Diamonds (49%)
- **Open Pit Operation** – 5034, Hearne & Tuzo
- **$600-$650 million** capital cost (2010 NI 43-101 report)
- 2 year construction
- ~11 year life of mine
- **360-380** jobs at full production
- **690 jobs at peak** of construction
- Average **annual production 4.5 million carats**/3 million tonnes

Social Investment

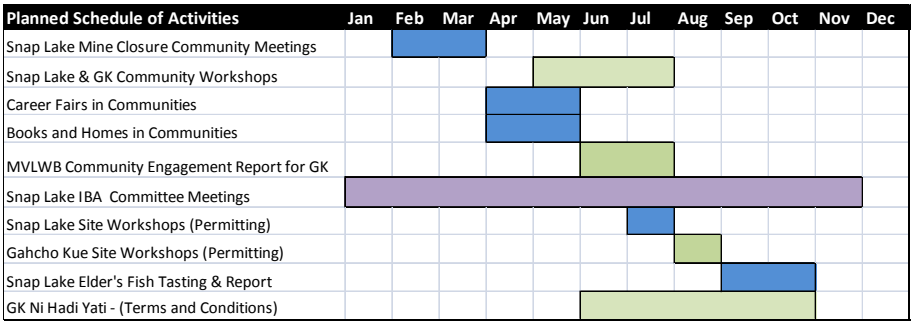
De Beers
GROUP OF COMPANIES

- $13.3 million spent on social investment in the Northwest Territories from 2008-2012
- 83% focused on training, education and literacy
- $3.3 million in social investment in 2012



2013 Engagement

De Beers
GROUP OF COMPANIES



2012 Recruitment Efforts

De Beers
GROUP OF COMPANIES

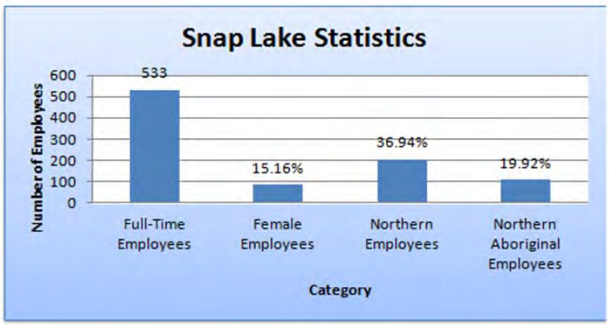
2012 De Beers Recruitment				
Total Competions	Total Applications Received	Total Northern Applicants	Total Northern Aboriginal Applicants	IBA Applicants
78	3,907	1,112	514	345
		Percentage of Total	Percentage of Total	Percentage of Total
		28%	13%	9%
Total Hired	Total Southerners Hired	Total Northerners Hired	Total Northern Northern Aboriginals Hired	IBA Members Hired
93	50	43	23	14
		Percentage of Total Hired	Percentage of Total Hired	Percentage of Total Hired
		46%	25%	15%

Recruitment challenges continue with finding relevant skills and abilities to fill the vacancies at Snap Lake with Northern residents.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Snap Lake Mine Statistics

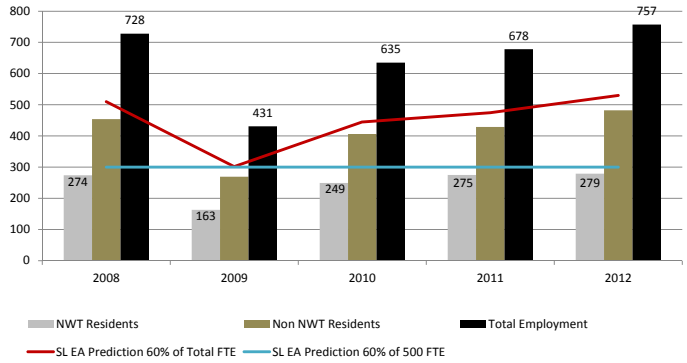
DE BEERS
GROUP OF COMPANIES



*as of May 2013

Snap Lake Mine Employment History

DE BEERS
GROUP OF COMPANIES



- During the Snap Lake Environmental Assessment, De Beers predicted there would be 500 FTE for the Operations Phase and that 60% or 300 would be NWT Residents
- In 2012, De Beers and its contractors employed 757 FTE, of which 36% or 279 were NWT Residents
- In 2012, 61% of the workforce were De Beers employees and 39% were Contractors

NWT Diamond Mine Employment - 2011

DE BEERS
GROUP OF COMPANIES

	Predicted Employees Operations Phase	Actual Employment (December 2011)	# Northern Resident Predicted	Actual Northern Resident Employment	**Northern** Residency Variance (Actual versus Predictions)
BHP Billiton's Ekati Mine	926	1,213	574	650 (54%)	+76
Diavik Diamond Mine	400	1,137	264	642 (56%)	+378
De Beers Snap Lake Mine	500	678	300	249 (37%)	-51
Predicted Total Workforce Requirements	1,826	3,044	1,138	1,541	**+403**

The Good News: *In 12 Years of Diamond Mining in the NWT, 403 more people than industry forecast would be working in our industry are in fact employed. Training and Development has been successful.*

The Challenge: For De Beers and other new mines opening up in the NWT, continued government educational investment in the NWT population that is not currently employed is required.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Socio-Economic Agreement Training Commitment

DE BEERS
GROUP OF COMPANIES

	SUMMARY			
	Trades Training	Apprenticeship	UG	
Commitment	10	10	20	40
Current Trainees	9	7	5	21
Program Graduates	16	5	18	39
Trainees To Date	24	23	34	81

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Ensuring Northern Residents are Priority

DE BEERS GROUP OF COMPANIES

- Recruitment
  - News/North
  - Jobsnorth.ca
  - Community Postings
  - Website
  - Direct Human Resources Contact Information
- Pick-up points in 11 NWT Communities
- Travel Allowance to get to Pick-up Points
- Partnership with the Mine Training Society
- Northern Allowances
  - NWT Salary Enhancement Benefits
  - Remote Site Allowance

Trades / Apprentices

DE BEERS GROUP OF COMPANIES

- 7 apprentices on track to become journeypersons
- Currently 9 trades trainees
- 5 Underground Mining Trainees
- 11 Females in Underground Miner positions
- Since the mine opened, 39 northerners have graduated from our training programs

Trades / Apprentices (Cont'd)

DE BEERS GROUP OF COMPANIES

- Apprenticeship Program Fully Funded
- Accommodations while in school of choice fully funded
- All trainees & apprentices hired are northern Aboriginal
- Assistance with schooling material from our on site Training Coordinators
- Trades Entrance Exam assistance and preparation through Learning Centre

Workforce Development

DE BEERS GROUP OF COMPANIES

- Work Placements facilitated through MTS
  - 4 Mine Process Operator Trainees joined us in 2013 for work placement experience. One has recently been hired as an Operator Trainee on a full time basis while another's contract was extended for Process Summer Student work.
- Summer Work Placement of 2 Maintenance Helpers
- 2 Aurora College Office Administration work placements in 2012
- Continued support and enrollment of employees in the Northern Leadership Development Program through Aurora College
- High School Career Pathing Workshop May 2013

Mine Training Society Partnership

DE BEERS GROUP OF COMPANIES

- Introduction to Mining (Part 1)
  - 6 week program
  - Hay River, Yellowknife, Fort Smith
  - Start Date: Possible July start
- Underground Miner Training Program (Part 2)
  - 12 week Program
  - Intake Start Date: August 26th
- Mineral Processing Operator Trainee Program
  - 14 weeks
  - Fort Smith
  - Start Date: September 3 – December 6th, 2013 / January 8th 2014

Gahcho Kué Opportunities

DE BEERS GROUP OF COMPANIES

- Up to 690 jobs at peak of construction
- 360-380 jobs available during operations
- Human Resource Strategy developed in 2012
- Labour shortages continue to exist in the NWT
- Mine Training Program (MTS) will continue to be a significant partner in training Northerners for jobs at Gahcho Kué
- $5 million cash and in-kind commitment to MTS "Mining the Future" through 2015
- Mining the Future targets training in a number of areas: Mineral Process Operating Technician; Camp Cook; Cook Apprenticeship; Heavy Equipment Operator; Geoscience Field Assistant; Introduction to Underground Mining; Underground Mining; and General Construction

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

NWT Post Secondary Scholarship Program

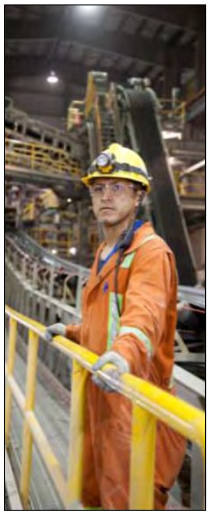
DE BEERS
GROUP OF COMPANIES

- Two kinds of scholarships available to NWT resident students enrolled in or attending post-secondary degree programs
- 15 “lump sum” scholarships worth $2,000 each
- Education Sponsorship worth up to $55,000 over a four-year degree program

Lump Sum Scholarships

DE BEERS
GROUP OF COMPANIES

- Available to NWT students studying in the following degree programs:
- Mine Engineering;
- Mine Geology;
- Finance & Accounting (Commerce);
- Human Resources;
- Occupational Health & Safety;
- Environmental Sciences;
- Metallurgy & Chemical Engineering; and,
- Mechanical & Electrical Engineering



Education Sponsorship

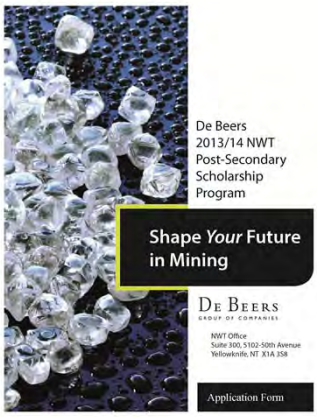
DE BEERS
GROUP OF COMPANIES

- Up to four years of significant financial support on an increasing scale
- Summer employment between school years
- Full-time employment upon completion of degree

How to Apply

DE BEERS
GROUP OF COMPANIES

- Application form online – www.debeersgroup.com/canada
- Two letters of reference
- Awarded on merit, including academic achievement, community service, leadership and extra-curricular activities



Forward Looking…

DE BEERS
GROUP OF COMPANIES

- Continued focus on Northern hires for Snap Lake Mine and upcoming GK hiring
- Continued focus on presence at community career fairs when available
- Partnership with Mine Training Society

Questions?

DE BEERS
GROUP OF COMPANIES

Business Investment

DE BEERS
GROUP OF COMPANIES

Construction and Operations Expenditure January 2005 to December 15, 2012		
	Expenditure to Date	Percent of Expenditure
Total Expenditure YTD	$1,893,410,418	N/A
NWT Portion	$1,322,019,874	69.82%
Aboriginal Portion on NWT Expenditure	$768,013,863	58.09%

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- Based on three pillars of sustainable development;
  - Economic
  - Social
  - Environmental sustainability
- Goods and Services
  - Goods and Services procured from Businesses must meet mining industry service and quality standards
- Long Term Sustainability/Business Capacity
  - Development of long-term sustainability and business capacity will be a fundamental consideration when entering into business relationships with Aboriginal and/or NWT businesses
  - Our work with Aboriginal and/or NWT business will support the development of technical and business skills and capacities that are transferable to other industries

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- De Beers will treat all companies fairly regardless of size
- Contractors
  - All contractors will be required to understand and comply with De Beers' Safety, Health, and Environmental Management Systems
  - All contractors will be required to understand, comply with and report on their success regarding northern hiring priorities

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- Business Registry
  - Develop a Business Registry for Northern and Aboriginal businesses to pre-qualify themselves for business opportunities
- Joint Ventures
  - Identify possible joint venture opportunities for Aboriginal Businesses
- Post Award Analyses
  - Coordinate post-award analyses for unsuccessful Northern and Aboriginal bidders to communicate areas of improvement in the commercial and/or technical aspects of the final evaluation

De Beers Business Registry

DE BEERS
GROUP OF COMPANIES

- June 2013 Re-launch
- Businesses can register
  - Company Info
  - Goods and Services
  - Socio-Economic Commitments
  - Work History
  - Health and Safety
- De Beers Procurement
  - Pre-qualify Businesses
  - Learn of new Business Formation and Joint Ventures

De Beers Business Registry

DE BEERS
GROUP OF COMPANIES

- Current Businesses
- Aboriginal Business Development Arms
- Profiles must be complete
- De Beers will assist those who require assistance to complete Profile online
- **www.debeersgroup.com/canada/businessregistry**

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Snap Lake Opportunities

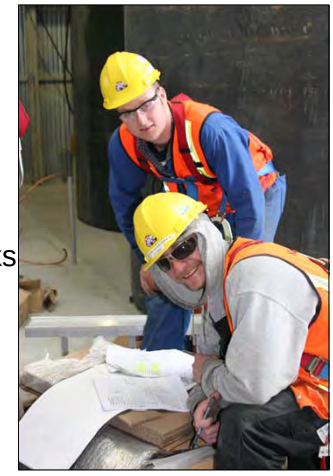
DE BEERS
GROUP OF COMPANIES

- Consolidation and Expediting -11/30/2013
- Winter Road Construction - 10/31/2013
- Fuel Haul – Winter Road - 8/31/2013
- Catering, Janitorial, Housekeeping - 9/30/2013

Gahcho Kue Opportunities – Construction

DE BEERS
GROUP OF COMPANIES

- General Contractor
- Civil Construction & Production Fleet
- Light Vehicles
- Initial Earthworks & Maintenance
- Liner Installations
- Construction and Erection of Fuel Tanks
- Accommodations Complex
- Communications & IT
- Fire Protection & Alarm
- Security Monitoring



General Contractor

DE BEERS
GROUP OF COMPANIES

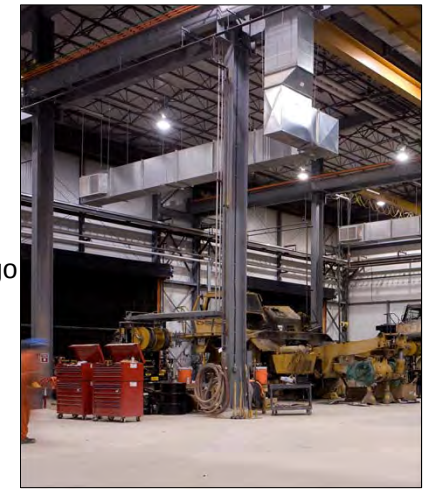
- Will include:
  - Concrete works
  - Structural Steel
  - Mechanical
  - Electrical/Instrumentation
  - Emulsion Plant

-Crushing
-Fuel Tank Piping
-Process Plant
-Power Plant
-Truck Shop
-Surface Utility Piping

Gahcho Kue Required Services Construction & Operations

DE BEERS
GROUP OF COMPANIES

- Tire Supply & Maintenance
- Explosives
- Winter Road Construction
- Camp Catering & Janitorial
- Fuel Supply & Lubricants
- Air Transport – Passenger & Cargo
- Freight Transport
- Fuel Transport
- Medical Services



Presentation Overview

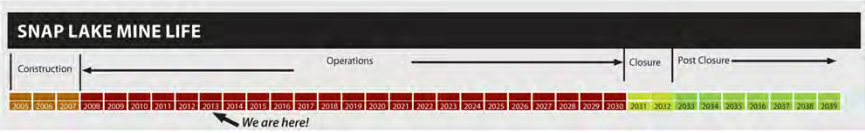
De Beers
GROUP OF COMPANIES

- Snap Lake & Gahcho Kué Regulatory Update
- Update on Snap Lake Water Management
- Gahcho Kué and Snap Lake Closure and Reclamation
- Gahcho Kué and Snap Lake Aquatic Effects Monitoring
- Demonstrations

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Snap Lake Mine - Regulatory

DE BEERS GROUP OF COMPANIES



Snap Lake Mine officially opened in July 2008

Aquatic Effects Monitoring Program (AEMP) redesign in progress

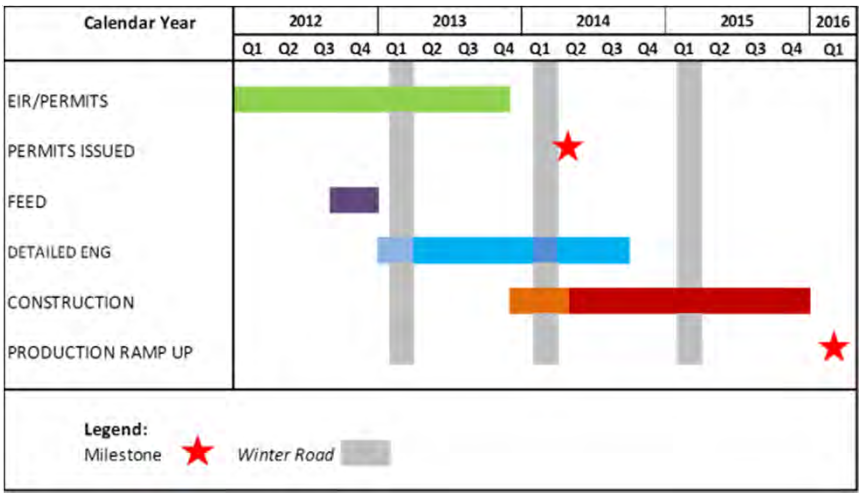
- September 9th, 2012 community meeting
- January 24th, 2013 technical session on reevaluation and monitoring
- May 29th, 2013 technical session on Weight of evidence and response framework
- Intent is for Board to approve plan June 20, 2013

Interim Closure and Reclamation Plan (ICRP) process

- February community meetings to discuss Closure
- May 13th, 2013 Technical Session
- Currently revising the ICRP based on feedback
- Board process will commence once submission is complete (likely end of May)

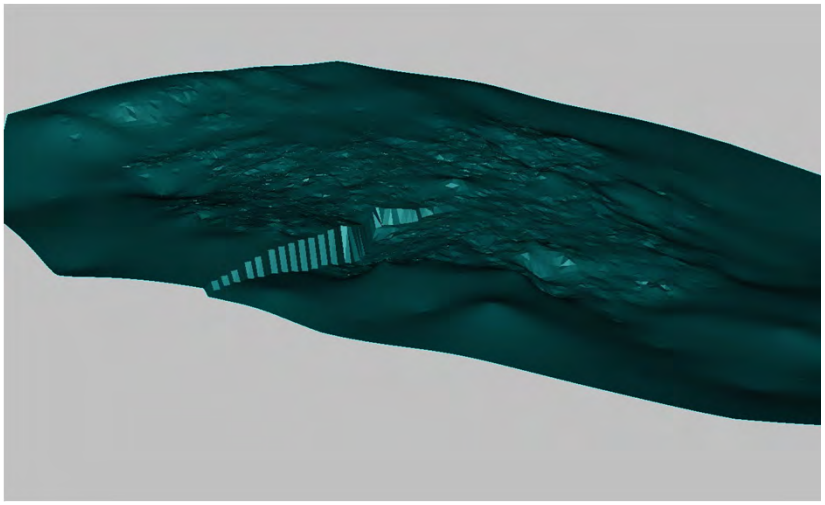
Gahcho Kué – Regulatory Update

DE BEERS GROUP OF COMPANIES

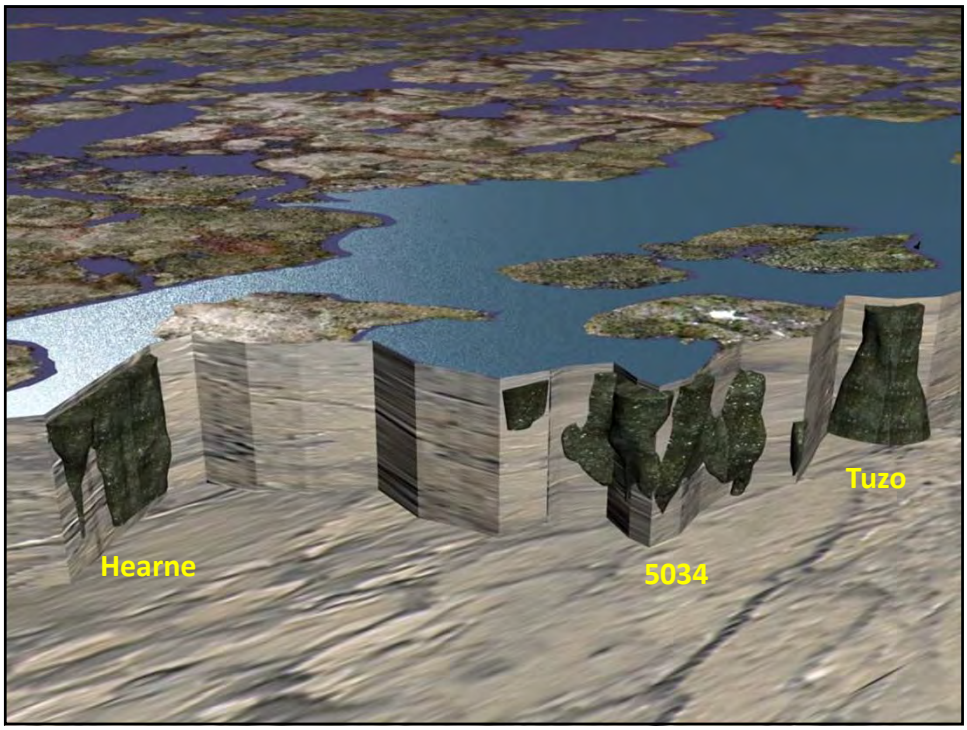


Snap Lake Mine - Kimberlites

DE BEERS
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT



Snap Lake Mine Water Management Enhancements

DE BEERS GROUP OF COMPANIES

- Sump infrastructure upgrade
- Continuous sump monitoring & more mature protocols
- "Flocc tank" pre-clarifying pool
- Debottlenecking & optimization of WTP & TWTP
- Increase of Clean Water System capacity U/G up to 8500 m3/d
- Increased monitoring/testing of bogs and shorelines pre and post freshet.
- Upcoming PS3 repair
- U/G water model updated
- IL6 ditch construction completed

Spring Freshet – Extra Measures

DE BEERS GROUP OF COMPANIES

- Increased monitoring
- Monitoring areas where spring freshet is most common
- Increasing discharge to the lake with a second diffuser
- Putting in place extra monitoring at SNP stations
- Monitoring Frequency – Daily
- Sampling Frequency - Weekly

SURVEILLANCE NETWORK PROGRAMME SAMPLING STATIONS

Site Operations Update

DE BEERS
GROUP OF COMPANIES

- Paste
  - Underground paste trials continuing
- Waste Management
  - New incinerator purchased, installation this summer
- North Pile Raise
  - Filling all voids within the starter cell to achieve final pile height

Water License

De Beers
GROUP OF COMPANIES

- Site specific work being carried out in preparation for application
- Update water modeling
  - Surface
  - Underground
- Additional water management enhancements for increased water discharge

Overview

DE BEERS
GROUP OF COMPANIES

- Re-visit AEMP at Snap Lake and introduction to AEMP at Gahcho Kué
- Key elements of the programs
- Similarities and differences between SL and GK
- Snap Lake re-evaluation- lessons learned and path forward
- Gahcho Kué- where we are at

Overview:

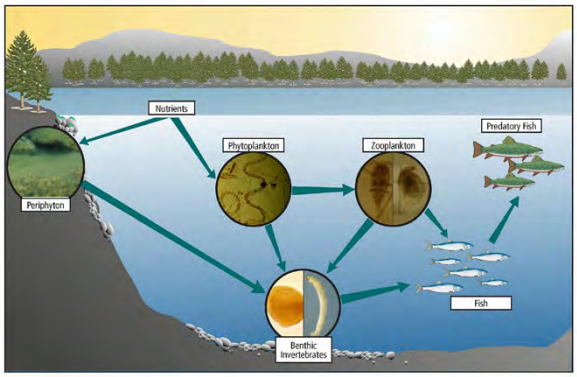
DE BEERS
GROUP OF COMPANIES

Key goals:

The water is safe to drink

The fish are good to eat

Food Web



The AEMP breakdown:

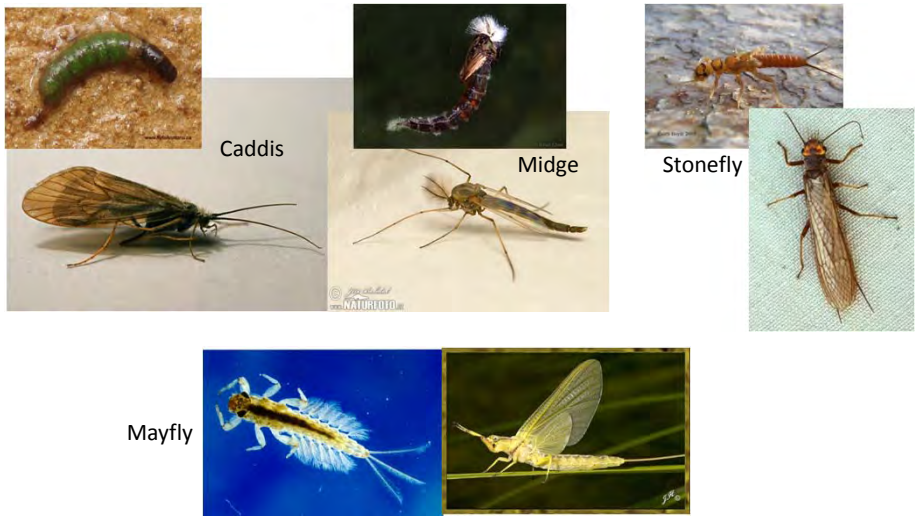
DE BEERS
GROUP OF COMPANIES

- **Six Core Components**
  - **Benthic Invertebrates**
  - **Fish: health, tissue metals, tasting, community**
  - **Plankton**
  - **Sediment Quality**
  - **Traditional Knowledge (expanded from 2005)**
  - **Water Quality**

***Same for Gahcho Kué with the addition of hydrology

Benthic Invertebrates = Bugs from the lake/stream bottom

DE BEERS
GROUP OF COMPANIES



Water Licence Requirements:

DE BEERS GROUP OF COMPANIES

- **A comprehensive AEMP-**
  - Living and non-living factors- model
  - Predict short and long-term effects
  - Test predictions made
  - Assess and need for additional action
  - Annual report
  - Major re-evaluation every 4 years
  - AEMP Response Plan
    - Significance thresholds
    - Action levels
    - Response

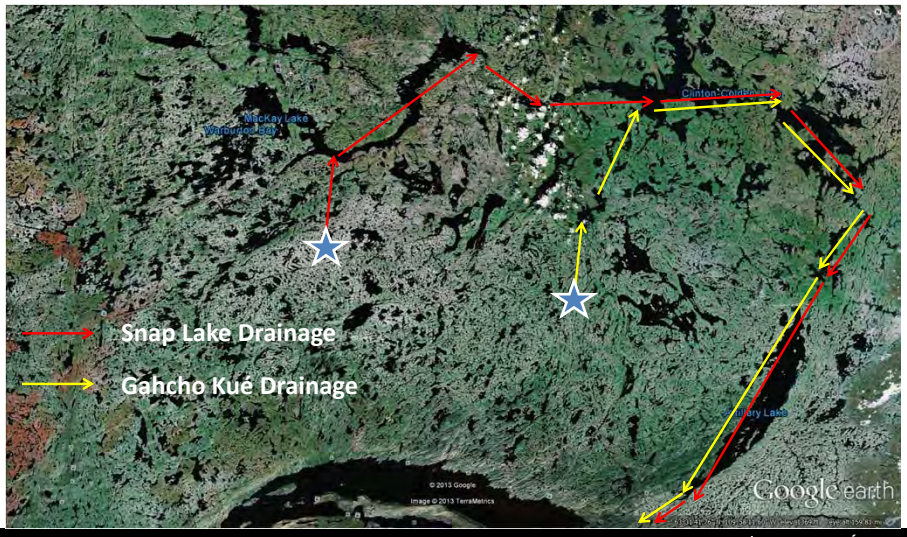
Sampling Methods

DE BEERS GROUP OF COMPANIES

- Sampling methods and data analyses are described and conducted on a component-specific basis- *check out the stations after this presentation*
- Samples collected in field, analyzed in the lab and compared to baseline and reference lakes.

The big picture: watershed

DE BEERS
GROUP OF COMPANIES



The similarities

DE BEERS
GROUP OF COMPANIES

Snap Lake fishes

- Burbot
- Lake Chub
- Slimy Sculpin
- Northern Pike (only Northeast Lake)
- Lake Trout
- Round Whitefish
- Arctic Grayling
- Longnose Sucker

Gahcho Kué fishes

- Burbot
- Lake Chub
- Slimy Sculpin
- Northern Pike
- Lake Trout
- Round Whitefish
- Arctic Grayling
- Longnose Sucker
- Ninespine stickleback

Key differences between Snap Lake and Gahcho Kué

DE BEERS
GROUP OF COMPANIES

- Snap Lake- underground
  Gahcho Kué- open pit
- Snap Lake is largely protected while Kennady Lake must be isolated and de-watered
- GK- downstream monitoring important

AEMP 2005-2011

DE BEERS
GROUP OF COMPANIES

Key Findings

- Design was appropriate (i.e. detected effects)
- As predicted, water quality changing in Snap Lake and downstream lakes = ↑nutrients
- But no evidence that changes are affecting the health of the lake or the drinking water
- Plankton and aquatic bug community changing likely due to nutrient enrichment
- Fish health, fish community and fish taste do not appear to be affected by changes to the water quality

Snap Lake AEMP 2005-2011

DE BEERS GROUP OF COMPANIES

Lessons Learned

Challenges

- Flow rates increased faster than expected
- Northwest arm not appropriate as reference*
- Gradient-style study design not appropriate
- Combining environmental and biology data- (e.g., water temperature affecting fish spawning times)

Successes

- Sample collection successful despite harsh climate
- Water quality models appropriate
- Predictions appear to be appropriate

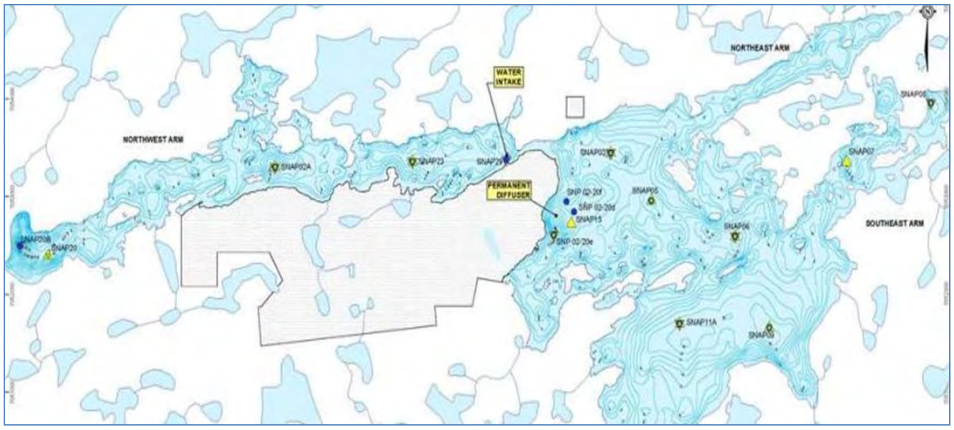
Snap Lake: Sampling Stations

DE BEERS GROUP OF COMPANIES

- In 2005, stations chosen to see if changes occurred ***further away*** from the mine
- In 2013, there is a change to looking at how things are ***changing over time*** and ***downstream***
- Why the change?
  - consistency among components
  - consistency over time
  - More important to compare to reference lakes and downstream conditions
  - Mathematical: enough sampling to see cause and effect

Proposed Monitoring Stations in Snap Lake

DE BEERS
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Proposed Monitoring Stations at Northeast Lake

DE BEERS
GROUP OF COMPANIES

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Proposed Monitoring Locations for Lake 13

DE BEERS
GROUP OF COMPANIES

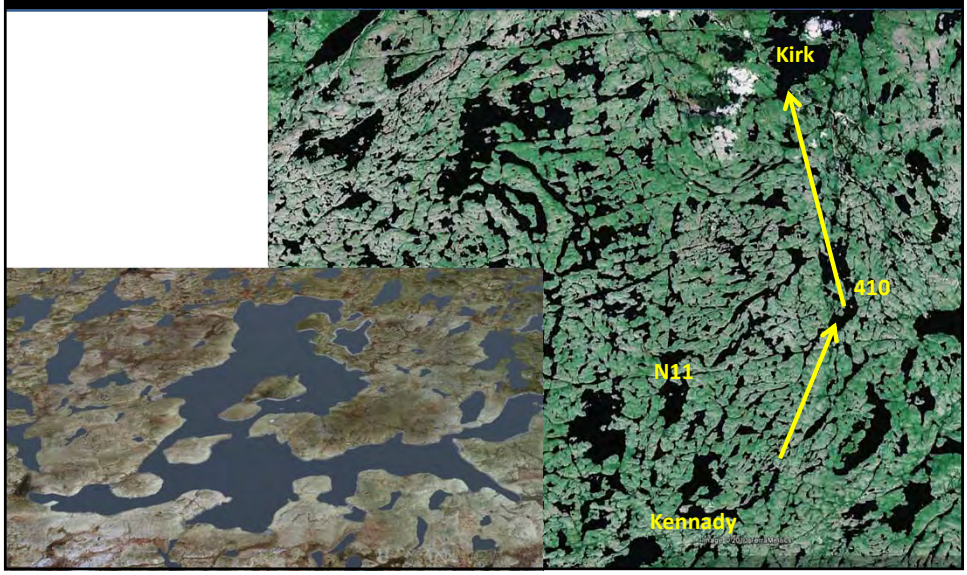
Current Process

DE BEERS
GROUP OF COMPANIES

- Snap Lake is redesigning the AEMP:
  - Sept. 2012- Community Meeting
  - Oct. 2012- 5 year summary (reevaluation) submitted
  - Nov. 2012- Redesign submitted
  - Jan. 2013- Technical Sessions
  - May 2013- Weight of evidence to be discussed
- Monitoring Program approved
- Under water license re-evaluation and redesign is required every *3 years*

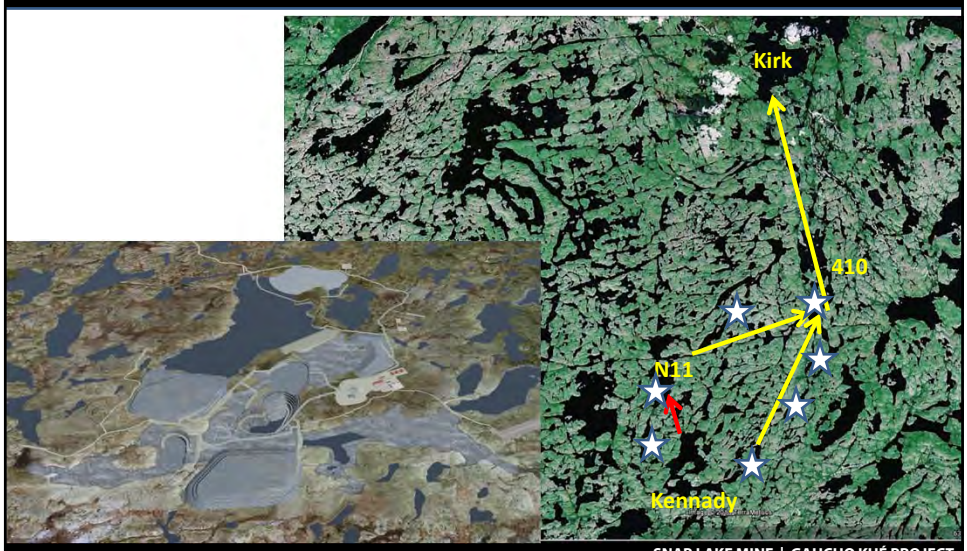
Gahcho Kué: Currently

De Beers
GROUP OF COMPANIES



Gahcho Kué AEMP Phase 1: De-watering/ Construction

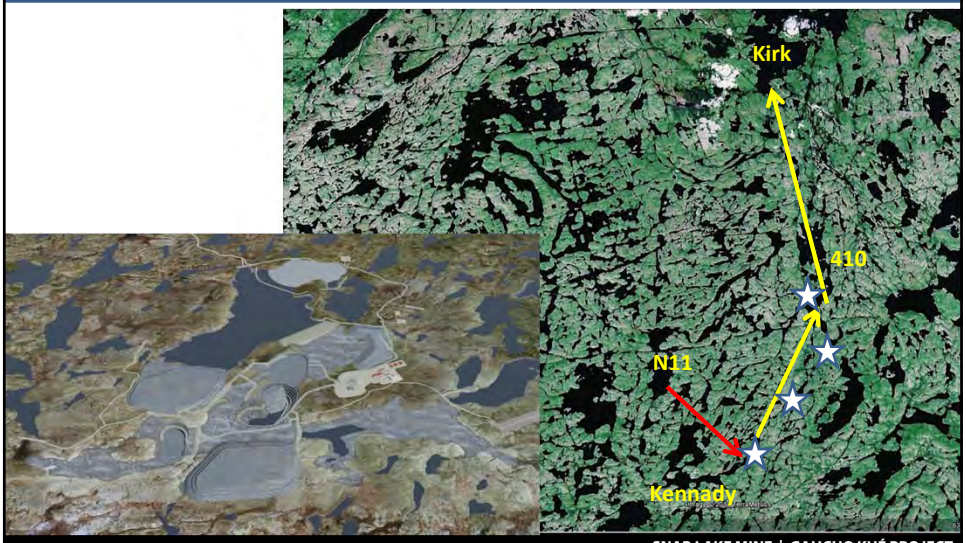
De Beers
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Gahcho Kué AEMP Phase 2: Operations/ Closure

De Beers
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Downstream flow

De Beers
GROUP OF COMPANIES

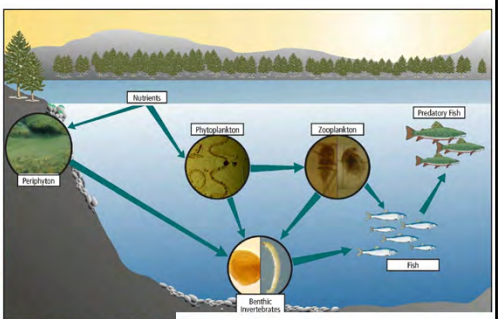
Water will be pumped from Lake N11 to the outflow of Kennady Lake to maintain natural water levels during the spring and summer

The purpose is to protect spawning fishes such as Arctic grayling.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

The challenges with finding good reference lakes

DE BEERS GROUP OF COMPANIES



Baseline and Reference Lakes

DE BEERS GROUP OF COMPANIES

- Snap Lake:
  2 new lakes chosen based on concerns from communities and regulators
- Gahcho Kué: East Lake and Reference Lake 2 & 3
  But we are looking for community advice during site visits in summer 2013.

Special Studies

DE BEERS
GROUP OF COMPANIES

- Occur as needed
- Include research activities that support monitoring
- Focus on development of monitoring methods/ findings and a better understanding of northern lakes/ rivers

- Currently proposed special studies include:
  1. Near shore environment
  2. Picoplankton
  3. Downstream Lakes
  4. Number of lake trout
  5. Food Web Analysis

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Traditional Knowledge

DE BEERS
GROUP OF COMPANIES

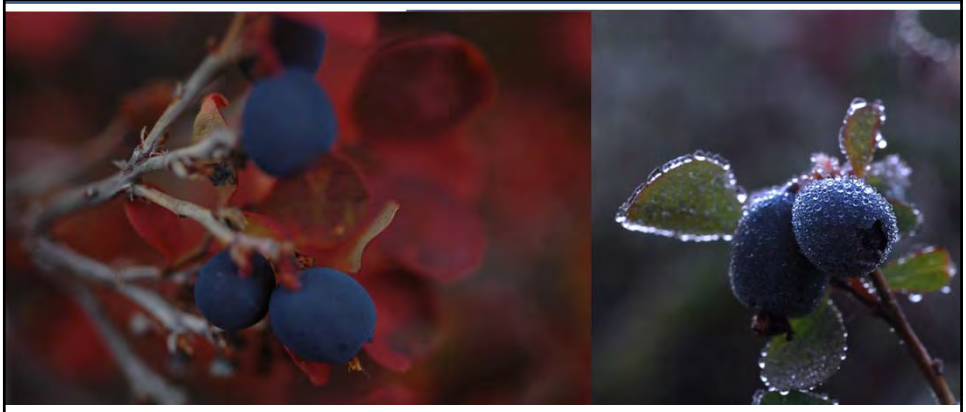
– Traditional Knowledge from Environmental Assessment
– Annual Fish Tasting Program
– Input on sampling sites and reference lake selection

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Don’t forget the berries during the fish tasting event

DE BEERS
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Questions/Comments?
SNAP LAKE MINE | GAHCHO KUÉ PROJECT

De Beers
GROUP OF COMPANIES

Objectives

DE BEERS
GROUP OF COMPANIES

- The objective of this presentation is to provide the proposed closure options and research for discussion and feedback
- Expected outcomes include:
  - A better understanding by community members of:
    - De Beers approach to community engagement.
    - The closure planning process for the Snap Lake Mine.
  - A better understanding by De Beers of:
    - community member questions and concerns regarding closure planning.
    - community member questions and concerns regarding De Beers community engagement approach.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Presentation Outline

DE BEERS
GROUP OF COMPANIES

- Overview of Closure Planning
- Progression of Closure and Reclamation Plan
- History of Engagement
- Current Interim Closure and Rec Plan Revision
  - Mine components and closure objectives
  - Closure Criteria
  - Options and Research
- Moving Forward

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Closure Planning in the NWT

DE BEERS GROUP OF COMPANIES

- **Regulatory Policy**
  - Developed by AANDC/INAC in 1980s in response to environmental impacts and financial burden to the Canadian public. In 2002, INAC released its *Mine Site Reclamation Policy for the Northwest Territories*.
- **Closure and Reclamation Plans**
  - Required as a condition of Water Licence issued by Land and Water Boards of the Mackenzie Valley.
- **Closure Plan Guidelines**
  - Developed by AANDC/INAC in 2000s to standardize process for proponents. The guidelines were revised by AANDC/INAC in partnership with the Land and Water Boards of the Mackenzie Valley in 2011. A finalized version of the guidelines has yet to be released.

Closure Planning in the NWT

DE BEERS GROUP OF COMPANIES

- De Beers Internal Policies also guide operations and closure planning.
  - Sustainable Development
  - Working with Aboriginal Communities
  - Mineral Waste Management
- Anglo American mine closure planning toolbox
  - The purpose of the toolbox is to ensure that closure planning is progressing at an adequate rate.

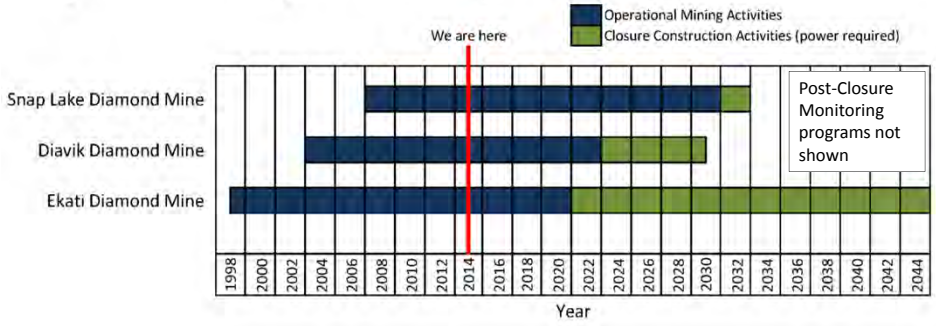
Time remaining to scheduled closure				
> 25 years	25-15 years	15-10 years	10-5 years	5-0 years
Preliminary Closure Plan		Draft Closure Plan	Detailed Closure Plan	Final Closure Plan

Source: Anglo American (2007). Sustainable Development Planning and Mine Closure. Toolbox, v1, 2007.

Closure Timeline

DE BEERS GROUP OF COMPANIES

- Snap Lake Mine is in the early stages of closure planning relative to nearby diamond mines (Ekati and Diavik).
- Final Closure and Reclamation Plan will be completed by 2028.
- Expected years to the end of mining operations are: Ekati - 7 years, Diavik - 9 years, and Snap Lake - 17 years.



Community Engagement

DE BEERS GROUP OF COMPANIES

- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as part of the Environmental Assessment process
  - Conceptual
- Methods of engagement included:
  - Information sessions in all several communities
  - Open house community meetings
  - One-on-one interviews
  - Guided site tours

Community Engagement

DE BEERS GROUP OF COMPANIES

- First Revision of Closure and Reclamation Plan
  - Interim Closure and Reclamation Plan (2006)
    - Requirement of the Water Licence issued by the Mackenzie Valley Land and Water Board.
    - Additional detail regarding closure methods and proposed research included to satisfy conditions of Water Licence and reviewer comments on existing plan.
- The Interim Closure and Reclamation Plan was subject to stakeholder review during the Board approval process.

Community Engagement

DE BEERS GROUP OF COMPANIES

- Current update of the Interim Closure and Reclamation Plan (2013)
  - Methods of engagement to date have included:
    - Stakeholder workshop in spring of 2011
    - Stakeholder review
    - Technical meetings held in September 2011
    - Public hearings in December 2011
    - Stakeholder review of the proposed Closure Objectives in October 2012
      - Closure Objectives approved by the MVLWB on November 22, 2012
    - Community meetings in February 2013
    - Technical meetings in March
  - Upcoming: Site visits in summer 2013, fish tasting in September 2013.

Closure and Reclamation Plan

DE BEERS
GROUP OF COMPANIES

1. Executive Summary
2. Introduction
3. Project environment
4. Project description
5. Requirements for permanent closure and reclamation
6. Progressive reclamation
7. Temporary closure
8. Integrated schedule of activities approaching permanent closure
9. Post-closure site assessment

Progression of the Closure Plan

DE BEERS
GROUP OF COMPANIES

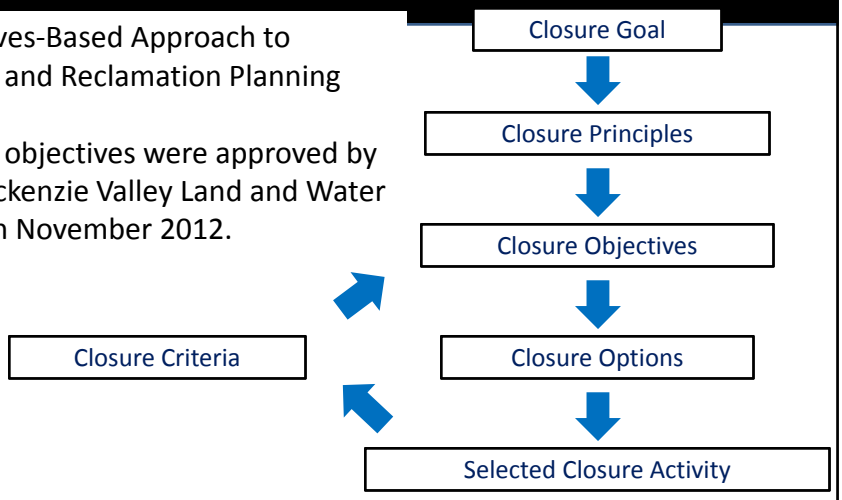
- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as a requirement of the Project Environmental Assessment
- Interim Closure and Reclamation Plan (2006)
  - Prepared as a requirement of the Water Licence MV2001L2-0002
- Interim Closure and Reclamation Plan (2011)
  - Prepared as part of the Water Licence application package
- Interim Closure and Reclamation Plan (2013)
  - Prepared as a requirement of the renewed Water Licence MV2011L2-0004.
  - Revised every 3 years
- Final Closure and Reclamation Plan (at least 2 years before the end of operations)

Closure Planning Framework

De Beers
GROUP OF COMPANIES

Objectives-Based Approach to Closure and Reclamation Planning

Closure objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.



Research Options and Uncertainties Workshop

De Beers
GROUP OF COMPANIES

- March 13 meeting to discuss Research options and uncertainty
  - Required by the MVLWB
- De Beers heard that a “decision road map” would be useful and is currently being developed
- Other comments focused on progressive reclamation/lessons learned from other mine sites
- ICRP to be revised and resubmitted to the MVLWB for stakeholder review
- Board process commences at that time
- Intent is that Closure criteria will be developed as the plan progresses

Current step: Reclamation Research Plan

- Aim to resolve uncertainties and answer questions pertaining to environmental risks for closure options or selected closure activities.

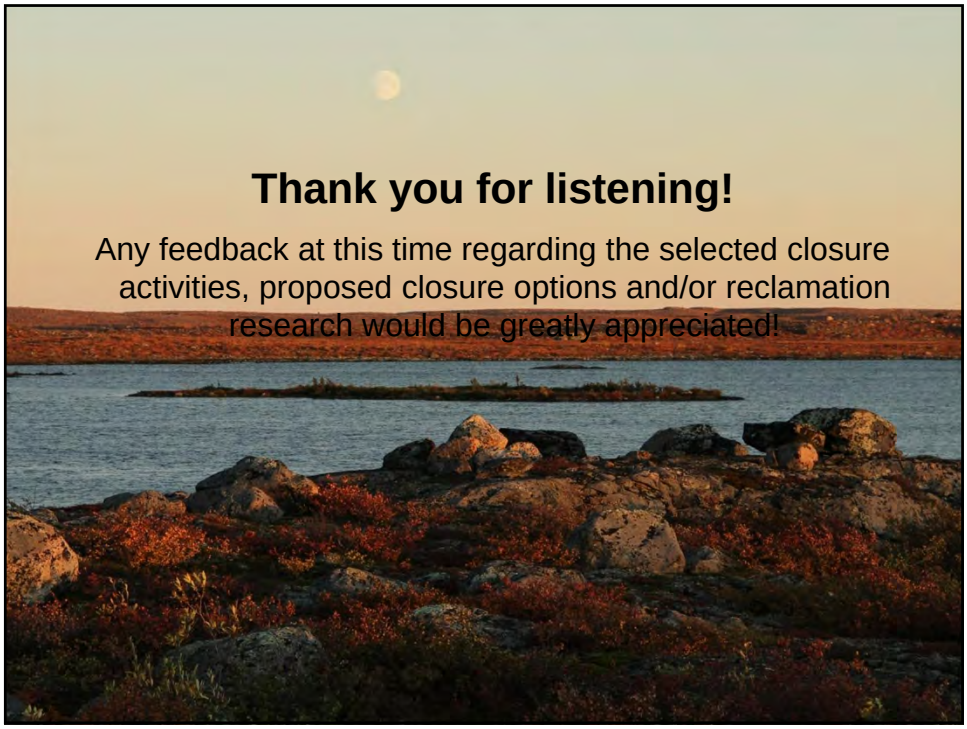
Closure Objective	What is the best closure objective for a particular mine component? Is the objective achievable?
Closure Options	Which of the closure options will best achieve the closure objective?
Selected Closure Activity	What is the best way to implement the selected closure activity?
Closure Criteria	What is the best way to measure whether the selected closure activity meets the closure objective?

Reclamation Research Plan

Next Steps

De Beers
GROUP OF COMPANIES

- De Beers is currently in the process of revising the Interim Closure and Reclamation Plan
  - Closure Objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.
  - De Beers visited communities in February 2013 to discuss closure
  - De Beers hosted a Closure Options and Research Workshop held in Yellowknife on March 13, 2013.
  - De Beers submits the Interim Closure and Reclamation Plan (version 3.2) in June, 2013 for stakeholder review.


Thank you for listening!
Any feedback at this time regarding the selected closure activities, proposed closure options and/or reclamation research would be greatly appreciated!

De Beers
GROUP OF COMPANIES
Gahcho Kué
Closure & Reclamation

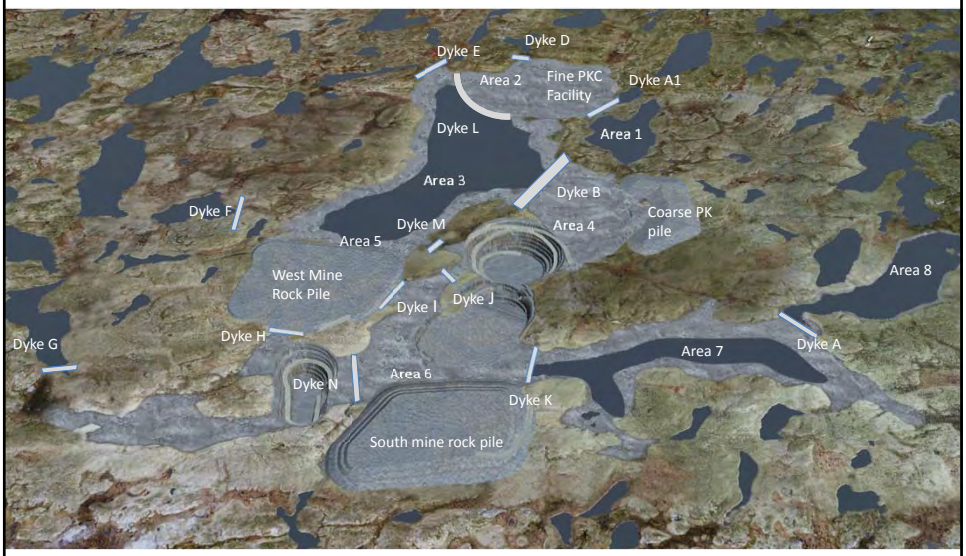
Construction (Year -1)

93

Construction (Year -2)

94

Operation (Year 1-11)



95

Closure (12 to 20+ Years)

96

Gahcho Kué – Closure & Reclamation

DE BEERS GROUP OF COMPANIES

- **Goals and Objectives** of the Conceptual Closure and Reclamation Plan (the Plan)
- **Key concepts** central to the Plan
- **Commitments** associated with the Plan
- **Overview of key activities** and **schedule**
- Conceptual Closure and Reclamation Plan **Summary**

Goals of the C&R (The Plan)

DE BEERS GROUP OF COMPANIES

- The **overall Goals** of the Conceptual C&R Plan includes:
  - **Minimize the environmental impacts** of operations to the extent practical
  - **Re-establish productive fish and wildlife habitat** as quickly as possible
  - **Create self-sustaining ecosystems**
  - **Achieve post-closure conditions** that do not require maintenance
- The C&R Plan is considered **"conceptual"** at this stage, and will be refined over time.

Long-term Objectives

DE BEERS GROUP OF COMPANIES

Long-term Objectives of the conceptual C&R Plan:

- **Re-establish the natural fish habitat** that maybe lost, altered, or disturbed as a result of the Project
- **Return site conditions to self-sustaining ecosystems** typical in the region
- **Create**, to the extent practical, **final landforms that integrate into the natural landscape**

Short-term Objectives

DE BEERS GROUP OF COMPANIES

- **Short-term Objectives of the Plan**:
  - **Reclaim areas as soon as possible** once they are no longer required
  - **Minimize the risk of erosion/sediment** loss from on-site runoff
  - **Stabilize slopes** to maintain safe working conditions and to aid reclamation activities
  - **Restore natural drainage,** where possible
  - **Establish ground cover** to limit soil erosion and dust production
  - **Maintain** an environmentally safe site

Key Concepts Community and Traditional Knowledge

DE BEERS GROUP OF COMPANIES

- **Community Feedback and Traditional Knowledge**
  - Beginning with the earliest phases of exploration at Kennady Lake, De Beers initiated and maintained contact with the various communities near the Project
  - Based on feedback received during the engagement process, De Beers identified community inputs for reclamation
    - Example: restore Kennady Lake as quickly as possible
  - The Plan was developed to address, to the extent possible, community inputs for reclamation
    - Example: pumping water from Lake N11 during refilling will reduce the time required to fill Kennady Lake from 20 years to 8 or 9 years

Conceptual C&R Plan – Commitments

DE BEERS GROUP OF COMPANIES

- Use progressive or **ongoing reclamation to minimize** the total amount of area disturbed by the Project activities at any one time
- **Recover as much soil** as practical for use in reclamation activities
- **Undertake reclamation trials** throughout the life of the Project
- **Liaise with other mine operators** in the Canadian Arctic – to share reclamation information/research to apply proven practices

Meeting Overview

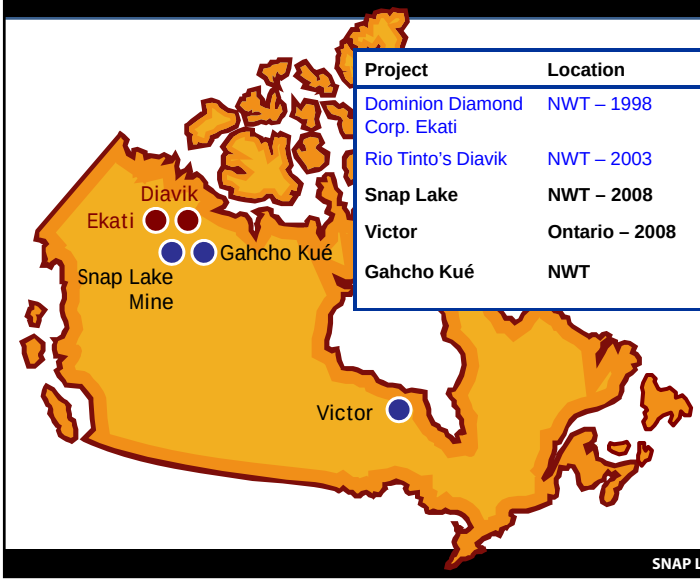
De Beers
GROUP OF COMPANIES

De Beers Update Snap and GK

- Human Resources Initiatives
- Business Opportunities
- Environment & Permitting Overview
- Closure and Reclamation
- Aquatic Effects Monitoring Program

De Beers in Canada

DE BEERS
GROUP OF COMPANIES



Project	Location	Production
Dominion Diamond Corp. Ekati	NWT – 1998	2.5 million carats/2011
Rio Tinto's Diavik	NWT – 2003	6.7 million carats/2011
Snap Lake	**NWT – 2008**	**870,000 carats/2012**
Victor	**Ontario – 2008**	**690,000 carats/2012**
Gahcho Kué	**NWT**	**Environmental Impact Review**

Snap Lake Mine – Quick Facts

DE BEERS
GROUP OF COMPANIES

- Located at Snap Lake**, 220 km northeast of Yellowknife**
- Completely **underground operation**
- Mining area <500 ha
- 2.5m kimberlite dyke dips **beneath Snap Lake** 12-15 degrees
- New Land Use Permit issued on February 16, 2011 for 5 years
- New Water License issued on June 14, 2012 for 8 years

Snap Lake Mine
Water Management Upgrades

DE BEERS
GROUP OF COMPANIES

- Pro-active water management enhancement ongoing
- Focused on source, containment, and treatment before being released
- No incidents during 2013 spring melt

Gahcho Kué Project

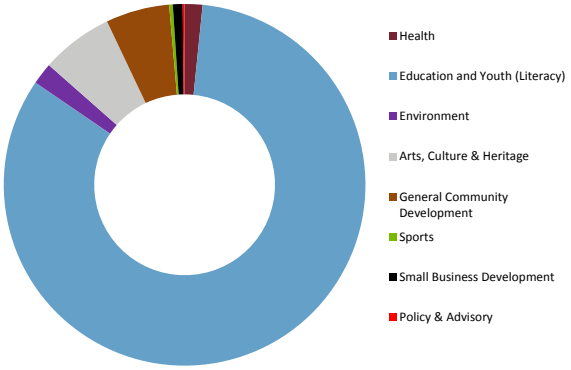
DE BEERS
GROUP OF COMPANIES

- **Located at Kennady Lake**, 280 km northeast of Yellowknife, 80 km southeast of Snap lake Mine
- **Joint Venture** – De Beers Canada (51% - operator); Mountain Province Diamonds (49%)
- **Open Pit Operation** – 5034, Hearne & Tuzo
- **$600-$650 million** capital cost (2010 NI 43-101 report)
- 2 year construction
- ~11 year life of mine
- **360-380** jobs at full production
- **690 jobs at peak** of construction
- Average **annual production 4.5 million carats**/3 million tonnes

Social Investment

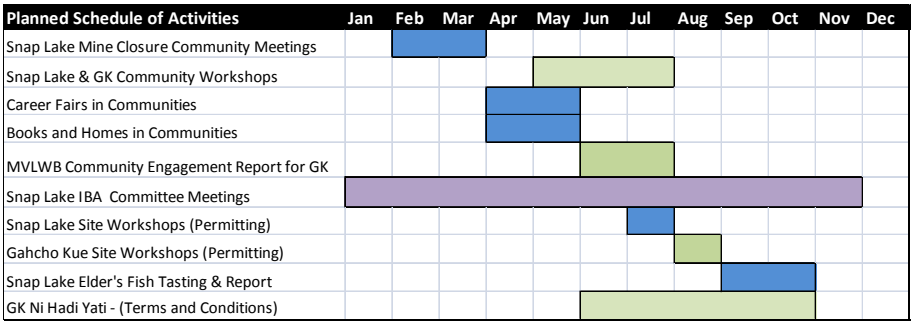
De Beers
GROUP OF COMPANIES

- $13.3 million spent on social investment in the Northwest Territories from 2008-2012
- 83% focused on training, education and literacy
- $3.3 million in social investment in 2012



2013 Engagement

De Beers
GROUP OF COMPANIES



NOTE: Some of the slides in the IBA presentation have been deleted from this record to respect confidentiality requirements of the IBA with the Tlicho Government.

2012 Employment

DE BEERS
GROUP OF COMPANIES

- 93 full-time jobs filled by De Beers in 2012
- 3,907 total applications received
- Nearly half of these jobs filled by NWT residents
- 275 applications received from Tlicho residents
- 13 Tlicho members hired

Number of Employees (De Beers & Contractors) working at Snap Lake
January 1 to December 31, 2012

Priority Group	Unskilled	Semi Skilled	Skilled	Professional	Management	TOTAL Active Employees
TLICHO	25	23	8	1	0	57
Total Active Employees	110	319	382	23	76	910
% of total who are TLICHO Citizens	23%	7%	2.1%	4%	0%	6%

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

2012 Employment

DE BEERS
GROUP OF COMPANIES

Employment De Beers Canada Employees – First Quarter 2013

Priority Group	Unskilled	Semi Skilled	Skilled	Professional	Management	TOTAL EMPLOYEES*
Tlicho	32	33	8	1	0	74
TOTAL Employed	125	338	394	23	74	954
% Tlicho	2.5%	10.2%	2%	4%	0%	7.75%

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Schedule B
Employment & Training Opportunities

DE BEERS
GROUP OF COMPANIES

2013 School Year

- High School Visits - Exploring Career Opportunities - Professionals from Snap Lake visited Tlicho high schools
  - ❑ Behchoko Culture Centre
  - ❑ Jean Wetrade Gameti School
  - ❑ Mezi Community School

NWT Post Secondary Scholarship Program

DE BEERS
GROUP OF COMPANIES

- Two kinds of scholarships available to NWT resident students enrolled in or attending post-secondary degree programs
- 15 "lump sum" scholarships worth $2,000 each
- Education Sponsorship worth up to $55,000 over a four-year degree program

Lump Sum Scholarships

DE BEERS
GROUP OF COMPANIES

- Available to NWT students studying in the following degree programs:
- Mine Engineering;
- Geology;
- Finance & Accounting (Commerce);
- Human Resources;
- Occupational Health & Safety;
- Environmental Sciences;
- Metallurgy & Chemical Engineering; and,
- Mechanical & Electrical Engineering

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Education Sponsorship

DE BEERS
GROUP OF COMPANIES

- Up to four years of significant financial support on an increasing scale
- Summer employment between school years
- Full-time employment upon completion of degree

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Health & Wellness

De Beers
GROUP OF COMPANIES

2012 Initiatives in Tlicho Communities

- Aboriginal Day Celebrations
- Books in Homes Program
- First Aid Workshop at CJBS
- Handgames Tournaments
- National Addiction Awareness Week
- Spring Carnivals
- Sports for Youth
- Tlicho Annual Gathering
- Youth Conference
- Youth Christmas Celebrations

Health & Wellness

De Beers
GROUP OF COMPANIES

2013 Highlights

- Books in Homes in Tlicho Schools
  - 5 schools
  - 900+ students
  - $29,706.59
- First Aid & CPR Workshop
- Spring Carnivals
- Youth & Men Handgames in Behchoko

Upcoming
- HR Workshop at Snap Lake
- Snap Lake Family Visits

2012 Recruitment Efforts

De Beers
GROUP OF COMPANIES

2012 De Beers Recruitment				
Total Competions	Total Applications Received	Total Northern Applicants	Total Northern Aboriginal Applicants	IBA Applicants
78	3,907	1,112	514	345
		Percentage of Total	Percentage of Total	Percentage of Total
		28%	13%	9%
Total Hired	Total Southerners Hired	Total Northerners Hired	Total Northern Northern Aboriginals Hired	IBA Members Hired
93	50	43	23	14
		Percentage of Total Hired	Percentage of Total Hired	Percentage of Total Hired
		46%	25%	15%

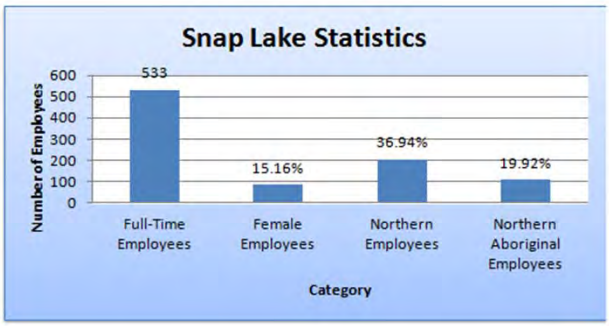
2012 Total Tlicho Applicants: 275

Recruitment challenges continue with finding relevant skills and abilities to fill the vacancies at Snap Lake with Northern residents.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Snap Lake Mine Statistics

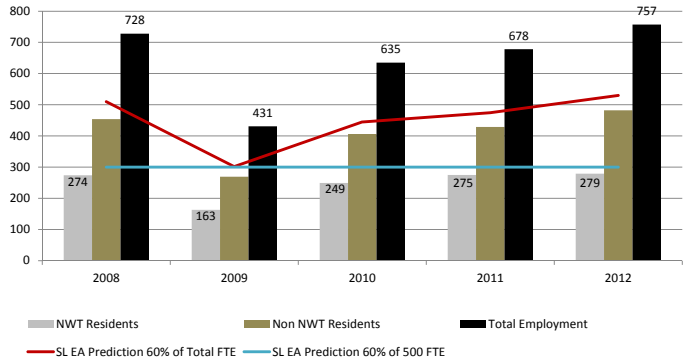
DE BEERS
GROUP OF COMPANIES



*as of May 2013

Snap Lake Mine Employment History

DE BEERS
GROUP OF COMPANIES



- During the Snap Lake Environmental Assessment, De Beers predicted there would be 500 FTE for the Operations Phase and that 60% or 300 would be NWT Residents
- In 2012, De Beers and its contractors employed 757 FTE, of which 36% or 279 were NWT Residents
- In 2012, 61% of the workforce were De Beers employees and 39% were Contractors

NWT Diamond Mine Employment - 2011

DE BEERS
GROUP OF COMPANIES

	Predicted Employees Operations Phase	Actual Employment (December 2011)	# Northern Resident Predicted	Actual Northern Resident Employment	**Northern** Residency Variance (Actual versus Predictions)
BHP Billiton's Ekati Mine	926	1,213	574	650 (54%)	+76
Diavik Diamond Mine	400	1,137	264	642 (56%)	+378
De Beers Snap Lake Mine	500	678	300	249 (37%)	-51
Predicted Total Workforce Requirements	1,826	3,044	1,138	1,541	**+403**

The Good News: *In 12 Years of Diamond Mining in the NWT, 403 more people than industry forecast would be working in our industry are in fact employed. Training and Development has been successful.*

The Challenge: For De Beers and other new mines opening up in the NWT, continued government educational investment in the NWT population that is not currently employed is required.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Socio-Economic Agreement Training Commitment

DE BEERS
GROUP OF COMPANIES

	SUMMARY			
	Trades Training	Apprenticeship	UG	
Commitment	10	10	20	40
Current Trainees	9	7	5	21
Program Graduates	16	5	18	39
Trainees To Date	24	23	34	81

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Ensuring Northern Residents are Priority

DE BEERS GROUP OF COMPANIES

- Recruitment
  - News/North
  - Jobsnorth.ca
  - Community Postings
  - Website
  - Direct Human Resources Contact Information
- Pick-up points in 11 NWT Communities
- Travel Allowance to get to Pick-up Points
- Partnership with the Mine Training Society
- Northern Allowances
  - NWT Salary Enhancement Benefits
  - Remote Site Allowance

Trades / Apprentices

DE BEERS GROUP OF COMPANIES

- 7 apprentices on track to become journeypersons
- Currently 9 trades trainees
- 5 Underground Mining Trainees
- 11 Females in Underground Miner positions
- Since the mine opened, 39 northerners have graduated from our training programs

Trades / Apprentices (Cont'd)

DE BEERS GROUP OF COMPANIES

- Apprenticeship Program Fully Funded
- Accommodations while in school of choice fully funded
- All trainees & apprentices hired are northern Aboriginal
- Assistance with schooling material from our on site Training Coordinators
- Trades Entrance Exam assistance and preparation through Learning Centre

Workforce Development

DE BEERS GROUP OF COMPANIES

- Work Placements facilitated through MTS
  - 4 Mine Process Operator Trainees joined us in 2013 for work placement experience. One has recently been hired as an Operator Trainee on a full time basis while another's contract was extended for Process Summer Student work.
- Summer Work Placement of 2 Maintenance Helpers
- 2 Aurora College Office Administration work placements in 2012
- Continued support and enrollment of employees in the Northern Leadership Development Program through Aurora College
- High School Career Pathing Workshop May 2013

Mine Training Society Partnership

DE BEERS GROUP OF COMPANIES

- Introduction to Mining (Part 1)
  - 6 week program
  - Hay River, Yellowknife, Fort Smith
  - Start Date: Possible July start
- Underground Miner Training Program (Part 2)
  - 12 week Program
  - Intake Start Date: August 26th
- Mineral Processing Operator Trainee Program
  - 14 weeks
  - Fort Smith
  - Start Date: September 3 – December 6th, 2013 / January 8th 2014

Gahcho Kué Opportunities

DE BEERS GROUP OF COMPANIES

- Up to 690 jobs at peak of construction
- 360-380 jobs available during operations
- Human Resource Strategy developed in 2012
- Labour shortages continue to exist in the NWT
- Mine Training Program (MTS) will continue to be a significant partner in training Northerners for jobs at Gahcho Kué
- $5 million cash and in-kind commitment to MTS "Mining the Future" through 2015
- Mining the Future targets training in a number of areas: Mineral Process Operating Technician; Camp Cook; Cook Apprenticeship; Heavy Equipment Operator; Geoscience Field Assistant; Introduction to Underground Mining; Underground Mining; and General Construction

NWT Post Secondary Scholarship Program

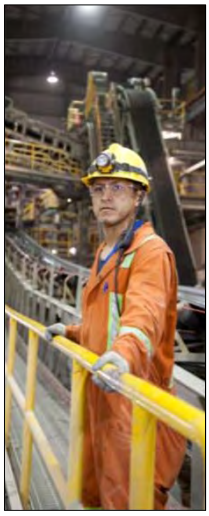
DE BEERS
GROUP OF COMPANIES

- Two kinds of scholarships available to NWT resident students enrolled in or attending post-secondary degree programs
- 15 “lump sum” scholarships worth $2,000 each
- Education Sponsorship worth up to $55,000 over a four-year degree program

Lump Sum Scholarships

DE BEERS
GROUP OF COMPANIES

- Available to NWT students studying in the following degree programs:
- Mine Engineering;
- Mine Geology;
- Finance & Accounting (Commerce);
- Human Resources;
- Occupational Health & Safety;
- Environmental Sciences;
- Metallurgy & Chemical Engineering; and,
- Mechanical & Electrical Engineering



Education Sponsorship

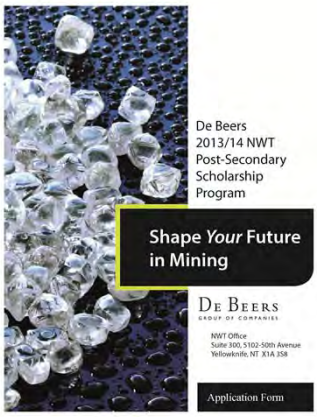
DE BEERS
GROUP OF COMPANIES

- Up to four years of significant financial support on an increasing scale
- Summer employment between school years
- Full-time employment upon completion of degree

How to Apply

DE BEERS
GROUP OF COMPANIES

- Application form online – www.debeersgroup.com/canada
- Two letters of reference
- Awarded on merit, including academic achievement, community service, leadership and extra-curricular activities



Forward Looking…

DE BEERS
GROUP OF COMPANIES

- Continued focus on Northern hires for Snap Lake Mine and upcoming GK hiring
- Continued focus on presence at community career fairs when available
- Partnership with Mine Training Society

Questions?

DE BEERS
GROUP OF COMPANIES

Business Investment

De Beers
GROUP OF COMPANIES

Construction and Operations Expenditure January 2005 to December 15, 2012		
	Expenditure to Date	Percent of Expenditure
Total Expenditure YTD	$1,893,410,418	N/A
NWT Portion	$1,322,019,874	69.82%
Aboriginal Portion on NWT Expenditure	$768,013,863	58.09%

De Beers Business Policy

De Beers
GROUP OF COMPANIES

- Based on three pillars of sustainable development;
  - Economic
  - Social
  - Environmental sustainability
- Goods and Services
  - Goods and Services procured from Businesses must meet mining industry service and quality standards
- Long Term Sustainability/Business Capacity
  - Development of long-term sustainability and business capacity will be a fundamental consideration when entering into business relationships with Aboriginal and/or NWT businesses
  - Our work with Aboriginal and/or NWT business will support the development of technical and business skills and capacities that are transferable to other industries

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- De Beers will treat all companies fairly regardless of size
- Contractors
  - All contractors will be required to understand and comply with De Beers' Safety, Health, and Environmental Management Systems
  - All contractors will be required to understand, comply with and report on their success regarding northern hiring priorities

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- Business Registry
  - Develop a Business Registry for Northern and Aboriginal businesses to pre-qualify themselves for business opportunities
- Joint Ventures
  - Identify possible joint venture opportunities for Aboriginal Businesses
- Post Award Analyses
  - Coordinate post-award analyses for unsuccessful Northern and Aboriginal bidders to communicate areas of improvement in the commercial and/or technical aspects of the final evaluation

De Beers Business Registry

DE BEERS
GROUP OF COMPANIES

- June 2013 Re-launch
- Businesses can register
  - Company Info
  - Goods and Services
  - Socio-Economic Commitments
  - Work History
  - Health and Safety
- De Beers Procurement
  - Pre-qualify Businesses
  - Learn of new Business Formation and Joint Ventures

De Beers Business Registry

DE BEERS
GROUP OF COMPANIES

- Current Businesses
- Aboriginal Business Development Arms
- Profiles must be complete
- De Beers will assist those who require assistance to complete Profile online
- **www.debeersgroup.com/canada/businessregistry**

Snap Lake Opportunities

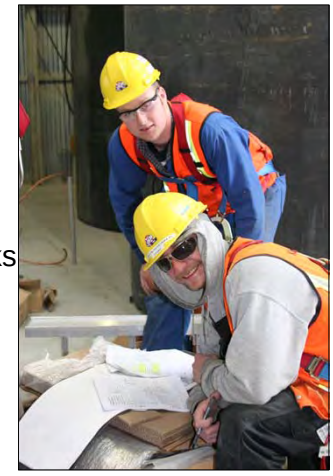
DE BEERS
GROUP OF COMPANIES

- Consolidation and Expediting -11/30/2013
- Winter Road Construction - 10/31/2013
- Fuel Haul – Winter Road - 8/31/2013
- Catering, Janitorial, Housekeeping - 9/30/2013

Gahcho Kue Opportunities – Construction

DE BEERS
GROUP OF COMPANIES

- General Contractor
- Civil Construction & Production Fleet
- Light Vehicles
- Initial Earthworks & Maintenance
- Liner Installations
- Construction and Erection of Fuel Tanks
- Accommodations Complex
- Communications & IT
- Fire Protection & Alarm
- Security Monitoring



General Contractor

DE BEERS
GROUP OF COMPANIES

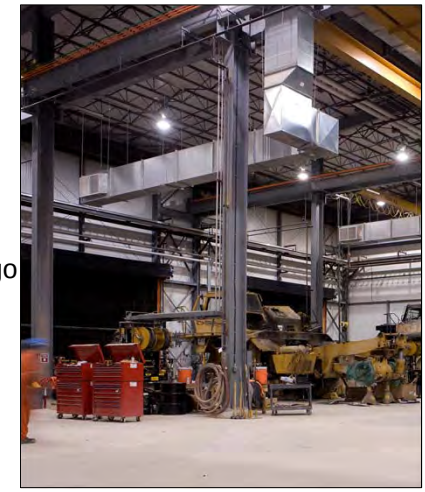
- Will include:
  - Concrete works
  - Structural Steel
  - Mechanical
  - Electrical/Instrumentation
  - Emulsion Plant

-Crushing
-Fuel Tank Piping
-Process Plant
-Power Plant
-Truck Shop
-Surface Utility Piping

Gahcho Kue Required Services Construction & Operations

DE BEERS
GROUP OF COMPANIES

- Tire Supply & Maintenance
- Explosives
- Winter Road Construction
- Camp Catering & Janitorial
- Fuel Supply & Lubricants
- Air Transport – Passenger & Cargo
- Freight Transport
- Fuel Transport
- Medical Services



Presentation Overview

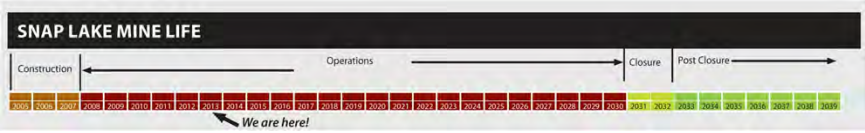
De Beers
GROUP OF COMPANIES

- Snap Lake & Gahcho Kué Regulatory Update
- Update on Snap Lake Water Management
- Gahcho Kué and Snap Lake Closure and Reclamation
- Gahcho Kué and Snap Lake Aquatic Effects Monitoring
- Demonstrations

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Snap Lake Mine - Regulatory

DE BEERS GROUP OF COMPANIES



Snap Lake Mine officially opened in July 2008

Aquatic Effects Monitoring Program (AEMP) redesign in progress

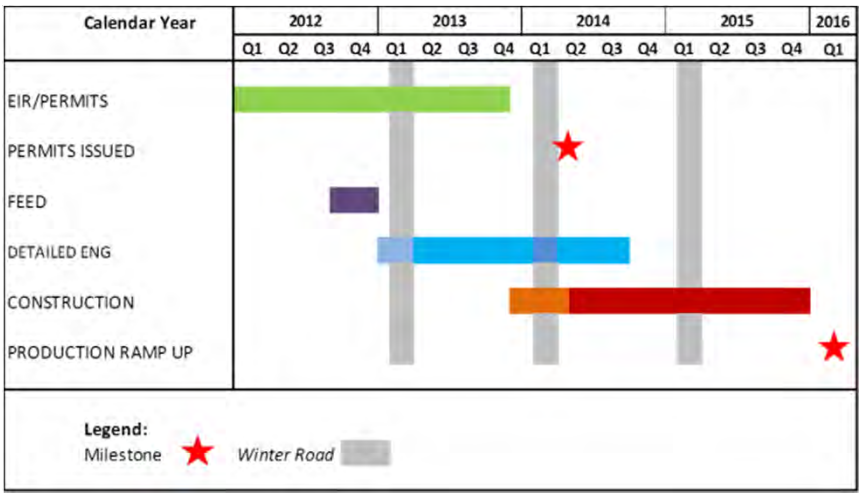
- September 9th, 2012 community meeting
- January 24th, 2013 technical session on reevaluation and monitoring
- May 29th, 2013 technical session on Weight of evidence and response framework
- Intent is for Board to approve plan June 20, 2013

Interim Closure and Reclamation Plan (ICRP) process

- February community meetings to discuss Closure
- May 13th, 2013 Technical Session
- Currently revising the ICRP based on feedback
- Board process will commence once submission is complete (likely end of May)

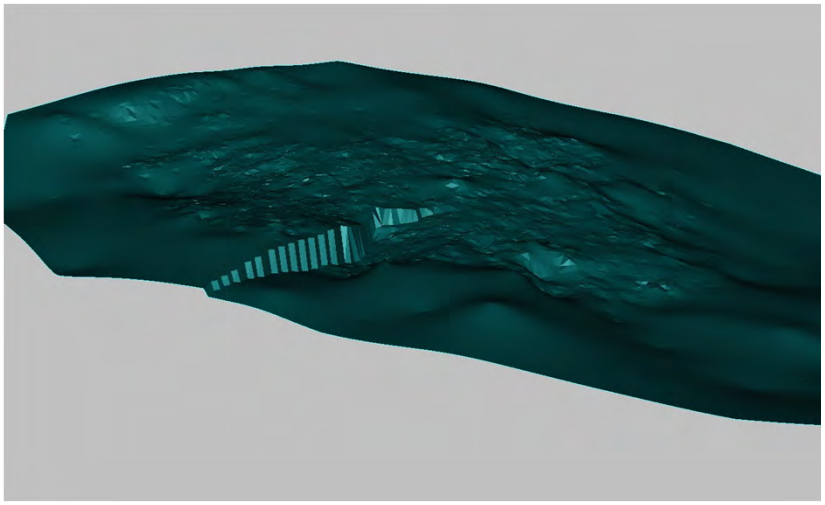
Gahcho Kué – Regulatory Update

DE BEERS GROUP OF COMPANIES

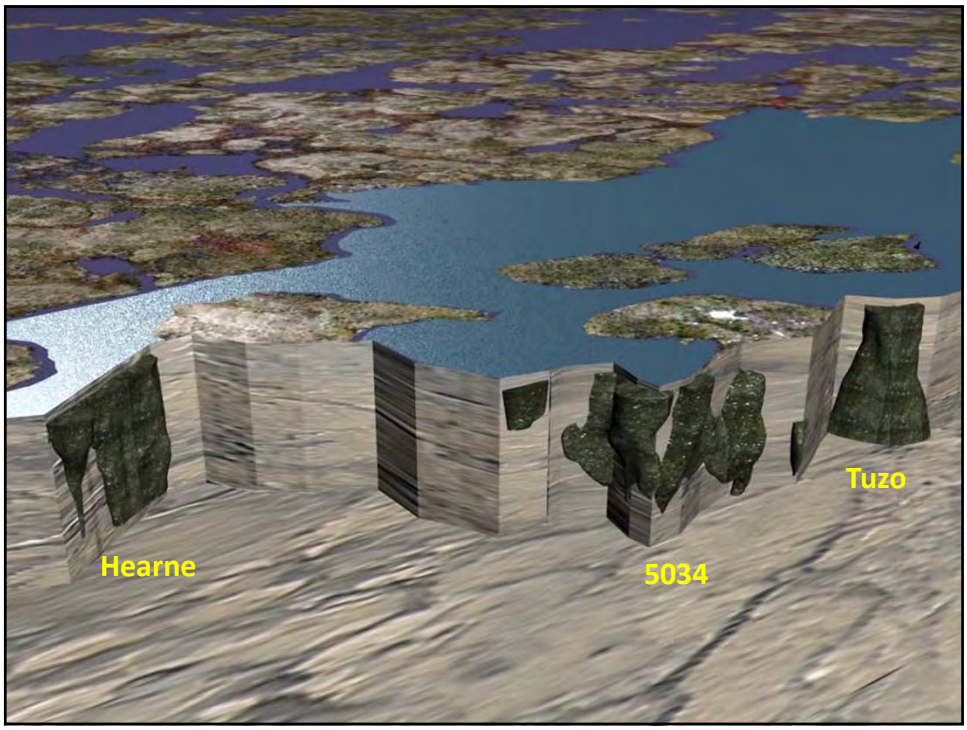


Snap Lake Mine - Kimberlites

DE BEERS
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT



Snap Lake Mine Water Management Enhancements

DE BEERS GROUP OF COMPANIES

- Sump infrastructure upgrade
- Continuous sump monitoring & more mature protocols
- "Flocc tank" pre-clarifying pool
- Debottlenecking & optimization of WTP & TWTP
- Increase of Clean Water System capacity U/G up to 8500 m3/d
- Increased monitoring/testing of bogs and shorelines pre and post freshet.
- Upcoming PS3 repair
- U/G water model updated
- IL6 ditch construction completed

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Spring Freshet – Extra Measures

DE BEERS GROUP OF COMPANIES

- Increased monitoring
- Monitoring areas where spring freshet is most common
- Increasing discharge to the lake with a second diffuser
- Putting in place extra monitoring at SNP stations
- Monitoring Frequency – Daily
- Sampling Frequency - Weekly

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

SURVEILLANCE NETWORK PROGRAMME SAMPLING STATIONS

Site Operations Update

DE BEERS
GROUP OF COMPANIES

- Paste
  - Underground paste trials continuing
- Waste Management
  - New incinerator purchased, installation this summer
- North Pile Raise
  - Filling all voids within the starter cell to achieve final pile height

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Water License

De Beers
GROUP OF COMPANIES

- Site specific work being carried out in preparation for application
- Update water modeling
  - Surface
  - Underground

- Additional water management enhancements for increased water discharge

Overview

DE BEERS
GROUP OF COMPANIES

- Re-visit AEMP at Snap Lake and introduction to AEMP at Gahcho Kué
- Key elements of the programs
- Similarities and differences between SL and GK
- Snap Lake re-evaluation- lessons learned and path forward
- Gahcho Kué- where we are at

Overview:

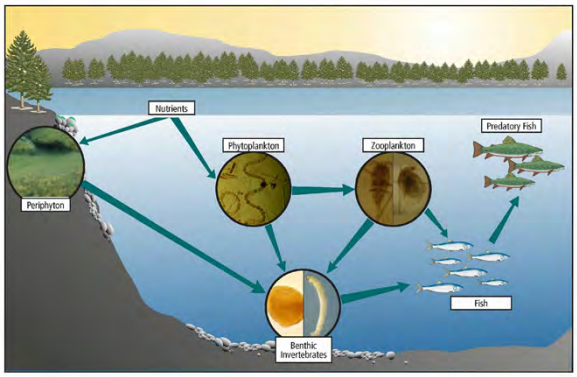
DE BEERS
GROUP OF COMPANIES

Key goals:

The water is safe to drink

The fish are good to eat

Food Web



The AEMP breakdown:

DE BEERS
GROUP OF COMPANIES

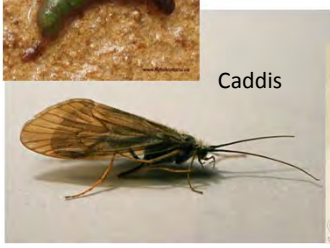
- **Six Core Components**
  - **Benthic Invertebrates**
  - **Fish: health, tissue metals, tasting, community**
  - **Plankton**
  - **Sediment Quality**
  - **Traditional Knowledge (expanded from 2005)**
  - **Water Quality**

***Same for Gahcho Kué with the addition of hydrology

Benthic Invertebrates = Bugs from the lake/stream bottom

DE BEERS
GROUP OF COMPANIES

Caddis



Midge

Stonefly

Mayfly

Water Licence Requirements:

DE BEERS GROUP OF COMPANIES

- **A comprehensive AEMP-**
  - Living and non-living factors- model
  - Predict short and long-term effects
  - Test predictions made
  - Assess and need for additional action
  - Annual report
  - Major re-evaluation every 4 years
  - AEMP Response Plan
    - Significance thresholds
    - Action levels
    - Response

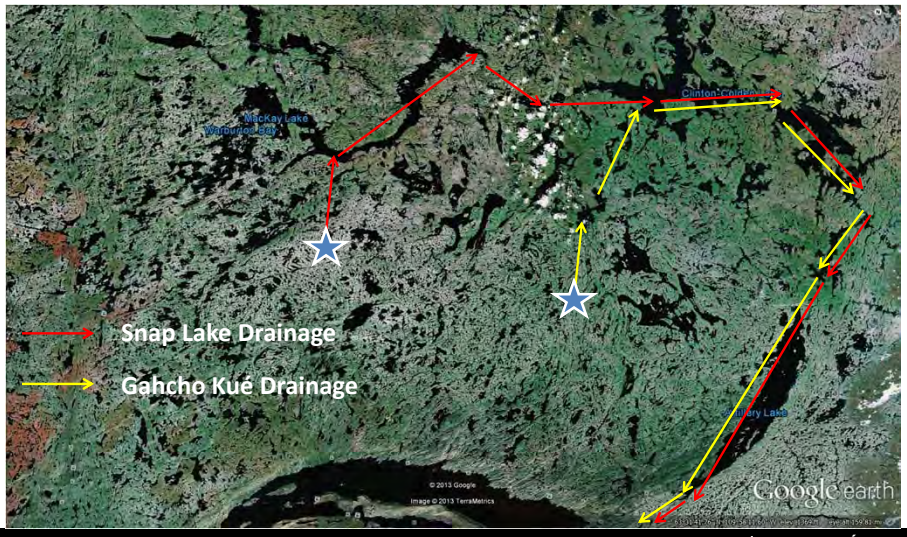
Sampling Methods

DE BEERS GROUP OF COMPANIES

- Sampling methods and data analyses are described and conducted on a component-specific basis- *check out the stations after this presentation*
- Samples collected in field, analyzed in the lab and compared to baseline and reference lakes.

The big picture: watershed

DE BEERS
GROUP OF COMPANIES



The similarities

DE BEERS
GROUP OF COMPANIES

Snap Lake fishes

- Burbot
- Lake Chub
- Slimy Sculpin
- Northern Pike (only Northeast Lake)
- Lake Trout
- Round Whitefish
- Arctic Grayling
- Longnose Sucker

Gahcho Kué fishes

- Burbot
- Lake Chub
- Slimy Sculpin
- Northern Pike
- Lake Trout
- Round Whitefish
- Arctic Grayling
- Longnose Sucker
- Ninespine stickleback

Key differences between Snap Lake and Gahcho Kué

DE BEERS
GROUP OF COMPANIES

- Snap Lake- underground
  Gahcho Kué- open pit
- Snap Lake is largely protected while Kennady Lake must be isolated and de-watered
- GK- downstream monitoring important

AEMP 2005-2011

DE BEERS
GROUP OF COMPANIES

Key Findings

- Design was appropriate (i.e. detected effects)
- As predicted, water quality changing in Snap Lake and downstream lakes = ↑nutrients
- But no evidence that changes are affecting the health of the lake or the drinking water
- Plankton and aquatic bug community changing likely due to nutrient enrichment
- Fish health, fish community and fish taste do not appear to be affected by changes to the water quality

Snap Lake AEMP 2005-2011

DE BEERS GROUP OF COMPANIES

Lessons Learned

Challenges

- Flow rates increased faster than expected
- Northwest arm not appropriate as reference*
- Gradient-style study design not appropriate
- Combining environmental and biology data- (e.g., water temperature affecting fish spawning times)

Successes

- Sample collection successful despite harsh climate
- Water quality models appropriate
- Predictions appear to be appropriate

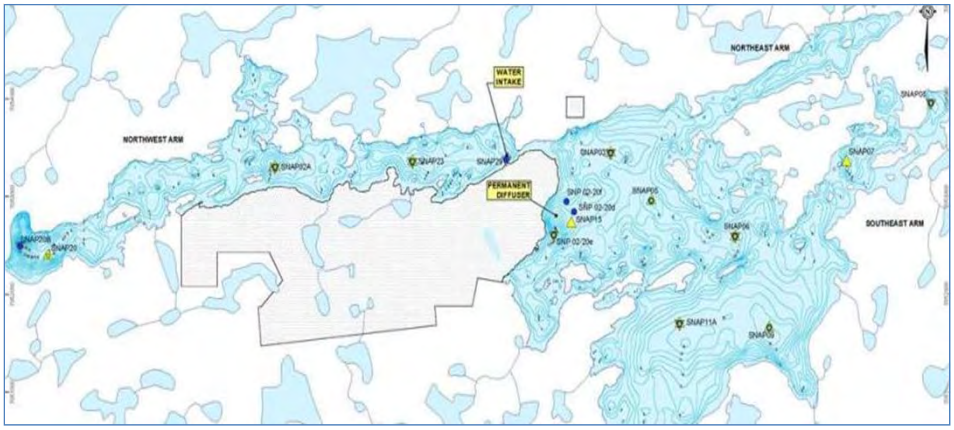
Snap Lake: Sampling Stations

DE BEERS GROUP OF COMPANIES

- In 2005, stations chosen to see if changes occurred ***further away*** from the mine
- In 2013, there is a change to looking at how things are ***changing over time*** and ***downstream***
- Why the change?
  - consistency among components
  - consistency over time
  - More important to compare to reference lakes and downstream conditions
  - Mathematical: enough sampling to see cause and effect

Proposed Monitoring Stations in Snap Lake

DE BEERS
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Proposed Monitoring Stations at Northeast Lake

DE BEERS
GROUP OF COMPANIES

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Proposed Monitoring Locations for Lake 13

DE BEERS
GROUP OF COMPANIES

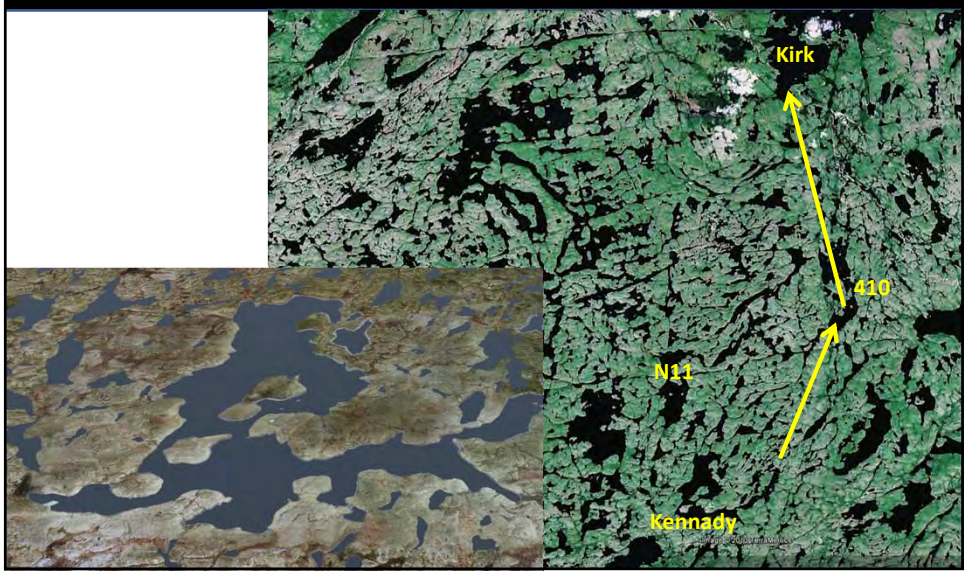
Current Process

DE BEERS
GROUP OF COMPANIES

- Snap Lake is redesigning the AEMP:
  - Sept. 2012- Community Meeting
  - Oct. 2012- 5 year summary (reevaluation) submitted
  - Nov. 2012- Redesign submitted
  - Jan. 2013- Technical Sessions
  - May 2013- Weight of evidence to be discussed
- Monitoring Program approved
- Under water license re-evaluation and redesign is required every *3 years*

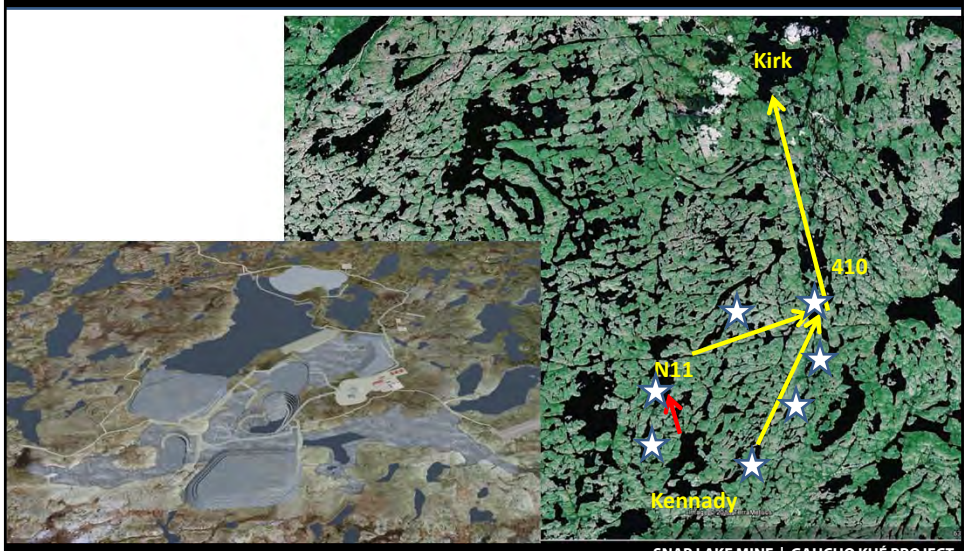
Gahcho Kué: Currently

De Beers
GROUP OF COMPANIES



Gahcho Kué AEMP Phase 1: De-watering/ Construction

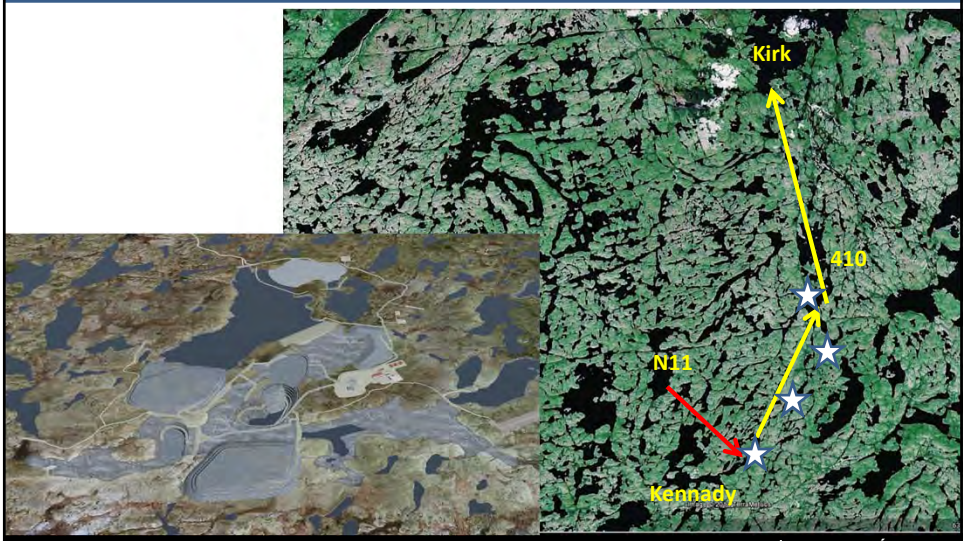
De Beers
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Gahcho Kué AEMP Phase 2: Operations/ Closure

De Beers
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Downstream flow

De Beers
GROUP OF COMPANIES

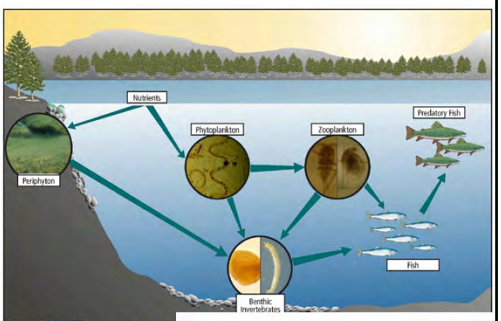
Water will be pumped from Lake N11 to the outflow of Kennady Lake to maintain natural water levels during the spring and summer

The purpose is to protect spawning fishes such as Arctic grayling.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

The challenges with finding good reference lakes

DE BEERS GROUP OF COMPANIES



Baseline and Reference Lakes

DE BEERS GROUP OF COMPANIES

- Snap Lake:
  2 new lakes chosen based on concerns from communities and regulators
- Gahcho Kué: East Lake and Reference Lake 2 & 3
  But we are looking for community advice during site visits in summer 2013.

Special Studies

DE BEERS
GROUP OF COMPANIES

- Occur as needed
- Include research activities that support monitoring
- Focus on development of monitoring methods/ findings and a better understanding of northern lakes/ rivers

- Currently proposed special studies include:
  1. Near shore environment
  2. Picoplankton
  3. Downstream Lakes
  4. Number of lake trout
  5. Food Web Analysis

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Traditional Knowledge

DE BEERS
GROUP OF COMPANIES

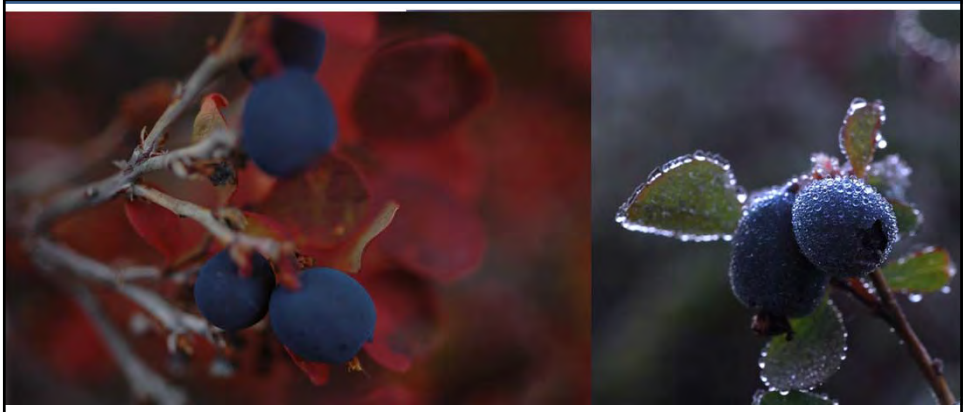
– Traditional Knowledge from Environmental Assessment
– Annual Fish Tasting Program
– Input on sampling sites and reference lake selection

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Don’t forget the berries during the fish tasting event

DE BEERS
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Questions/Comments?
SNAP LAKE MINE | GAHCHO KUÉ PROJECT

De Beers
GROUP OF COMPANIES

Objectives

DE BEERS
GROUP OF COMPANIES

- The objective of this presentation is to provide the proposed closure options and research for discussion and feedback
- Expected outcomes include:
  - A better understanding by community members of:
    - De Beers approach to community engagement.
    - The closure planning process for the Snap Lake Mine.
  - A better understanding by De Beers of:
    - community member questions and concerns regarding closure planning.
    - community member questions and concerns regarding De Beers community engagement approach.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Presentation Outline

DE BEERS
GROUP OF COMPANIES

- Overview of Closure Planning
- Progression of Closure and Reclamation Plan
- History of Engagement
- Current Interim Closure and Rec Plan Revision
  - Mine components and closure objectives
  - Closure Criteria
  - Options and Research
- Moving Forward

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Closure Planning in the NWT

DE BEERS GROUP OF COMPANIES

- **Regulatory Policy**
  - Developed by AANDC/INAC in 1980s in response to environmental impacts and financial burden to the Canadian public. In 2002, INAC released its *Mine Site Reclamation Policy for the Northwest Territories*.
- **Closure and Reclamation Plans**
  - Required as a condition of Water Licence issued by Land and Water Boards of the Mackenzie Valley.
- **Closure Plan Guidelines**
  - Developed by AANDC/INAC in 2000s to standardize process for proponents. The guidelines were revised by AANDC/INAC in partnership with the Land and Water Boards of the Mackenzie Valley in 2011. A finalized version of the guidelines has yet to be released.

Closure Planning in the NWT

DE BEERS GROUP OF COMPANIES

- De Beers Internal Policies also guide operations and closure planning.
  - Sustainable Development
  - Working with Aboriginal Communities
  - Mineral Waste Management
- Anglo American mine closure planning toolbox
  - The purpose of the toolbox is to ensure that closure planning is progressing at an adequate rate.

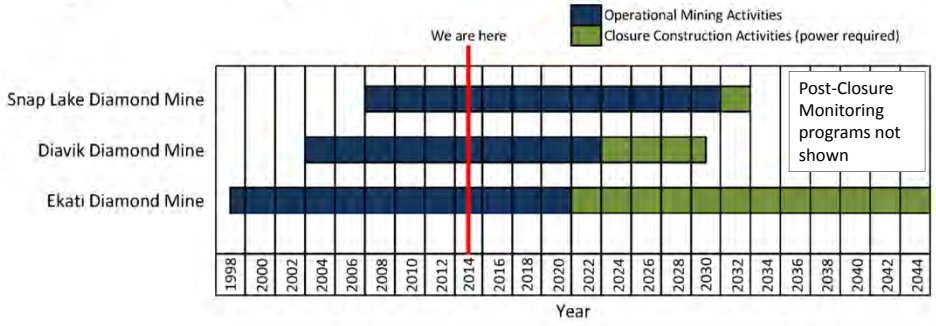
Time remaining to scheduled closure				
> 25 years	25-15 years	15-10 years	10-5 years	5-0 years
Preliminary Closure Plan		Draft Closure Plan	Detailed Closure Plan	Final Closure Plan

Source: Anglo American (2007). Sustainable Development Planning and Mine Closure. Toolbox, v1, 2007.

Closure Timeline

DE BEERS GROUP OF COMPANIES

- Snap Lake Mine is in the early stages of closure planning relative to nearby diamond mines (Ekati and Diavik).
- Final Closure and Reclamation Plan will be completed by 2028.
- Expected years to the end of mining operations are: Ekati - 7 years, Diavik - 9 years, and Snap Lake - 17 years.



Community Engagement

DE BEERS GROUP OF COMPANIES

- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as part of the Environmental Assessment process
  - Conceptual
- Methods of engagement included:
  - Information sessions in all several communities
  - Open house community meetings
  - One-on-one interviews
  - Guided site tours

Community Engagement

DE BEERS GROUP OF COMPANIES

- First Revision of Closure and Reclamation Plan
  - Interim Closure and Reclamation Plan (2006)
    - Requirement of the Water Licence issued by the Mackenzie Valley Land and Water Board.
    - Additional detail regarding closure methods and proposed research included to satisfy conditions of Water Licence and reviewer comments on existing plan.
- The Interim Closure and Reclamation Plan was subject to stakeholder review during the Board approval process.

Community Engagement

DE BEERS GROUP OF COMPANIES

- Current update of the Interim Closure and Reclamation Plan (2013)
  - Methods of engagement to date have included:
    - Stakeholder workshop in spring of 2011
    - Stakeholder review
    - Technical meetings held in September 2011
    - Public hearings in December 2011
    - Stakeholder review of the proposed Closure Objectives in October 2012
      - Closure Objectives approved by the MVLWB on November 22, 2012
    - Community meetings in February 2013
    - Technical meetings in March
  - Upcoming: Site visits in summer 2013, fish tasting in September 2013.

Closure and Reclamation Plan

DE BEERS GROUP OF COMPANIES

1. Executive Summary
2. Introduction
3. Project environment
4. Project description
5. Requirements for permanent closure and reclamation
6. Progressive reclamation
7. Temporary closure
8. Integrated schedule of activities approaching permanent closure
9. Post-closure site assessment

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Progression of the Closure Plan

DE BEERS GROUP OF COMPANIES

- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as a requirement of the Project Environmental Assessment
- Interim Closure and Reclamation Plan (2006)
  - Prepared as a requirement of the Water Licence MV2001L2-0002
- Interim Closure and Reclamation Plan (2011)
  - Prepared as part of the Water Licence application package
- Interim Closure and Reclamation Plan (2013)
  - Prepared as a requirement of the renewed Water Licence MV2011L2-0004.
  - Revised every 3 years
- Final Closure and Reclamation Plan (at least 2 years before the end of operations)

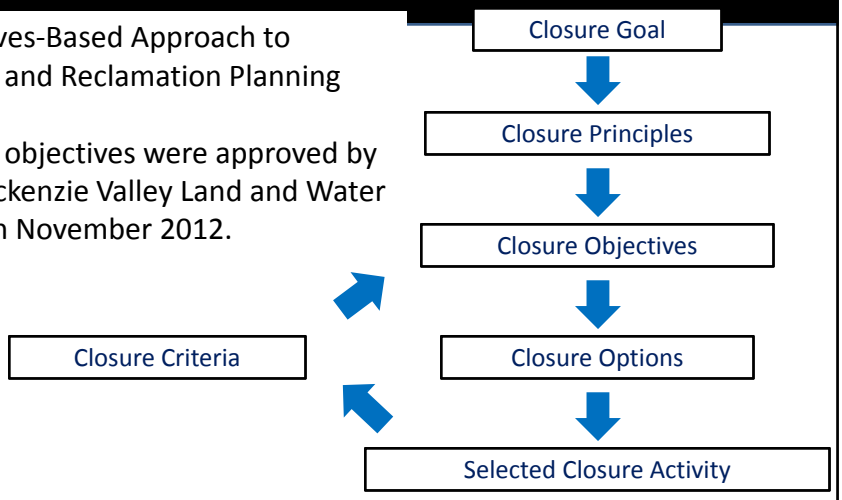
SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Closure Planning Framework

De Beers
GROUP OF COMPANIES

Objectives-Based Approach to Closure and Reclamation Planning

Closure objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.



Research Options and Uncertainties Workshop

De Beers
GROUP OF COMPANIES

- March 13 meeting to discuss Research options and uncertainty
  - Required by the MVLWB
- De Beers heard that a “decision road map” would be useful and is currently being developed
- Other comments focused on progressive reclamation/lessons learned from other mine sites
- ICRP to be revised and resubmitted to the MVLWB for stakeholder review
- Board process commences at that time
- Intent is that Closure criteria will be developed as the plan progresses

Current step: Reclamation Research Plan

- Aim to resolve uncertainties and answer questions pertaining to environmental risks for closure options or selected closure activities.

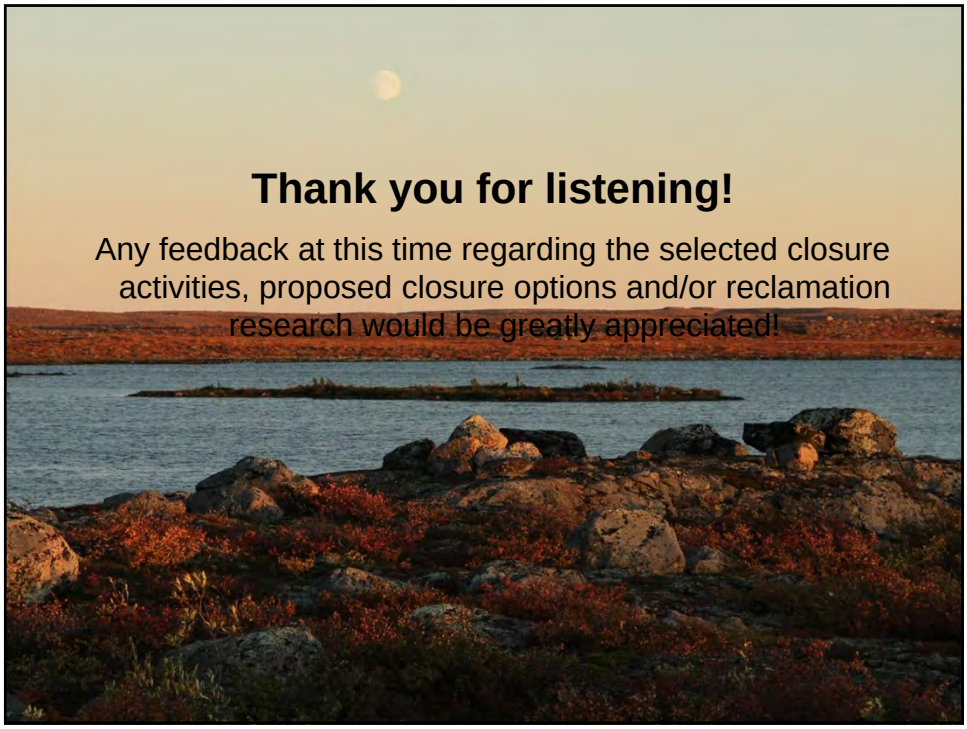
Closure Objective	What is the best closure objective for a particular mine component? Is the objective achievable?
Closure Options	Which of the closure options will best achieve the closure objective?
Selected Closure Activity	What is the best way to implement the selected closure activity?
Closure Criteria	What is the best way to measure whether the selected closure activity meets the closure objective?

Reclamation Research Plan

Next Steps

De Beers
GROUP OF COMPANIES

- De Beers is currently in the process of revising the Interim Closure and Reclamation Plan
  - Closure Objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.
  - De Beers visited communities in February 2013 to discuss closure
  - De Beers hosted a Closure Options and Research Workshop held in Yellowknife on March 13, 2013.
  - De Beers submits the Interim Closure and Reclamation Plan (version 3.2) in June, 2013 for stakeholder review.


Thank you for listening!
Any feedback at this time regarding the selected closure activities, proposed closure options and/or reclamation research would be greatly appreciated!

De Beers
GROUP OF COMPANIES
Gahcho Kué
Closure & Reclamation

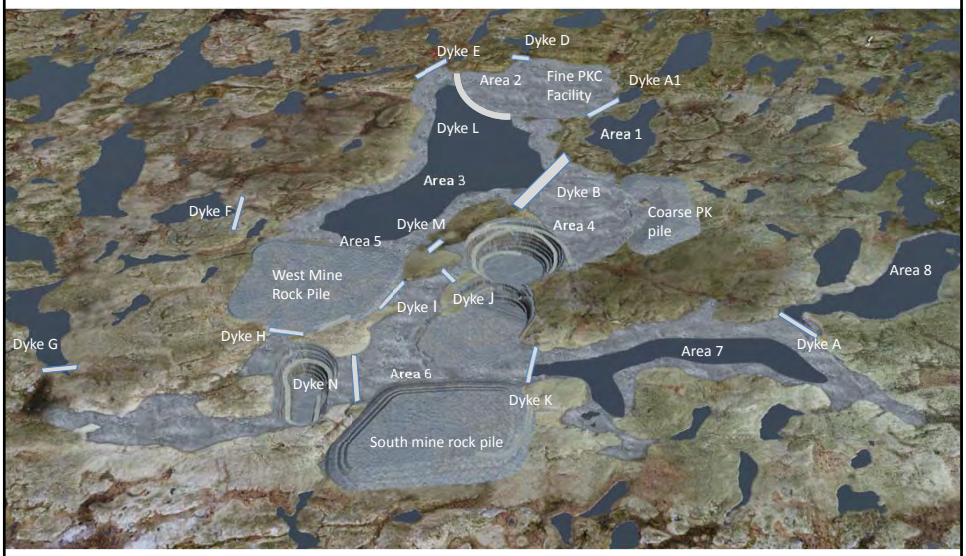
Construction (Year -1)

103

Construction (Year -2)

104

Operation (Year 1-11)



105

Closure (12 to 20+ Years)

106

Gahcho Kué – Closure & Reclamation

DE BEERS GROUP OF COMPANIES

- **Goals and Objectives** of the Conceptual Closure and Reclamation Plan (the Plan)
- **Key concepts** central to the Plan
- **Commitments** associated with the Plan
- **Overview of key activities** and **schedule**
- Conceptual Closure and Reclamation Plan **Summary**

Goals of the C&R (The Plan)

DE BEERS GROUP OF COMPANIES

- The **overall Goals** of the Conceptual C&R Plan includes:
  - **Minimize the environmental impacts** of operations to the extent practical
  - **Re-establish productive fish and wildlife habitat** as quickly as possible
  - **Create self-sustaining ecosystems**
  - **Achieve post-closure conditions** that do not require maintenance
- The C&R Plan is considered **"conceptual"** at this stage, and will be refined over time.

Long-term Objectives

DE BEERS GROUP OF COMPANIES

Long-term Objectives of the conceptual C&R Plan:

- **Re-establish the natural fish habitat** that maybe lost, altered, or disturbed as a result of the Project
- **Return site conditions to self-sustaining ecosystems** typical in the region
- **Create**, to the extent practical, **final landforms that integrate into the natural landscape**

Short-term Objectives

DE BEERS GROUP OF COMPANIES

- **Short-term Objectives of the Plan**:
  - **Reclaim areas as soon as possible** once they are no longer required
  - **Minimize the risk of erosion/sediment** loss from on-site runoff
  - **Stabilize slopes** to maintain safe working conditions and to aid reclamation activities
  - **Restore natural drainage,** where possible
  - **Establish ground cover** to limit soil erosion and dust production
  - **Maintain** an environmentally safe site

Key Concepts Community and Traditional Knowledge

DE BEERS GROUP OF COMPANIES

- **Community Feedback and Traditional Knowledge**
  - Beginning with the earliest phases of exploration at Kennady Lake, De Beers initiated and maintained contact with the various communities near the Project
  - Based on feedback received during the engagement process, De Beers identified community inputs for reclamation
    - Example: restore Kennady Lake as quickly as possible
  - The Plan was developed to address, to the extent possible, community inputs for reclamation
    - Example: pumping water from Lake N11 during refilling will reduce the time required to fill Kennady Lake from 20 years to 8 or 9 years

Conceptual C&R Plan – Commitments

DE BEERS GROUP OF COMPANIES

- Use progressive or **ongoing reclamation to minimize** the total amount of area disturbed by the Project activities at any one time
- **Recover as much soil** as practical for use in reclamation activities
- **Undertake reclamation trials** throughout the life of the Project
- **Liaise with other mine operators** in the Canadian Arctic – to share reclamation information/research to apply proven practices

Meeting Overview

De Beers
GROUP OF COMPANIES

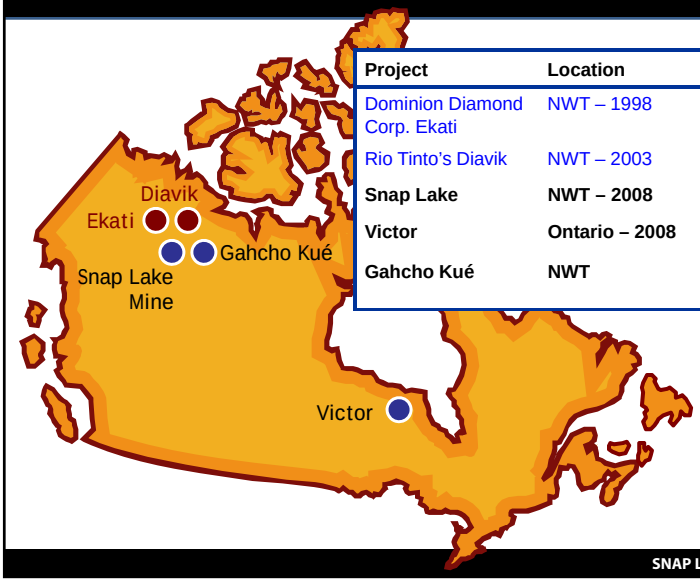
De Beers Update Snap and GK

- Human Resources Initiatives
- Business Opportunities
- Environment & Permitting Overview
- Closure and Reclamation
- Aquatic Effects Monitoring Program

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

De Beers in Canada

DE BEERS
GROUP OF COMPANIES



Project	Location	Production
Dominion Diamond Corp. Ekati	NWT – 1998	2.5 million carats/2011
Rio Tinto's Diavik	NWT – 2003	6.7 million carats/2011
Snap Lake	**NWT – 2008**	**870,000 carats/2012**
Victor	**Ontario – 2008**	**690,000 carats/2012**
Gahcho Kué	**NWT**	**Environmental Impact Review**

Snap Lake Mine – Quick Facts

DE BEERS
GROUP OF COMPANIES

- Completely underground operation
- 220 km northeast of Yellowknife
- Mining area <500 ha
- 2.5m kimberlite dyke dips beneath Snap Lake 12-15 degrees
- New Land Use Permit issued on February 16, 2011 for 5 years
- New water license issued on June 14, 2012 for 8 years

Gahcho Kué Project

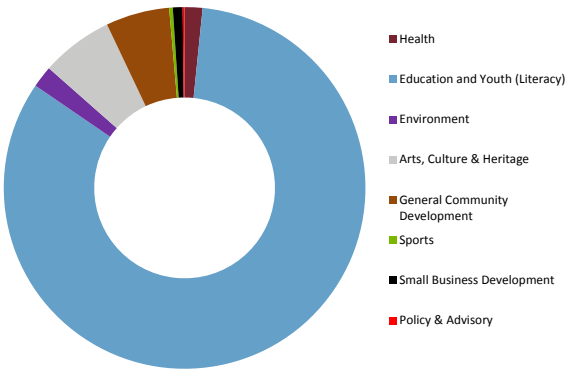
DE BEERS
GROUP OF COMPANIES

- Located at Kennady Lake, 280 km northeast of Yellowknife, 80 km southeast of Snap lake Mine
- Joint Venture – De Beers Canada (51% - operator); Mountain Province Diamonds (49%)
- Open Pit Operation – 5034, Hearne & Tuzo
- $600-$650 million capital cost (2010 NI 43-101 report)
- 2 year construction
- ~11 year life of mine
- 360-380 jobs at full production
- 690 jobs at peak of construction
- Average annual production 4.5 million carats/3 million tonnes

Social Investment

DE BEERS
GROUP OF COMPANIES

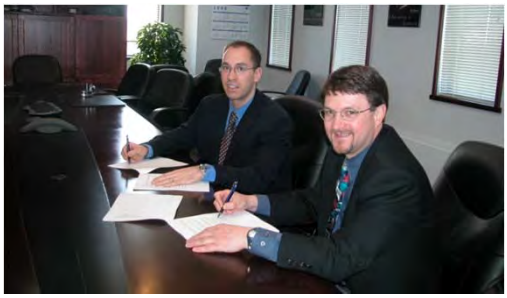
- $13.3 million spent on social investment in the Northwest Territories from 2008-2012
- 83% focused on training, education and literacy
- $3.3 million in social investment in 2012



Socio Economic Agreements

DE BEERS
GROUP OF COMPANIES

- Are follow-up mechanisms to monitor and adaptively manage socio-economic aspects of NWT mining operations
- Are aimed at optimizing the opportunities for mining projects for NWT Residents
- Typically include s:
  - targets and priorities for NWT Resident employment and training
  - targets for expenditure on goods & services with NWT businesses
  - commitments by mining companies to promote and support community health & wellness
  - commitments to promoting and supporting community culture and traditions
  - a requirement to publicly report on fulfillment of commitments and achievement of targets



De Beers signed a Socio -Economic Agreement with the GNWT for Snap Lake – May 18, 2004. The 2012 Annual Report will be issued in May 2013.

NOTE: NOTE: Some of the slides in the IBA presentation have been deleted from this record to respect confidentiality requirements of the IBA with the Yellowknives Dene First Nation.

Health & Wellness

DE BEERS
GROUP OF COMPANIES

- Youth Career Fair
- Mother's/Father's Day Celebrations
- Spring Carnival
- Celebration Feast of Katen Tekakwitha
- Breakfast with Santa
- 2012 Christmas Program
- Lateral Violence Workshop
- Food Safety Level 1 Course
- 2nd annual Mackenzie Youth Dene Games
- National Aboriginal Day activities
- Chekoa Program
- Hand Games Tournament at Snap Lake Mine led by Bobby Drygeese

Employment

DE BEERS
GROUP OF COMPANIES

- 93 full-time jobs filled by De Beers in 2012
- Nearly half filled by NWT residents
- 54 applications received from YKDFN residents

Priority Group	Unskilled	Semi Skilled	Skilled	Professional	Management	TOTAL EMPLOYEES*
YKDFN	8	5	3	0	0	16
TOTAL Employed	110	319	382	23	76	910
% YKDFN	7%	2%	>1%	0%	0%	2%

YKDFN Employment

DE BEERS
GROUP OF COMPANIES

- 93 positions vacant and filled by De Beers in 2012
- 3907 Applicants, of which 598 (28%) were NWT Residents
- 54 applications(1%) received from YKDFN members

Priority Group	Unskilled	Semi Skilled	Skilled	Professional	Management	TOTAL EMPLOYEES*
YKDFN	8	5	3	0	0	16
TOTAL Employed	110	319	382	23	76	910
% YKDFN	7%	2%	>1%	0%	0%	2%

These reflect number of active employees for De Beers and contractors as of December 31, 2012.

Prosperity Award

De Beers
GROUP OF COMPANIES

Questions?

De Beers
GROUP OF COMPANIES

De Beers
GROUP OF COMPANIES

MAHSI!

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

2012 Recruitment Efforts

DE BEERS
GROUP OF COMPANIES

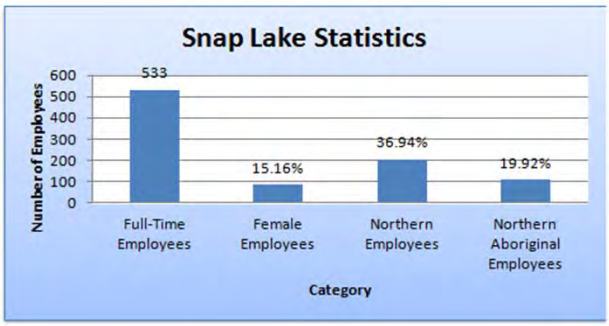
2012 De Beers Recruitment				
Total Competions	Total Applications Received	Total Northern Applicants	Total Northern Aboriginal Applicants	IBA Applicants
78	3,907	1,112	514	345
		Percentage of Total	Percentage of Total	Percentage of Total
		28%	13%	9%
Total Hired	Total Southerners Hired	Total Northerners Hired	Total Northern Northern Aboriginals Hired	IBA Members Hired
93	50	43	23	14
		Percentage of Total Hired	Percentage of Total Hired	Percentage of Total Hired
		46%	25%	15%

2012 Total YKDFN Applicants: 54

Recruitment challenges continue with finding relevant skills and abilities to fill the vacancies at Snap Lake with Northern residents.

Snap Lake Mine Statistics

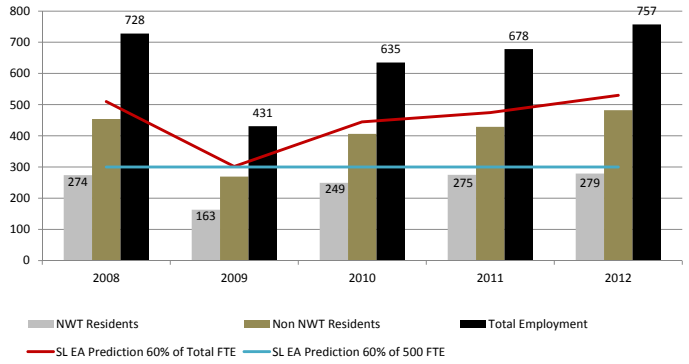
DE BEERS
GROUP OF COMPANIES



*as of May 2013

Snap Lake Mine Employment History

DE BEERS
GROUP OF COMPANIES



- During the Snap Lake Environmental Assessment, De Beers predicted there would be 500 FTE for the Operations Phase and that 60% or 300 would be NWT Residents
- In 2012, De Beers and its contractors employed 757 FTE, of which 36% or 279 were NWT Residents
- In 2012, 61% of the workforce were De Beers employees and 39% were Contractors

NWT Diamond Mine Employment - 2011

DE BEERS
GROUP OF COMPANIES

	Predicted Employees Operations Phase	Actual Employment (December 2011)	# Northern Resident Predicted	Actual Northern Resident Employment	**Northern** Residency Variance (Actual versus Predictions)
BHP Billiton's Ekati Mine	926	1,213	574	650 (54%)	+76
Diavik Diamond Mine	400	1,137	264	642 (56%)	+378
De Beers Snap Lake Mine	500	678	300	249 (37%)	-51
Predicted Total Workforce Requirements	1,826	3,044	1,138	1,541	**+403**

The Good News: *In 12 Years of Diamond Mining in the NWT, 403 more people than industry forecast would be working in our industry are in fact employed. Training and Development has been successful.*

The Challenge: For De Beers and other new mines opening up in the NWT, continued government educational investment in the NWT population that is not currently employed is required.

Socio-Economic Agreement Training Commitment

DE BEERS GROUP OF COMPANIES

	SUMMARY			
	Trades Training	Apprenticeship	UG	
Commitment	10	10	20	40
Current Trainees	9	7	5	21
Program Graduates	16	5	18	39
Trainees To Date	24	23	34	81

Ensuring Northern Residents are Priority

DE BEERS GROUP OF COMPANIES

- Recruitment
  - News/North
  - Jobsnorth.ca
  - Community Postings
  - Website
  - Direct Human Resources Contact Information
- Pick-up points in 11 NWT Communities
- Travel Allowance to get to Pick-up Points
- Partnership with the Mine Training Society
- Northern Allowances
  - NWT Salary Enhancement Benefits
  - Remote Site Allowance

Trades / Apprentices

DE BEERS
GROUP OF COMPANIES

- 7 apprentices on track to become journeypersons
- Currently 9 trades trainees
- 5 Underground Mining Trainees
- 11 Females in Underground Miner positions
- Since the mine opened, 39 northerners have graduated from our training programs

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Trades / Apprentices (Cont'd)

DE BEERS
GROUP OF COMPANIES

- Apprenticeship Program Fully Funded
- Accommodations while in school of choice fully funded
- All trainees & apprentices hired are northern Aboriginal
- Assistance with schooling material from our on site Training Coordinators
- Trades Entrance Exam assistance and preparation through Learning Centre

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Workforce Development

DE BEERS
GROUP OF COMPANIES

- Work Placements facilitated through MTS
  - 4 Mine Process Operator Trainees joined us in 2013 for work placement experience. One has recently been hired as an Operator Trainee on a full time basis while another's contract was extended for Process Summer Student work.
- Summer Work Placement of 2 Maintenance Helpers
- 2 Aurora College Office Administration work placements in 2012
- Continued support and enrollment of employees in the Northern Leadership Development Program through Aurora College
- High School Career Pathing Workshop May 2013

Mine Training Society Partnership

DE BEERS
GROUP OF COMPANIES

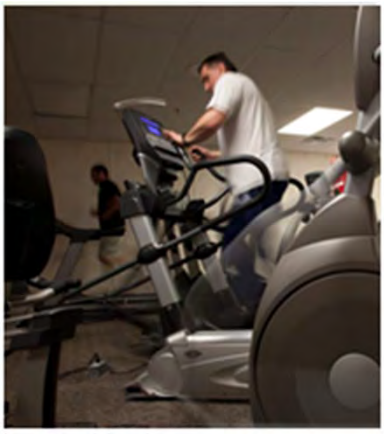
- Introduction to Mining (Part 1)
  - 6 week program
  - Hay River, Yellowknife, Fort Smith
  - Start Date: Possible July start
- Underground Miner Training Program (Part 2)
  - 12 week Program
  - Intake Start Date: August 26th
- Mineral Processing Operator Trainee Program
  - 14 weeks
  - Fort Smith
  - Start Date: September 3 – December 6th, 2013 / January 8th 2014

Snap Lake Mine
Health & Wellness Initiatives

DE BEERS
GROUP OF COMPANIES

Health & Wellness at Snap Lake

- Cross Cultural Orientation Course
- Drug & Alcohol Policy
- Snap Lake Cultural Centre Activities
- $25,000 investment in fitness equipment in 2012
- Focus on completing employee medicals to ensure fitness for work.



Gahcho Kué Opportunities

DE BEERS
GROUP OF COMPANIES

- Up to 690 jobs at peak of construction
- 360-380 jobs available during operations
- Human Resource Strategy developed in 2012
- Labour shortages continue to exist in the NWT
- Mine Training Program (MTS) will continue to be a significant partner in training Northerners for jobs at Gahcho Kué
- $5 million cash and in-kind commitment to MTS "Mining the Future" through 2015
- Mining the Future targets training in a number of areas: Mineral Process Operating Technician; Camp Cook; Cook Apprenticeship; Heavy Equipment Operator; Geoscience Field Assistant; Introduction to Underground Mining; Underground Mining; and General Construction

NWT Post Secondary Scholarship Program

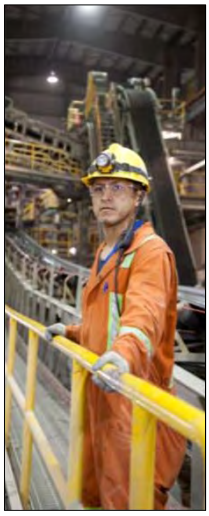
DE BEERS
GROUP OF COMPANIES

- Two kinds of scholarships available to NWT resident students enrolled in or attending post-secondary degree programs
- 15 “lump sum” scholarships worth $2,000 each
- Education Sponsorship worth up to $55,000 over a four-year degree program

Lump Sum Scholarships

DE BEERS
GROUP OF COMPANIES

- Available to NWT students studying in the following degree programs:
- Mine Engineering;
- Mine Geology;
- Finance & Accounting (Commerce);
- Human Resources;
- Occupational Health & Safety;
- Environmental Sciences;
- Metallurgy & Chemical Engineering; and,
- Mechanical & Electrical Engineering



Education Sponsorship

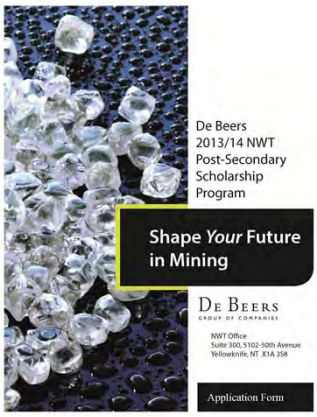
De Beers
GROUP OF COMPANIES

- Up to four years of significant financial support on an increasing scale
- Summer employment between school years
- Full-time employment upon completion of degree

How to Apply

De Beers
GROUP OF COMPANIES

- Application form online – www.debeersgroup.com/canada
- Two letters of reference
- Awarded on merit, including academic achievement, community service, leadership and extra-curricular activities



Forward Looking…

DE BEERS
GROUP OF COMPANIES

- Continued focus on Northern hires for Snap Lake Mine and upcoming GK hiring
- Continued focus on presence at community career fairs when available
- Partnership with Mine Training Society

Questions?

DE BEERS
GROUP OF COMPANIES

Business Investment

De Beers
GROUP OF COMPANIES

Construction and Operations Expenditure January 2005 to December 15, 2012		
	Expenditure to Date	Percent of Expenditure
Total Expenditure YTD	$1,893,410,418	N/A
NWT Portion	$1,322,019,874	69.82%
Aboriginal Portion on NWT Expenditure	$768,013,863	58.09%

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- Based on three pillars of sustainable development;
  - Economic
  - Social
  - Environmental sustainability
- Goods and Services
  - Goods and Services procured from Businesses must meet mining industry service and quality standards
- Long Term Sustainability/Business Capacity
  - Development of long-term sustainability and business capacity will be a fundamental consideration when entering into business relationships with Aboriginal and/or NWT businesses
  - Our work with Aboriginal and/or NWT business will support the development of technical and business skills and capacities that are transferable to other industries

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- De Beers will treat all companies fairly regardless of size
- Contractors
  - All contractors will be required to understand and comply with De Beers' Safety, Health, and Environmental Management Systems
  - All contractors will be required to understand, comply with and report on their success regarding northern hiring priorities

De Beers Business Policy

DE BEERS
GROUP OF COMPANIES

- Business Registry
  - Develop a Business Registry for Northern and Aboriginal businesses to pre-qualify themselves for business opportunities
- Joint Ventures
  - Identify possible joint venture opportunities for Aboriginal Businesses
- Post Award Analyses
  - Coordinate post-award analyses for unsuccessful Northern and Aboriginal bidders to communicate areas of improvement in the commercial and/or technical aspects of the final evaluation

De Beers Business Registry

DE BEERS
GROUP OF COMPANIES

- June 2013 Re-launch
- Businesses can register
  - Company Info
  - Goods and Services
  - Socio-Economic Commitments
  - Work History
  - Health and Safety
- De Beers Procurement
  - Pre-qualify Businesses
  - Learn of new Business Formation and Joint Ventures

De Beers Business Registry

DE BEERS
GROUP OF COMPANIES

- Current Businesses
- Aboriginal Business Development Arms
- Profiles must be complete
- De Beers will assist those who require assistance to complete Profile online
- **www.debeersgroup.com/canada/businessregistry**

Snap Lake Opportunities

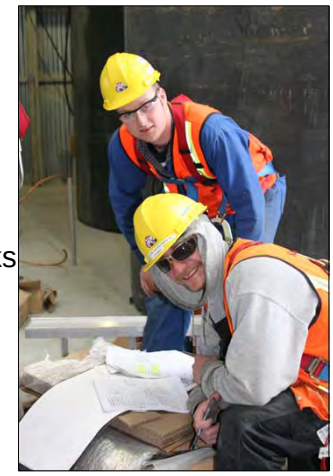
DE BEERS
GROUP OF COMPANIES

- Consolidation and Expediting -11/30/2013
- Winter Road Construction - 10/31/2013
- Fuel Haul – Winter Road - 8/31/2013
- Catering, Janitorial, Housekeeping - 9/30/2013

Gahcho Kue Opportunities – Construction

DE BEERS
GROUP OF COMPANIES

- General Contractor
- Civil Construction & Production Fleet
- Light Vehicles
- Initial Earthworks & Maintenance
- Liner Installations
- Construction and Erection of Fuel Tanks
- Accommodations Complex
- Communications & IT
- Fire Protection & Alarm
- Security Monitoring



General Contractor

DE BEERS
GROUP OF COMPANIES

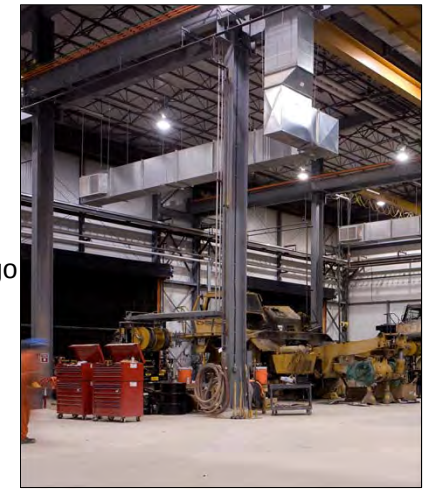
- Will include:
  - Concrete works
  - Structural Steel
  - Mechanical
  - Electrical/Instrumentation
  - Emulsion Plant

-Crushing
-Fuel Tank Piping
-Process Plant
-Power Plant
-Truck Shop
-Surface Utility Piping

Gahcho Kue Required Services Construction & Operations

De Beers
GROUP OF COMPANIES

- Tire Supply & Maintenance
- Explosives
- Winter Road Construction
- Camp Catering & Janitorial
- Fuel Supply & Lubricants
- Air Transport – Passenger & Cargo
- Freight Transport
- Fuel Transport
- Medical Services



Questions?

De Beers
GROUP OF COMPANIES

Presentation Overview

De Beers
GROUP OF COMPANIES

- Snap Lake & Gahcho Kué Regulatory Update
- Update on Snap Lake Water Management
- Gahcho Kué and Snap Lake Closure and Reclamation
- Gahcho Kué and Snap Lake Aquatic Effects Monitoring
- Demonstrations

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Snap Lake Mine - Regulatory

DE BEERS GROUP OF COMPANIES

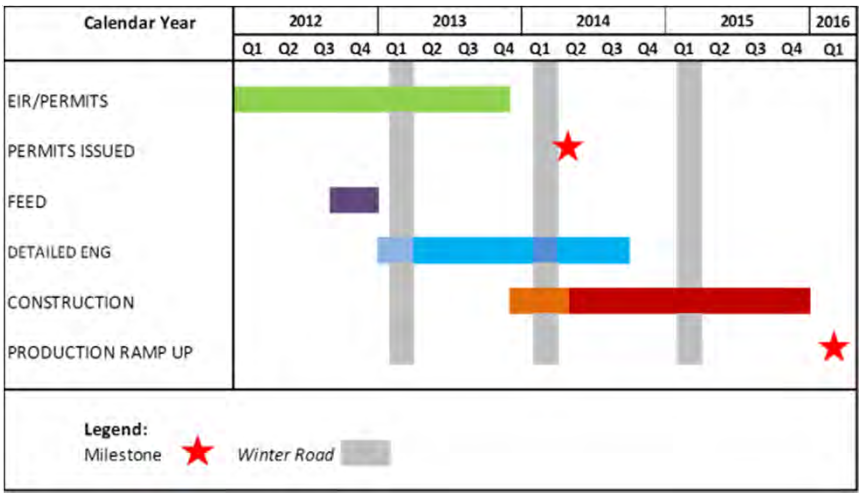
Snap Lake Mine officially opened in July 2008
Water License Amendment approved on June 14, 2012

Aquatic Effects Monitoring Program (AEMP) redesign in progress
- September 9th, 2012 community meeting
- January 24th, 2013 technical session on reevaluation and monitoring
- May 29th, 2013 technical session on Weight of evidence and response framework

Interim Closure and Reclamation Plan (ICRP) in progress
- February 2013 Community Representative Meetings
- May 13th, 2013 Technical Session
- Currently revising the ICRP based on feedback

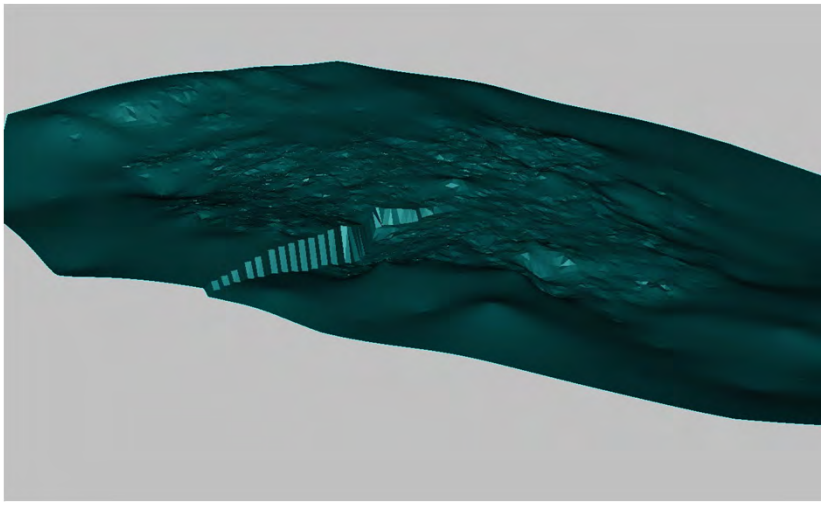
Gahcho Kué – Regulatory Update

DE BEERS GROUP OF COMPANIES

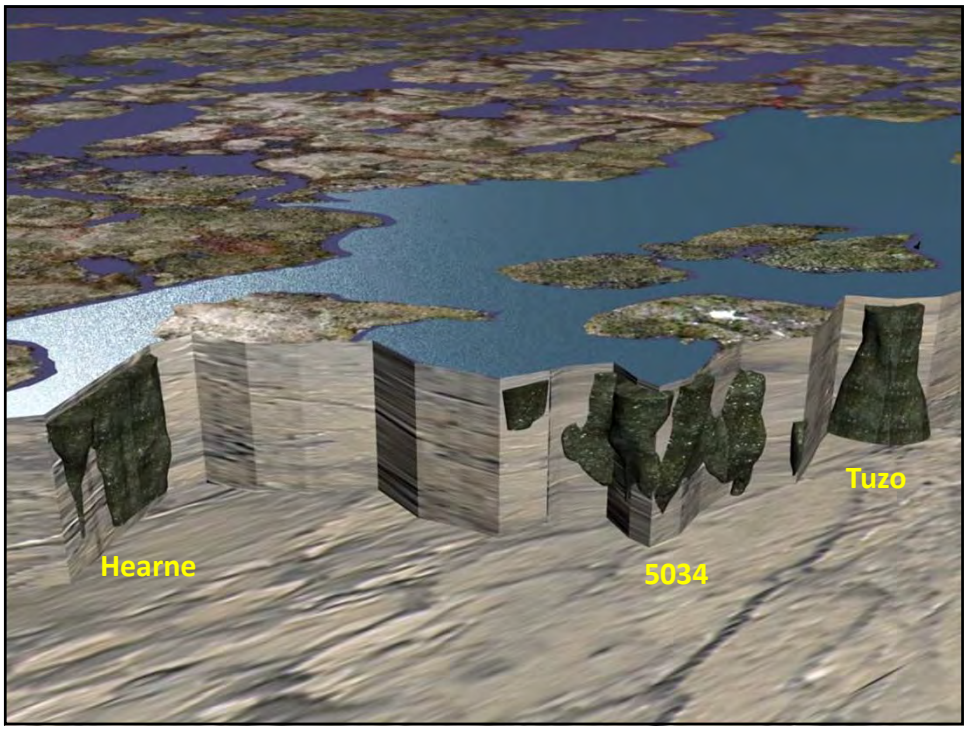


Snap Lake Mine - Kimberlites

DE BEERS
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT



Snap Lake Mine Water Management Enhancements

DE BEERS GROUP OF COMPANIES

- Sump infrastructure upgrade
- Continuous sump monitoring & more mature protocols
- "Flocc tank" pre-clarifying pool
- Debottlenecking & optimization of WTP & TWTP
- Increase of Clean Water System capacity U/G up to 8500 m3/d
- Increased monitoring/testing of bogs and shorelines pre and post freshet.
- Upcoming PS3 repair
- U/G water model updated
- IL6 ditch construction completed

Spring Freshet – Extra Measures

DE BEERS GROUP OF COMPANIES

- Increased monitoring
- Monitoring areas where spring freshet is most common
- Increasing discharge to the lake with a second diffuser
- Putting in place extra monitoring at SNP stations
- Monitoring Frequency – Daily
- Sampling Frequency - Weekly

SURVEILLANCE NETWORK PROGRAMME SAMPLING STATIONS

Site Operations Update

DE BEERS
GROUP OF COMPANIES

- Paste
  - Underground paste trials continuing
- Waste Management
  - New incinerator purchased, installation this summer
- North Pile Raise
  - Filling all voids within the starter cell to achieve final pile height

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Water License

De Beers
GROUP OF COMPANIES

- Site specific work being carried out in preparation for application
- Update water modeling
  - Surface
  - Underground
- Additional water management enhancements for increased water discharge

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

De Beers
GROUP OF COMPANIES

Objectives

DE BEERS
GROUP OF COMPANIES

- The objective of this presentation is to provide the proposed closure options and research for discussion and feedback
- Expected outcomes include:
  - A better understanding by community members of:
    - De Beers approach to community engagement.
    - The closure planning process for the Snap Lake Mine.
  - A better understanding by De Beers of:
    - community member questions and concerns regarding closure planning.
    - community member questions and concerns regarding De Beers community engagement approach.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Presentation Outline

DE BEERS
GROUP OF COMPANIES

- Overview of Closure Planning
- Progression of Closure and Reclamation Plan
- History of Engagement
- Current Interim Closure and Rec Plan Revision
  - Mine components and closure objectives
  - Closure Criteria
  - Options and Research
- Moving Forward

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Closure Planning in the NWT

DE BEERS GROUP OF COMPANIES

- **Regulatory Policy**
  - Developed by AANDC/INAC in 1980s in response to environmental impacts and financial burden to the Canadian public. In 2002, INAC released its *Mine Site Reclamation Policy for the Northwest Territories*.
- **Closure and Reclamation Plans**
  - Required as a condition of Water Licence issued by Land and Water Boards of the Mackenzie Valley.
- **Closure Plan Guidelines**
  - Developed by AANDC/INAC in 2000s to standardize process for proponents. The guidelines were revised by AANDC/INAC in partnership with the Land and Water Boards of the Mackenzie Valley in 2011. A finalized version of the guidelines has yet to be released.

Closure Planning in the NWT

DE BEERS GROUP OF COMPANIES

- De Beers Internal Policies also guide operations and closure planning.
  - Sustainable Development
  - Working with Aboriginal Communities
  - Mineral Waste Management
- Anglo American mine closure planning toolbox
  - The purpose of the toolbox is to ensure that closure planning is progressing at an adequate rate.

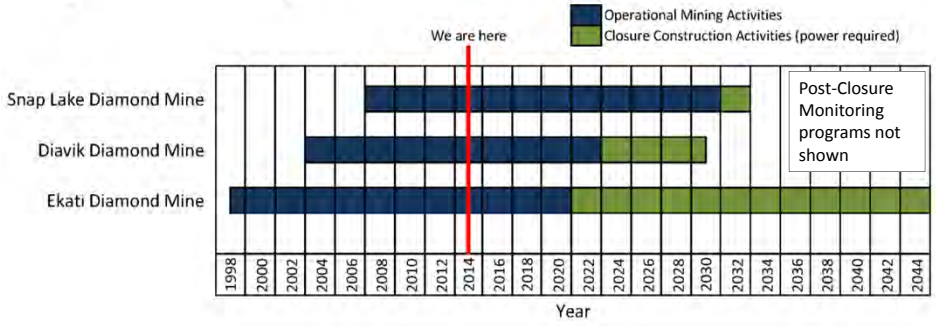
Time remaining to scheduled closure				
> 25 years	25-15 years	15-10 years	10-5 years	5-0 years
Preliminary Closure Plan		Draft Closure Plan	Detailed Closure Plan	Final Closure Plan

Source: Anglo American (2007). Sustainable Development Planning and Mine Closure. Toolbox, v1, 2007.

Closure Timeline

DE BEERS GROUP OF COMPANIES

- Snap Lake Mine is in the early stages of closure planning relative to nearby diamond mines (Ekati and Diavik).
- Final Closure and Reclamation Plan will be completed by 2028.
- Expected years to the end of mining operations are: Ekati - 7 years, Diavik - 9 years, and Snap Lake - 17 years.



Community Engagement

DE BEERS GROUP OF COMPANIES

- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as part of the Environmental Assessment process
  - Conceptual
- Methods of engagement included:
  - Information sessions in all several communities
  - Open house community meetings
  - One-on-one interviews
  - Guided site tours

Community Engagement

DE BEERS GROUP OF COMPANIES

- First Revision of Closure and Reclamation Plan
  - Interim Closure and Reclamation Plan (2006)
    - Requirement of the Water Licence issued by the Mackenzie Valley Land and Water Board.
    - Additional detail regarding closure methods and proposed research included to satisfy conditions of Water Licence and reviewer comments on existing plan.
- The Interim Closure and Reclamation Plan was subject to stakeholder review during the Board approval process.

Community Engagement

DE BEERS GROUP OF COMPANIES

- Current update of the Interim Closure and Reclamation Plan (2013)
  - Methods of engagement to date have included:
    - Stakeholder workshop in spring of 2011
    - Stakeholder review
    - Technical meetings held in September 2011
    - Public hearings in December 2011
    - Stakeholder review of the proposed Closure Objectives in October 2012
      - Closure Objectives approved by the MVLWB on November 22, 2012
    - Community meetings in February 2013
    - Technical meetings in March
  - Upcoming: Site visits in summer 2013, fish tasting in September 2013.

Closure and Reclamation Plan

DE BEERS
GROUP OF COMPANIES

1. Executive Summary
2. Introduction
3. Project environment
4. Project description
5. Requirements for permanent closure and reclamation
6. Progressive reclamation
7. Temporary closure
8. Integrated schedule of activities approaching permanent closure
9. Post-closure site assessment

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Progression of the Closure Plan

DE BEERS
GROUP OF COMPANIES

- Preliminary Closure and Reclamation Plan (2003)
  - Prepared as a requirement of the Project Environmental Assessment
- Interim Closure and Reclamation Plan (2006)
  - Prepared as a requirement of the Water Licence MV2001L2-0002
- Interim Closure and Reclamation Plan (2011)
  - Prepared as part of the Water Licence application package
- Interim Closure and Reclamation Plan (2013)
  - Prepared as a requirement of the renewed Water Licence MV2011L2-0004.
  - Revised every 3 years
- Final Closure and Reclamation Plan (at least 2 years before the end of operations)

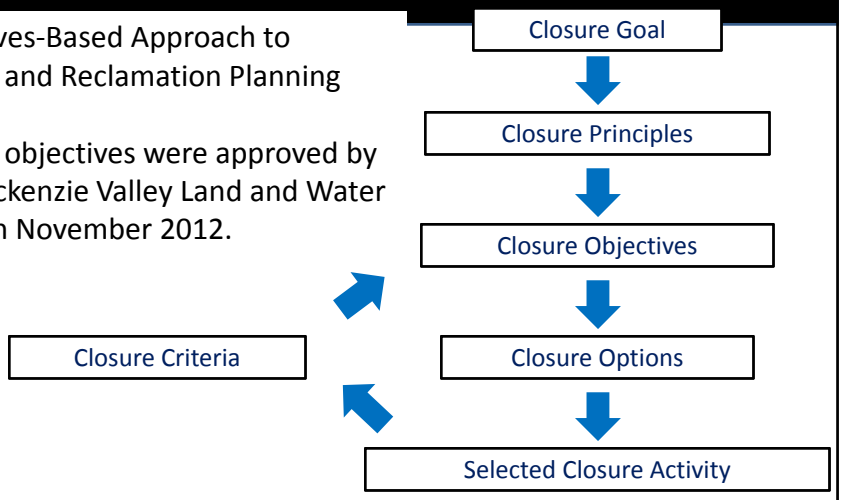
SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Closure Planning Framework

De Beers
GROUP OF COMPANIES

Objectives-Based Approach to Closure and Reclamation Planning

Closure objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.



Research Options and Uncertainties Workshop

De Beers
GROUP OF COMPANIES

- March 13 meeting to discuss Research options and uncertainty
  - Required by the MVLWB
- De Beers heard that a “decision road map” would be useful and is currently being developed
- Other comments focused on progressive reclamation/lessons learned from other mine sites
- ICRP to be revised and resubmitted to the MVLWB for stakeholder review
- Board process commences at that time
- Intent is that Closure criteria will be developed as the plan progresses

Current step: Reclamation Research Plan

- Aim to resolve uncertainties and answer questions pertaining to environmental risks for closure options or selected closure activities.

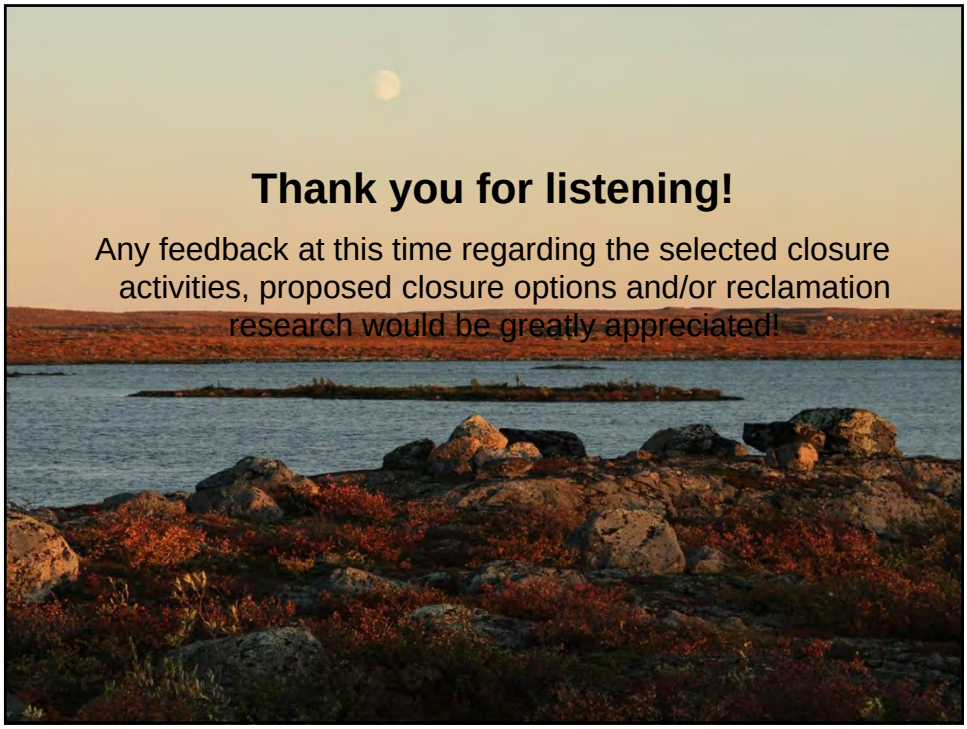
Closure Objective	What is the best closure objective for a particular mine component? Is the objective achievable?
Closure Options	Which of the closure options will best achieve the closure objective?
Selected Closure Activity	What is the best way to implement the selected closure activity?
Closure Criteria	What is the best way to measure whether the selected closure activity meets the closure objective?

Reclamation Research Plan

Next Steps

De Beers
GROUP OF COMPANIES

- De Beers is currently in the process of revising the Interim Closure and Reclamation Plan
  - Closure Objectives were approved by the Mackenzie Valley Land and Water Board in November 2012.
  - De Beers visited communities in February 2013 to discuss closure
  - De Beers hosted a Closure Options and Research Workshop held in Yellowknife on March 13, 2013.
  - De Beers submits the Interim Closure and Reclamation Plan (version 3.2) in June, 2013 for stakeholder review.

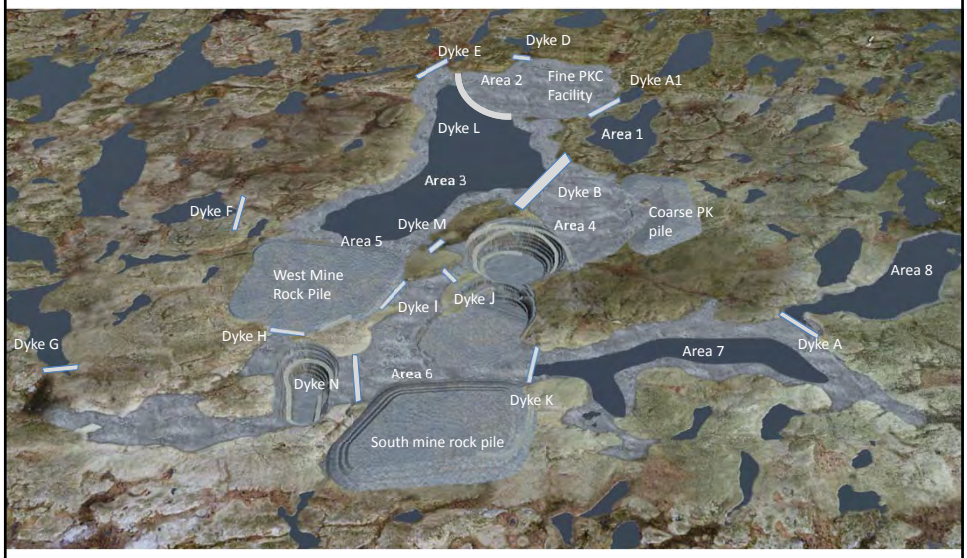

Thank you for listening!
Any feedback at this time regarding the selected closure activities, proposed closure options and/or reclamation research would be greatly appreciated!

De Beers
GROUP OF COMPANIES
Gahcho Kué
Closure & Reclamation

Construction (Year -1)

Construction (Year -2)

Operation (Year 1-11)



Closure (12 to 20+ Years)

Gahcho Kué – Closure & Reclamation

DE BEERS GROUP OF COMPANIES

- **Goals and Objectives** of the Conceptual Closure and Reclamation Plan (the Plan)
- **Key concepts** central to the Plan
- **Commitments** associated with the Plan
- **Overview of key activities** and **schedule**
- Conceptual Closure and Reclamation Plan **Summary**

Goals of the C&R (The Plan)

DE BEERS GROUP OF COMPANIES

- The **overall Goals** of the Conceptual C&R Plan includes:
  - **Minimize the environmental impacts** of operations to the extent practical
  - **Re-establish productive fish and wildlife habitat** as quickly as possible
  - **Create self-sustaining ecosystems**
  - **Achieve post-closure conditions** that do not require maintenance
- The C&R Plan is considered **"conceptual"** at this stage, and will be refined over time.

Long-term Objectives

DE BEERS GROUP OF COMPANIES

Long-term Objectives of the conceptual C&R Plan:

- **Re-establish the natural fish habitat** that maybe lost, altered, or disturbed as a result of the Project
- **Return site conditions to self-sustaining ecosystems** typical in the region
- **Create**, to the extent practical, **final landforms that integrate into the natural landscape**

Short-term Objectives

DE BEERS GROUP OF COMPANIES

- **Short-term Objectives of the Plan**:
  - **Reclaim areas as soon as possible** once they are no longer required
  - **Minimize the risk of erosion/sediment** loss from on-site runoff
  - **Stabilize slopes** to maintain safe working conditions and to aid reclamation activities
  - **Restore natural drainage,** where possible
  - **Establish ground cover** to limit soil erosion and dust production
  - **Maintain** an environmentally safe site

Key Concepts Community and Traditional Knowledge

DE BEERS GROUP OF COMPANIES

- **Community Feedback and Traditional Knowledge**
  - Beginning with the earliest phases of exploration at Kennady Lake, De Beers initiated and maintained contact with the various communities near the Project
  - Based on feedback received during the engagement process, De Beers identified community inputs for reclamation
    - Example: restore Kennady Lake as quickly as possible
  - The Plan was developed to address, to the extent possible, community inputs for reclamation
    - Example: pumping water from Lake N11 during refilling will reduce the time required to fill Kennady Lake from 20 years to 8 or 9 years

Conceptual C&R Plan – Commitments

DE BEERS GROUP OF COMPANIES

- Use progressive or **ongoing reclamation to minimize** the total amount of area disturbed by the Project activities at any one time
- **Recover as much soil** as practical for use in reclamation activities
- **Undertake reclamation trials** throughout the life of the Project
- **Liaise with other mine operators** in the Canadian Arctic – to share reclamation information/research to apply proven practices

Overview

De Beers
GROUP OF COMPANIES

- Re-visit AEMP at Snap Lake and introduction to AEMP at Gahcho Kué
- Key elements of the programs
- Similarities and differences between SL and GK
- Snap Lake re-evaluation- lessons learned and path forward
- Gahcho Kué- where we are at

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Overview:

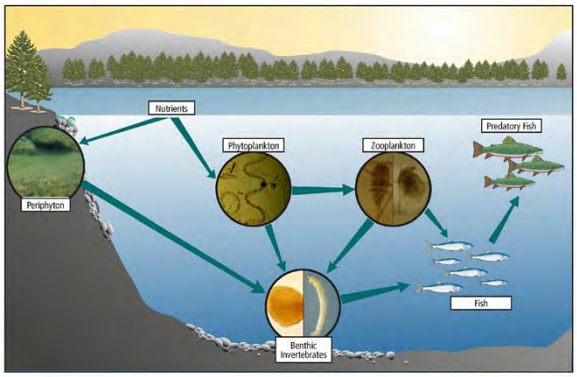
DE BEERS
GROUP OF COMPANIES

Key goals:

The water is safe to drink

The fish are good to eat

Food Web



The AEMP breakdown:

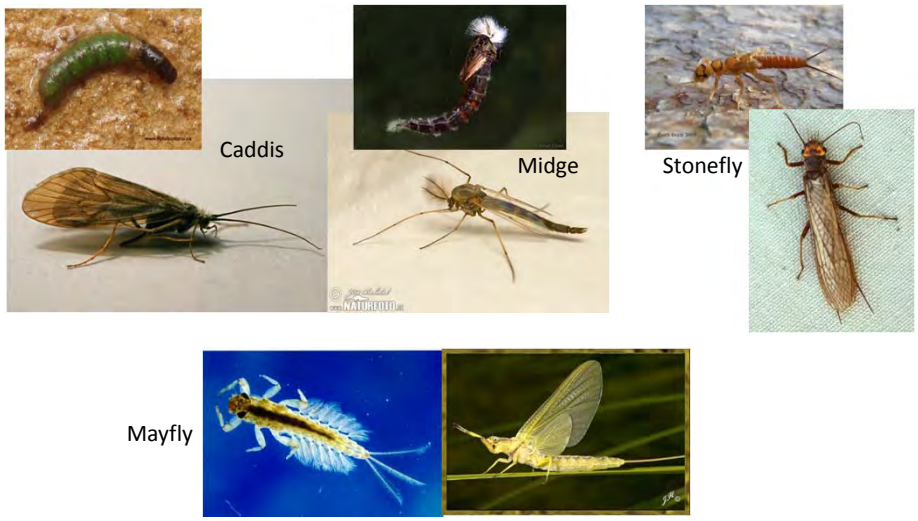
DE BEERS
GROUP OF COMPANIES

- **Six Core Components**
  - **Benthic Invertebrates**
  - **Fish: health, tissue metals, tasting, community**
  - **Plankton**
  - **Sediment Quality**
  - **Traditional Knowledge (expanded from 2005)**
  - **Water Quality**

***Same for Gahcho Kué with the addition of hydrology

Benthic Invertebrates = Bugs from the lake/stream bottom

DE BEERS GROUP OF COMPANIES



Water Licence Requirements:

DE BEERS GROUP OF COMPANIES

- **A comprehensive AEMP-**
  - Living and non-living factors- model
  - Predict short and long-term effects
  - Test predictions made
  - Assess and need for additional action
  - Annual report
  - Major re-evaluation every 4 years
  - AEMP Response Plan
    - Significance thresholds
    - Action levels
    - Response

Sampling Methods

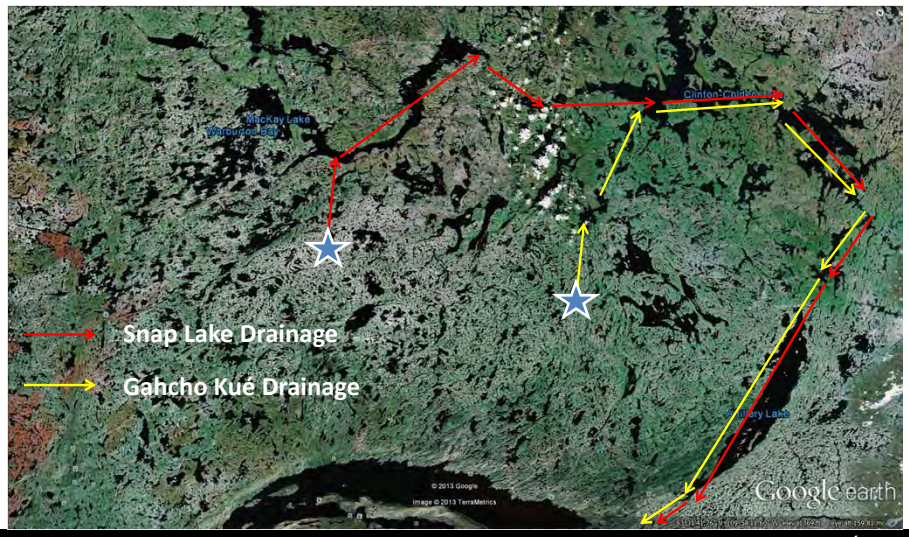
DE BEERS GROUP OF COMPANIES

- Sampling methods and data analyses are described and conducted on a component-specific basis- *check out the stations after this presentation*
- Samples collected in field, analyzed in the lab and compared to baseline and reference lakes.

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

The big picture: watershed

DE BEERS GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

The similarities

DE BEERS
GROUP OF COMPANIES

Snap Lake fishes

- Burbot
- Lake Chub
- Slimy Sculpin
- Northern Pike (only Northeast Lake)
- Lake Trout
- Round Whitefish
- Arctic Grayling
- Longnose Sucker

Gahcho Kué fishes

- Burbot
- Lake Chub
- Slimy Sculpin
- Northern Pike

- Lake Trout
- Round Whitefish
- Arctic Grayling
- Longnose Sucker
- Ninespine stickleback

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Key differences between Snap Lake and Gahcho Kué

DE BEERS
GROUP OF COMPANIES

- Snap Lake- underground
  Gahcho Kué- open pit
- Snap Lake is largely protected while Kennady Lake must be isolated and de-watered
- GK- downstream monitoring important

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

AEMP 2005-2011

DE BEERS
GROUP OF COMPANIES

Key Findings

- Design was appropriate (i.e. detected effects)
- As predicted, water quality changing in Snap Lake and downstream lakes = ↑nutrients
- But no evidence that changes are affecting the health of the lake or the drinking water
- Plankton and aquatic bug community changing likely due to nutrient enrichment
- Fish health, fish community and fish taste do not appear to be affected by changes to the water quality

Snap Lake AEMP 2005-2011

DE BEERS
GROUP OF COMPANIES

Lessons Learned

Challenges

- Flow rates increased faster than expected
- Northwest arm not appropriate as reference*
- Gradient-style study design not appropriate
- Combining environmental and biology data- (e.g., water temperature affecting fish spawning times)

Successes

- Sample collection successful despite harsh climate
- Water quality models appropriate
- Predictions appear to be appropriate

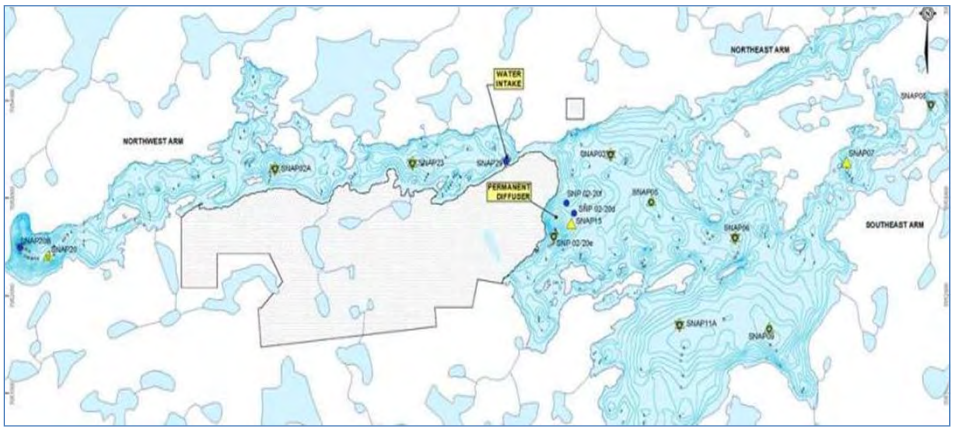
Snap Lake: Sampling Stations

DE BEERS GROUP OF COMPANIES

- In 2005, stations chosen to see if changes occurred ***further away*** from the mine
- In 2013, there is a change to looking at how things are ***changing over time*** and ***downstream***
- Why the change?
  - consistency among components
  - consistency over time
  - More important to compare to reference lakes and downstream conditions
  - Mathematical: enough sampling to see cause and effect

Proposed Monitoring Stations in Snap Lake

DE BEERS GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Proposed Monitoring Stations at Northeast Lake

DE BEERS
GROUP OF COMPANIES

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Proposed Monitoring Locations for Lake 13

DE BEERS
GROUP OF COMPANIES

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Current Process

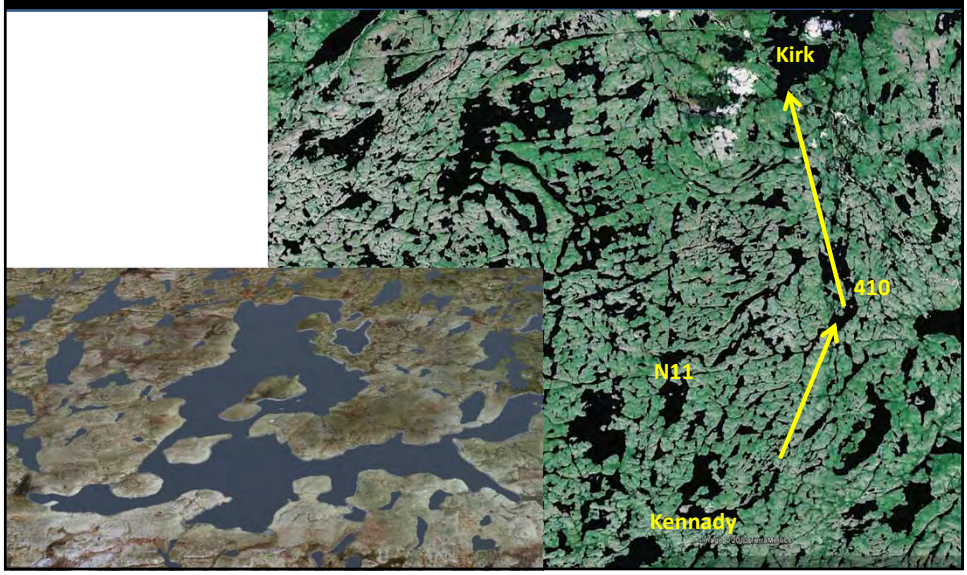
DE BEERS
GROUP OF COMPANIES

- Snap Lake is redesigning the AEMP:
  - Sept. 2012- Community Meeting
  - Oct. 2012- 5 year summary (reevaluation) submitted
  - Nov. 2012- Redesign submitted
  - Jan. 2013- Technical Sessions
  - May 2013- Weight of evidence to be discussed
- Monitoring Program approved
- Under water license re-evaluation and redesign is required every *3 years*

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

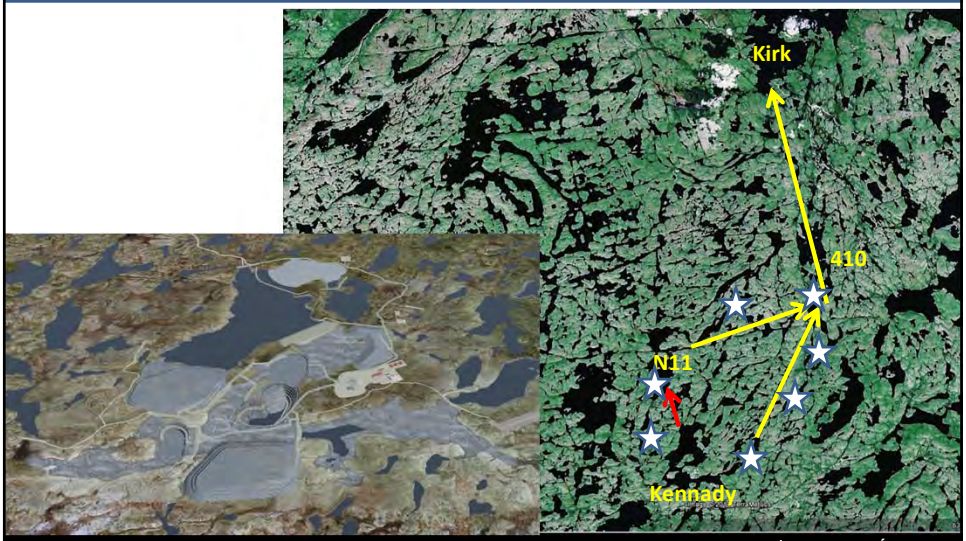
Gahcho Kué: Currently

DE BEERS
GROUP OF COMPANIES



Gahcho Kué AEMP Phase 1: De-watering/ Construction

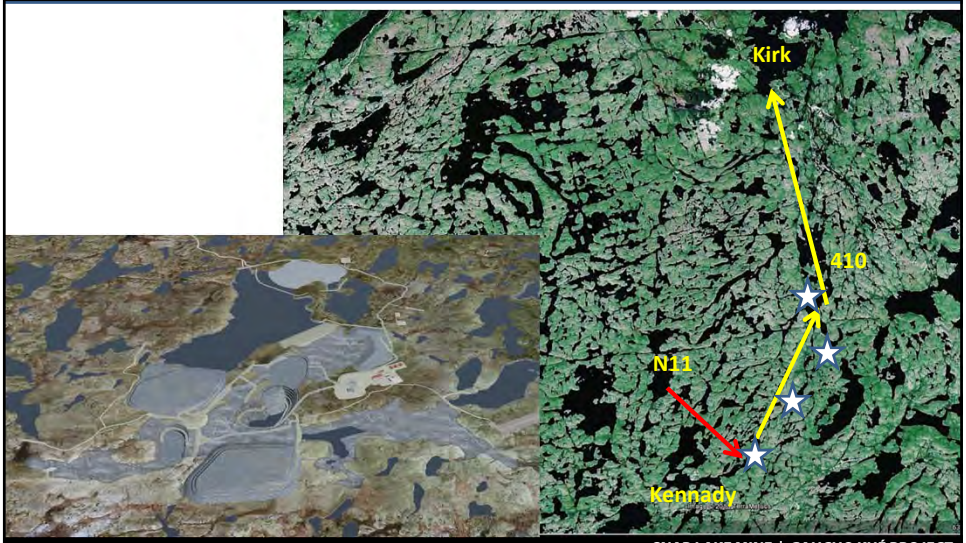
DE BEERS
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Gahcho Kué AEMP Phase 2: Operations/ Closure

DE BEERS
GROUP OF COMPANIES



SNAP LAKE MINE | GAHCHO KUÉ PROJECT

Downstream flow

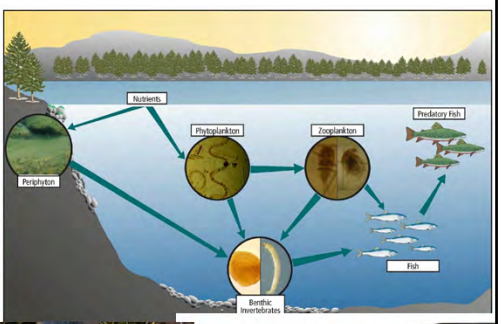
DE BEERS
GROUP OF COMPANIES

Water will be pumped from Lake N11 to the outflow of Kennady Lake to maintain natural water levels during the spring and summer

The purpose is to protect spawning fishes such as Arctic grayling.

The challenges with finding good reference lakes

DE BEERS
GROUP OF COMPANIES



Baseline and Reference Lakes

DE BEERS GROUP OF COMPANIES

- Snap Lake:
  2 new lakes chosen based on concerns from communities and regulators

- Gahcho Kué: East Lake and Reference Lake 2 & 3
  But we are looking for community advice during site visits in summer 2013.

Special Studies

DE BEERS GROUP OF COMPANIES

- Occur as needed
- Include research activities that support monitoring
- Focus on development of monitoring methods/ findings and a better understanding of northern lakes/ rivers

- Currently proposed special studies include:
  1. Near shore environment
  2. Picoplankton
  3. Downstream Lakes
  4. Number of lake trout
  5. Food Web Analysis

SNAP LAKE MINE | GAHCHO KUÉ PROJECT

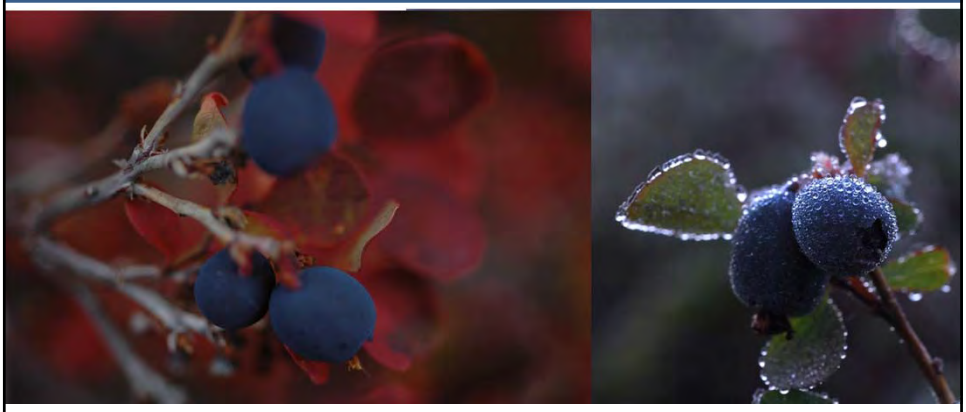
Traditional Knowledge

DE BEERS
GROUP OF COMPANIES

- Traditional Knowledge from Environmental Assessment
- Annual Fish Tasting Program
- Input on sampling sites and reference lake selection

Don’t forget the berries during the fish tasting event

DE BEERS
GROUP OF COMPANIES



Questions/Comments?

Appendix G

Objectives of Site Visit and Overview of Day Presentation

Summer 2013

Snap Lake Mine - Regulatory

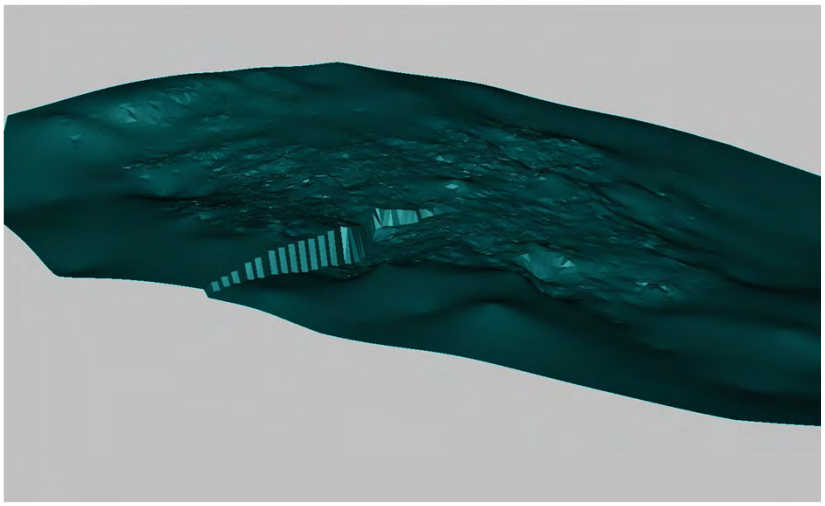
DE BEERS GROUP OF COMPANIES

Snap Lake Mine officially opened in July 2008
Water License Amendment approved on June 14, 2012
Aquatic Effects Monitoring Program (AEMP) redesign in progress
- September 9th, 2012 community meeting
- January 24th, 2013 technical session on reevaluation and monitoring
- May 29th, 2013 technical session on Weight of evidence and response framework
- Intent is for Board to approve plan June 20, 2013

Interim Closure and Reclamation Plan (ICRP) process
- February community meetings to discuss Closure
- May 13th, 2013 Technical Session
- Currently revising the ICRP based on feedback
- Board process will commence once submission is complete

Snap Lake Mine - Kimberlites

DE BEERS GROUP OF COMPANIES



Snap Lake Mine Water Management Enhancements

DE BEERS GROUP OF COMPANIES

- Sump infrastructure upgrade
- Continuous sump monitoring & more mature protocols
- "Flocc tank" pre-clarifying pool
- Debottlenecking & optimization of WTP & TWTP
- Increase of Clean Water System capacity U/G up to 8500 m3/d
- Increased monitoring/testing of bogs and shorelines pre and post freshet.
- Upcoming PS3 repair
- U/G water model updated
- IL6 ditch construction completed

Spring Freshet – Extra Measures

DE BEERS GROUP OF COMPANIES

- Increased monitoring
- Monitoring areas where spring freshet is most common
- Increasing discharge to the lake with a second diffuser
- Putting in place extra monitoring at SNP stations
- Monitoring Frequency – Daily
- Sampling Frequency - Weekly

4

SURVEILLANCE NETWORK PROGRAMME SAMPLING STATIONS

Water License

DE BEERS
GROUP OF COMPANIES

- Site specific work being carried out in preparation for application
- Update water modeling
  - Surface
  - Underground

- Additional water management enhancements for increased water discharge

Appendix H

Aquatic Effects Monitoring Plan Workshop Presentation

January 2013

Aquatic Effects Monitoring Program

Overview

January 24, 2013 Yellowknife

AEMP Overview

- Outline
  - Background
  - 2005-2011 AEMP
  - Approach
  - AEMP Components
  - AEMP Study Area
  - Sample Location
  - Sample Schedule
  - Sample Methods and Data Analyses
  - Special Studies
  - Weight of Evidence
  - Response Framework

Background – Legal Aspects

AEMP is a requirement of the Water Licence

2013 AEMP Design Plan - update to the 2005 AEMP Design Plan

Objectives:

a) To determine the short- and long-term effects of the Project on the receiving environment;

b) To test the predictions made in the Environmental Assessment (EA) or in other submissions to the Board regarding the impacts of the Project on the Receiving Environment;

Objectives:

c) To assess the efficacy of mitigation measures that are used to minimize the effects of the Project on the Receiving Environment; and

d) To identify the need for additional mitigation measures to reduce or eliminate Project-related effects.

3

AEMP 2005-2011

Key Findings

- Design was appropriate and detected effects
- Water quality is changing in Snap Lake and downstream lakes as predicted, observe nutrient enrichment
- Water quality changes do not seem to be causing adverse effects to the health of the lake or to drinking water
- Plankton and benthic community changing likely due to nutrient enrichment
- Fish health, fish community and fish taste do not appear to be affected by changes to the water quality

4

AEMP 2005-2011

Lessons Learned

Challenges

- Flow rates increased faster during construction than predicted
- Northwest arm not appropriate as a reference area
- Gradient-style study design not appropriate
- Limited integration of habitat and physical data with biological data (e.g., water temperature affecting fish spawning times)

Successes

- Sample collection largely successful despite Arctic climate challenges
- Models used to predict water quality appear to be appropriate
- Predictions appear to be appropriate and do not require substantive change

AEMP - 2013-2016

- Update the AEMP Design Plan

Snap Lake Mine – Type of Effects

Potential 'Stressors'

- Minewater Discharge (Treated Effluent)
- Uncontrolled runoff
- Acid Deposition
- Spills

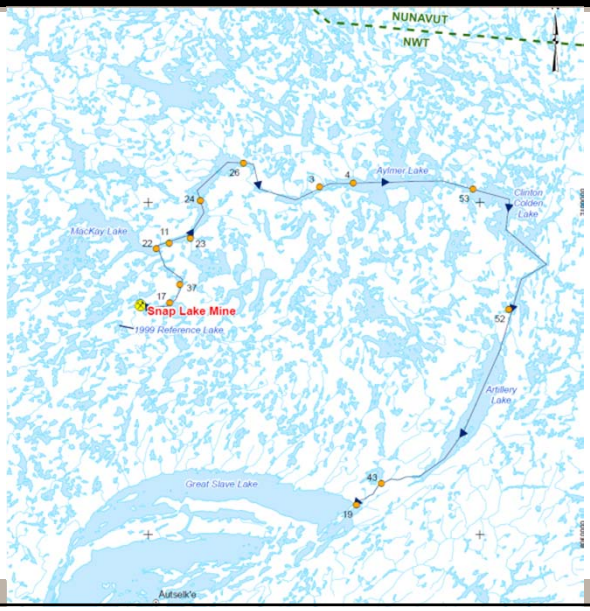
- Updated predictions of how this could change water quality in Snap Lake
- Presented in water licence renewal

Effects to Snap Lake – Updated Predictions

Water Quality in Snap Lake - Updated

- Increases in major ions, nutrients, some metals
- Metals not predicted to increase as predicted in EAR
- Acid deposition into local lakes not predicted to have effect but was some uncertainty
- Treated effluent will decrease with distance downstream of Snap Lake

Updated predictions – Downstream Lakes

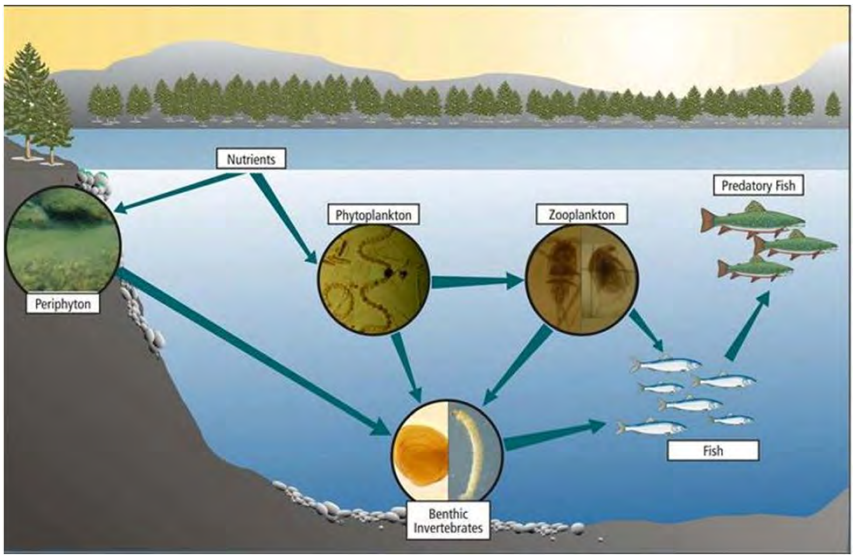


Effects to Snap Lake – Updated Predictions

Fish Habitat
- Changes in water level not expected, monitored through hydrology program

Benthic Invertebrates, Plankton, Fish
- No changes to predictions of effects of mine on these components

Snap Lake Aquatic Ecosystem

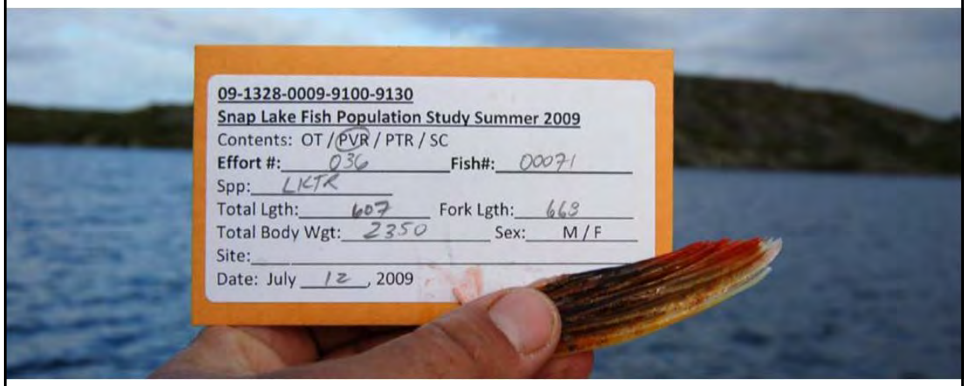


AEMP Components

- Six Core Components
  - Water Quality
  - Sediment Quality
  - Plankton
  - Benthic Invertebrates
  - Fish: health, tissue metals, tasting, community
  - Traditional Knowledge (expanded from 2005)

AEMP Components

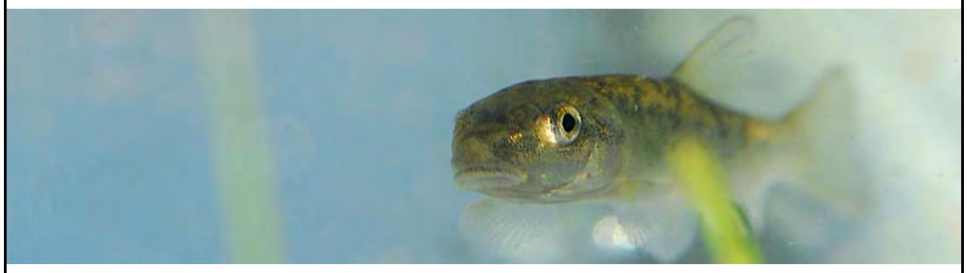
- Supporting Components
  - Site Characterization/Supporting Environmental Variables (new)
  - Supporting studies (as needed)



13

AEMP Approach

- Approach
  - Overall Hypotheses
    - Effects due to toxicity of substances in effluent
    - Enrichment due to nutrients from effluent
  - Key Questions for each component
    - Example from Water Quality: Is water from Snap Lake safe to drink?



14

Study Area

- Snap Lake
  - main basin and northwest arm
- Northeast Lake (reference)
- Lake 13 (new reference)
  - the Re-evaluation Report recommended the addition of a second reference lake
  - the intent of a second reference lake is to further understand and bound natural variability
- Upstream of King Lake (KING01)
  - One station located in the Lockhart River system, downstream of Snap Lake

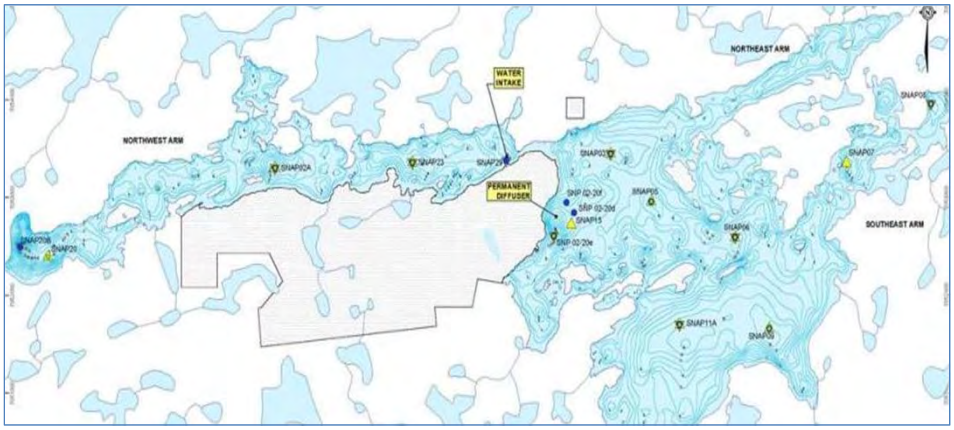
Reference Lake Selection

- No lake is identical to Snap Lake
- Completed and approved by Board in 2005
- Review of over 30 lakes in region
- Field program on five lakes
- Rated each of five lakes on similarity to Snap Lake
- Chose the top two

Table 4-1 Summary of Key Reference Lake Results

Criterion	Snap Lake	Northeast Lake	Unnamed Lake 3	Unnamed Lake 13	Unnamed Lake 33	Unnamed Lake 34
BATHYMETRY						
Average Depth (m)	7.4	10.8	13.0	6.8	9.0	10.3
Maximum Depth (m)	24.6	31.7	30.5	22.1	24.8	30.2
Similarity Ranking		Medium-low	Low	High	Medium	Medium-low
WATER QUALITY						
Average TDS (mg/L)	8	9	3	7	8	6
Average total phosphorus (mg/L)	0.007	0.002	0.003	0.003	0.004	<0.001
Chlorophyll *a* (µg/L)	1.9	1.0	0.8	1.0	-	0.8
Chlorophyll *c* (µg/L)	0.7	0.1	0.2	0.2	-	0.1
Metals	Metal concentrations are similar in all lakes					
Similarity Ranking		Medium	Medium	Medium	Medium	Medium
SEDIMENT QUALITY						
Percent sand	49	65	48	45	76	49
Percent silt	43	29	36	45	10	43
Percent clay	8	6	16	10	4	8
Total organic carbon (percent)	16	11	7	11	4	11
Metals		Similar	High As	Slightly low Cd, Cr, Zn	Slightly low overall	Slightly low Cd, Cr, Zn
Similarity Ranking		Medium	Low	Medium	Medium-low	Medium

Proposed Monitoring Stations in Snap Lake



17

Proposed Monitoring Stations at Northeast Lake

18

Proposed Monitoring Locations for Lake 13

19

Sampling Stations

- In 2005, stations were established to detect a spatial gradient within Snap Lake
- Move from spatial and seasonal trends in Snap Lake to monitoring trends over time and changes downstream of Snap Lake
- Rationale for sampling station updates in the 2013 AEMP Design Plan:
  - increase consistency among components
  - maintain consistency for each component over time
  - reflect the shift from 'within Snap Lake' to assessing the main basin as a whole compared to reference lakes and downstream conditions
  - provide sufficient power (i.e., large enough sample size) to detect differences considered ecologically significant that can be related to potential causation of effect

20

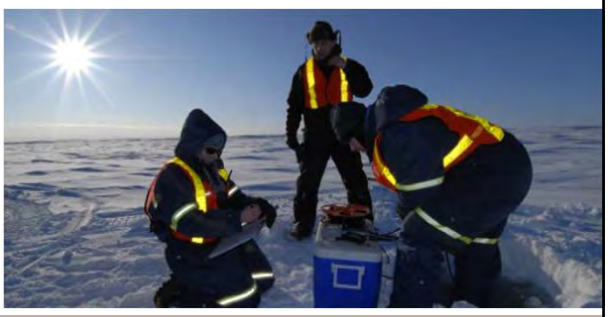
Sampling Schedule

- Monitoring frequency for 2005 to 2012:
  - **Annual**: water quality, sediment quality, plankton, benthic invertebrates, fish tasting
  - **Once every 5 years**: fish health, fish community, and fish tissue

21

Sampling Schedule

- 2013 AEMP Design Plan:
  - **Annual**: water quality, sediment quality at diffuser, plankton, fish tasting, supporting environmental variables
  - **Every 3 Years**: sediment quality, benthic invertebrates, fish health, fish community, fish tissue
  - Traditional Knowledge – to be determined



22

Sampling Methods

- Sampling methods and data analyses are described and conducted on a component-specific basis
- Component sampling methods include field measurements, laboratory analyses, and statistical analyses
- Each component follows rigorous quality assurance/ quality control procedures

Special Studies

- Occur as needed and/or required
- Include research activities that support monitoring
- Focus on development of monitoring methods, further investigation of monitoring findings, or to fill data gaps, understand the ecosystem
- Currently proposed special studies include:
  1. Littoral
  2. Picoplankton
  3. Downstream Lakes
  4. Lake Trout Population Estimate
  5. Stable Isotope Food Web Analysis

Traditional Knowledge

- 2005 Design
  - Traditional Knowledge from Environmental Assessment
  - Annual Fish Tasting Program

25

Traditional Knowledge

- 2013 Design
  - 2012 preliminary meeting with communities
  - 2013 spring community meetings
  - Design Plan forthcoming as addendum for approval

26

Pulling it all Together

- How are all the lines of evidence from each of the six components pulled together to say what might be affecting the lake?

Weight of Evidence

- **IF** its determined that there is an effect due to the mine
- **THEN** apply the Weight of Evidence
- **Weight of Evidence (WOE)** = systematic and transparent method for integrating complex data generated in environmental assessment programs.
- WOE can provide the basis for future investigative studies to determine causation and potential remedies

Response Framework

- When and how does the mine take action on monitoring results?
  - Response Framework
    - Significance Thresholds
    - Action Levels

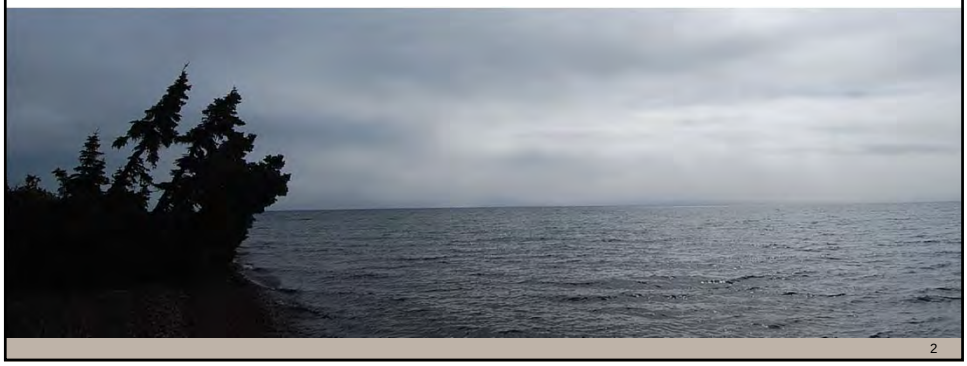
Snap Lake Mine
Aquatic Effects Monitoring Program

Water Quality Component

January 24, 2013 Yellowknife

Presentation Overview

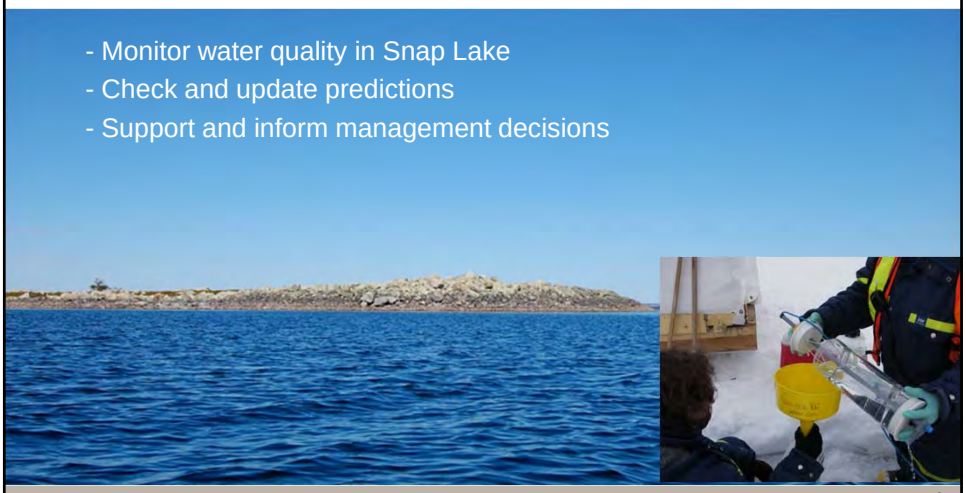
- Objectives of the Water Quality Component
- Key Questions
- Design Rationale
- Overview of 2013 Design Plan
- Design Changes



Objectives

- Objectives of the AEMP Water Quality component are to:

  - Monitor water quality in Snap Lake
  - Check and update predictions
  - Support and inform management decisions



3

Key Questions

Discharge to Snap Lake:

1. Are key parameters in treated effluent consistent with EAR predictions and below Water Licence limits?

Snap Lake:

2. Are key parameters below AEMP benchmarks and Water Licence limits?

3. Parameters with increasing concentrations:
   How do they compare to AEMP benchmarks, reference lakes, and predictions?

4

Key Questions continued…

Snap Lake (continued):

4. Are spatial and seasonal patterns consistent with predictions?

5. Is water from Snap Lake safe to drink?

Nearby Waterbodies:

6. Nearby waterbodies: Evidence of acidification from the Mine?

General Design Rationale

- 2005 Design Plan**:** identifying spatial patterns in Snap Lake
- 2013 Design Plan: past trends and recent water quality data

- Early on:
  - Mine effluent sank to the bottom of the lake
  - Clear gradient across the lake

- Now:
  - Main basin is fairly evenly mixed; concentrations increasing over time
  - Evidence of effluent-related parameters downstream as predicted

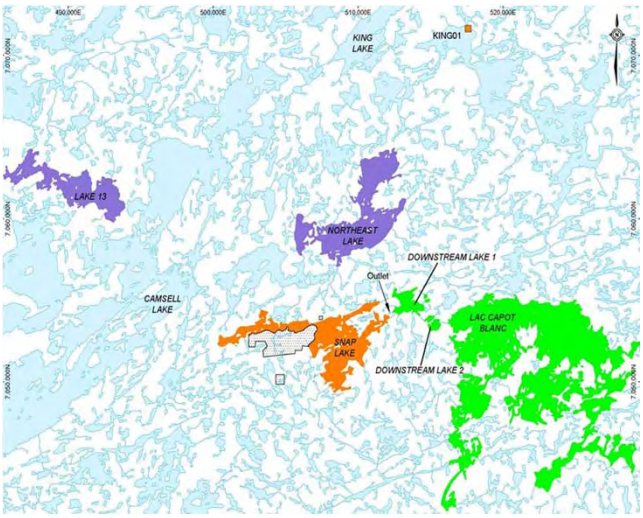
General Design Rationale continued...

- The 2013 Design Plan allows for:
  - Adequately monitoring conditions within Snap Lake; and,
  - Expanding the program to include additional reference lake and downstream locations

Overview of 2013 Water Quality Program

- Sampling Locations
- Sampling Frequency
- Field Measurements
- Laboratory Analyses
- Data Analyses

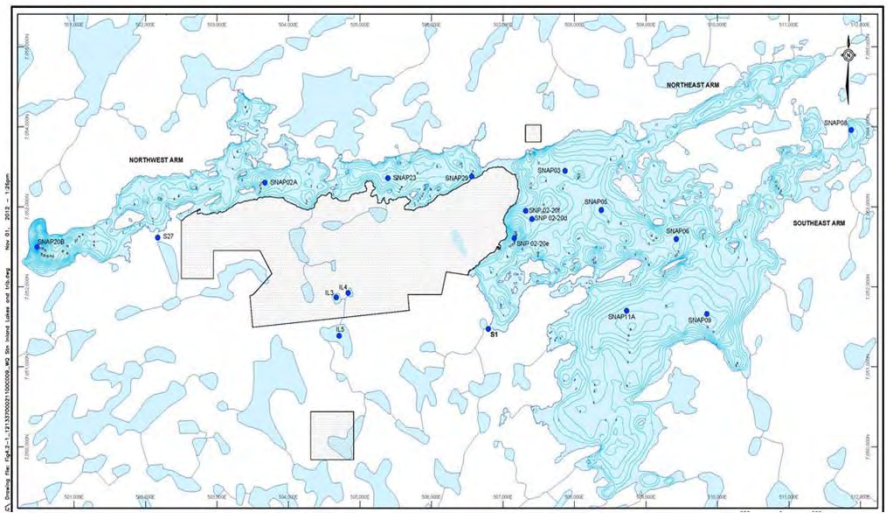
Water Quality Sampling Areas



Water Quality Sampling Locations

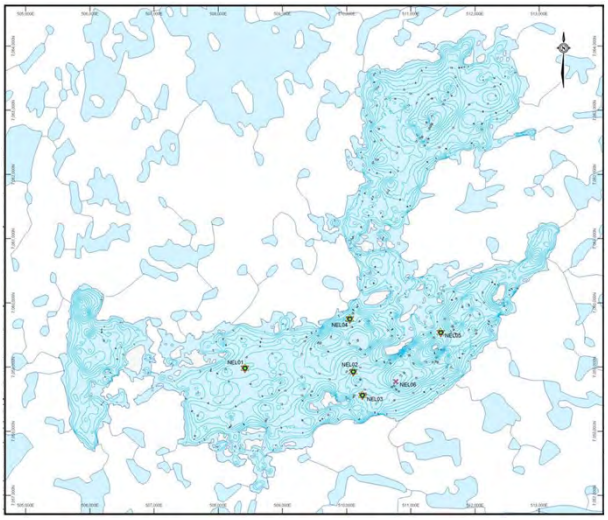
- Snap Lake:
  - Main Basin: SNP 02-20d, SNP 02-20e, SNP 02-20f, SNAP03, SNAP05, SNAP06, SNAP08, SNAP09, and SNAP11A
  - Northwest Arm: SNAP29, SNAP23, SNAP02A, and SNAP20B
- Reference Lakes:
  - Northeast Lake: NEL01, NEL02, NEL03, NEL04, NEL05, and NEL06
  - Lake 13: LK13-01, LK13-02, LK13-03, LK13-04, LK13-05, and LK13-06
- Tributaries: S1 and S27
- Inland Lakes: IL3, IL4, and IL5
- Downstream Locations: KING01, plus 3 lakes included in a “special study”

Snap Lake Sampling Locations
Including Inland Lakes and Tributary Stations



Northeast Lake Stations

CMF1

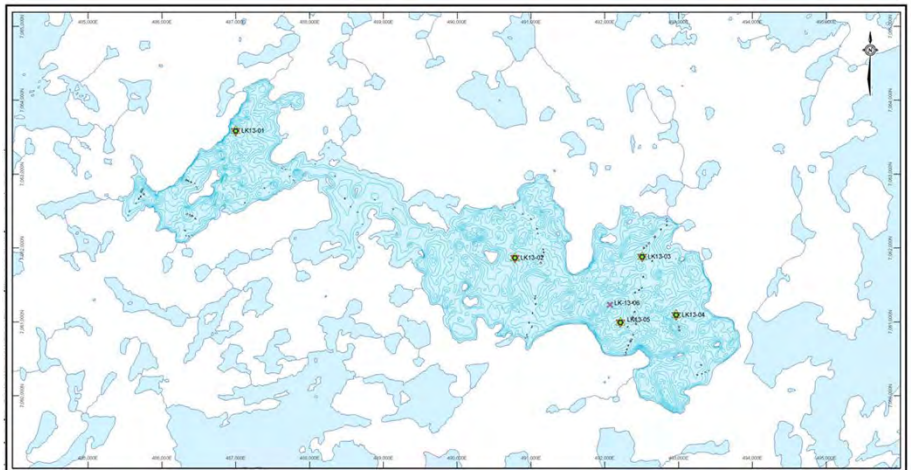


Slide 12

CMF1 Tasha these next two slides are also in the "general" presentation in Section 3, but I thought you might want to show specific sampling locations in the reference lakes, which are not shown in the previous slide.

Cherie Frick, 1/19/2013

Lake 13 Stations



Sampling Frequency

- **Snap Lake:**
  - Diffuser: monthly (SNP)
  - Main Basin & Northwest Arm: 4 times per year
- **Reference Lakes:**
  - same schedule as Snap Lake
- **Tributaries:**
  - twice weekly during spring freshet
  - monthly during open-water conditions
- **Inland Lakes:**
  - monthly during open-water conditions
- **Downstream (KING01)**:
  - Annually (late ice-covered conditions)

Field Measurements

- Field measurements include:
  - dissolved oxygen, pH, water temperature, and conductivity
  - ice thickness during ice-covered conditions
  - Secchi depth during open-water conditions
- Field water quality profiles will be collected every:
  - 1 m within the water column
  - 0.5 m (stations < 5 m)

Laboratory Analyses

- Laboratory analyses generally include:
  - physical and conventional parameters
  - major ions
  - nutrients
  - metals
  - biological
  - selected organics
  - toxicity
- Lab parameters vary by location and in frequency sampled

Summary: Parameters and Sampling Frequency for Snap Lake

Parameter Categories (continued on next slide)	Snap Lake	
	Diffuser Stations (SNP)	Main Basin and Northwest Arm
Field Measurements/Profiles	monthly	April/May, July, August, September
Physical and conventional parameters, TDS and major ions	monthly	April/May, July, August, September
Nutrients	monthly	April/May, July, August, September
Metals	monthly	April/May, September

- "April/May" – program completed in either month (not both), depending on logistical requirements and ice conditions.

17

Summary: Parameters and Sampling Frequency for Snap Lake

Parameter Categories (continued from previous slide)		Snap Lake	
		Diffuser Stations (SNP)	Main Basin and Northwest Arm
Organics		monthly	not applicable
Biological	*Escherichia coli*	monthly	not applicable
	Microcystin-LR	not applicable	January, April, July, August, September at SNAP29 only
Toxicity	*Ceriodaphnia dubia; Pseudokirchneriella subcapitata*	twice per year (April/May, September)	not applicable
	Early life stage (embryo/alevin/fry) with Rainbow Trout	once per year	not applicable

18

Summary: Parameters and Sampling Frequency in Other Areas

Parameter Categories	Reference Lakes	Inland Lakes	Tributaries	Downstream (KING01)
Field Measurements/Profiles	April/May, July, August, September	monthly during open-water conditions (surface)	twice weekly during spring freshet and monthly during open-water conditions	April/May
Physical and Conventional Parameters, TDS, and Major Ions	April/May, July, August, September	monthly during open-water conditions		April/May
Nutrients	April/May, July, August, September	monthly during open-water conditions for nitrogen nutrients	weekly during spring freshet and monthly during open-water conditions	April/May
Metals	April/May, September	not applicable		April/May

Data Analyses

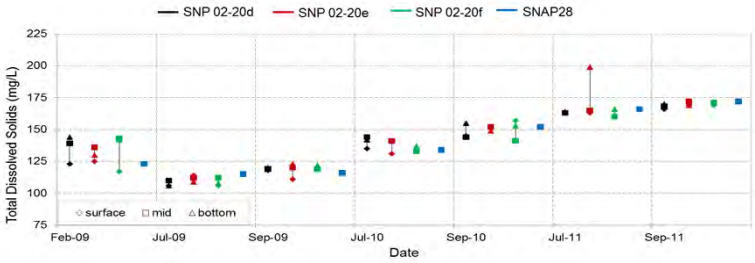
- Answer the six key questions
- Compare water quality against:
  - AEMP Benchmarks
  - Water Licence limits
  - EAR predictions
- Analyze temporal, seasonal and spatial trends
- Other inputs (e.g., uncontrolled runoff, seepage, and overland spills) considered when required

Design Changes and Rationale

- Reductions in the Water Quality Component:
  - Stations in the Main Basin
  - Sampling Depth
  - Sampling Frequency
- Additions to the Water Quality Component:
  - New Stations
  - Parameters Analyzed
  - Downstream "Special Study"

Reductions in the Water Quality Component

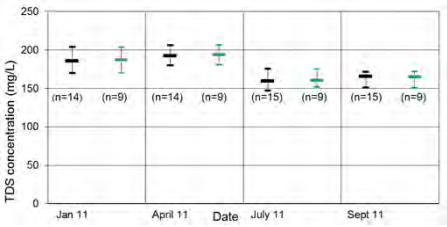
- Stations in Snap Lake
  - 2005 Design Plan:
    - 15 stations in the main basin; 4 stations in the northwest arm
  - 2013 Design Plan:
    - 9 stations in the main basin; 4 stations in the northwest arm
    - Discontinue: SNAP04, SNAP07, SNAP10, SNAP12, SNAP26, and SNAP28



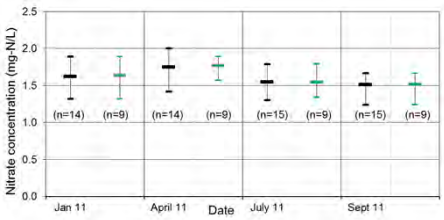
Reductions in WQ Component continued...

Whole-lake Average Comparison

TDS



Nitrate

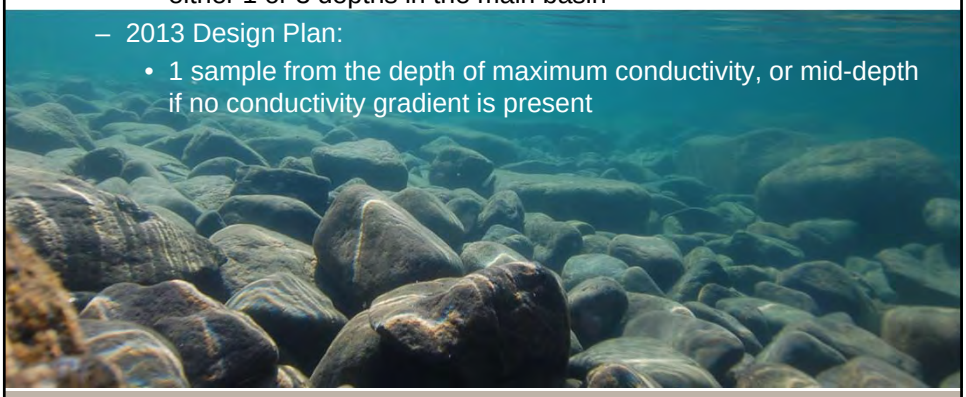


middle bar = average; upper bar = max; lower bar = min

23

Reductions in WQ Component continued...

- Sampling Depth
  - 2005 Design Plan:
    - 3 sampling depths at the diffuser stations
    - either 1 or 3 depths in the main basin
  - 2013 Design Plan:
    - 1 sample from the depth of maximum conductivity, or mid-depth if no conductivity gradient is present

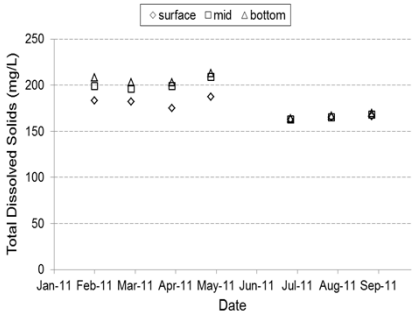


24

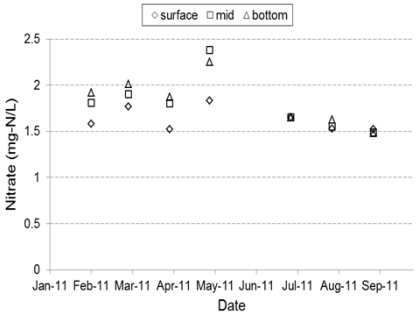
Reductions in WQ Component continued...

Sample Depth Comparison (SNP 02-20d)

TDS



Nitrate

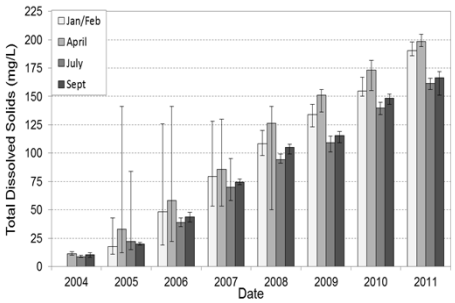


25

Reductions in WQ Component continued...

Sampling Frequency

- **2005 Design Plan:**
  - Snap Lake, Northeast Lake, and KING01:
    - ice-cover (Jan and Apr)
    - open-water (July and Sept)
- **2013 Design Plan:**
  - Snap Lake and Ref. Lakes:
    - ice cover (Apr or May)
    - open-water (July, Aug, Sept)
  - KING01 (annually)
    - ice cover (Apr or May)



26

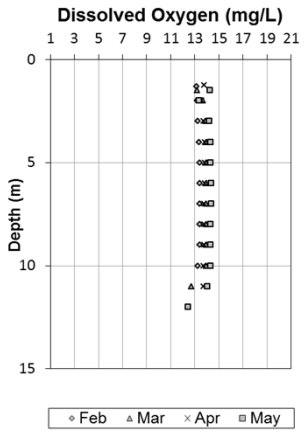
Reductions in WQ Component continued...

Sampling Frequency

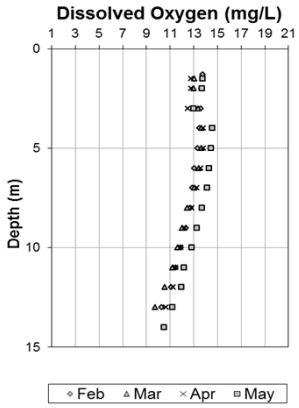
- 2005 Design Plan:
  - **Field profiles** monthly from January to May and in summer
  - **Metals** monthly (diffuser); quarterly (Snap Lake)
- 2013 Design Plan:
  - **Field profiles** in April/May, July, August and September
  - **Metals** monthly (diffuser); other stations April/May and September

Reductions in WQ Component continued...

SNP 02-20d



SNAP05



Additions to WQ Component continued...

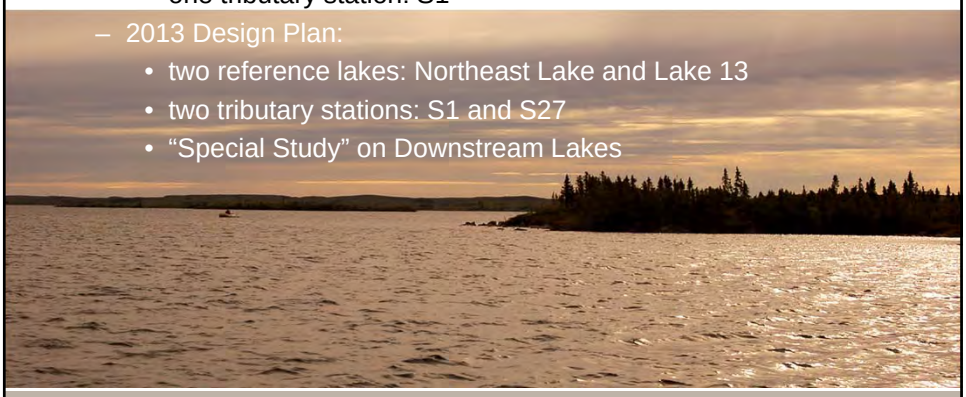
Parameters Analyzed

- 2005 Design Plan:
  - As described
- 2013 Design Plan:
  - Analyses to be completed for:
    - microcystin-LR in January, April, July, August, September at SNAP29 (water intake) only
    - Early life stage (ELS) toxicity test with Rainbow Trout once per year, discussions ongoing regarding which ELS test to do

29

Additions to the Water Quality Component

- New Stations
  - 2005 Design Plan:
    - one reference lake: Northeast Lake;
    - one tributary station: S1
  - 2013 Design Plan:
    - two reference lakes: Northeast Lake and Lake 13
    - two tributary stations: S1 and S27
    - "Special Study" on Downstream Lakes



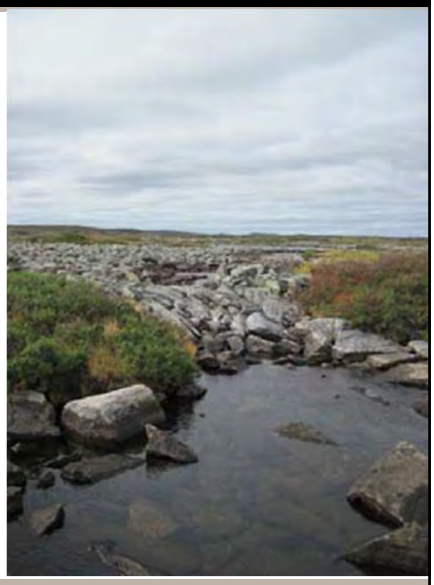
30

Downstream Lakes Special Study

Snap Lake 2013 AEMP Design Plan

Overview

- Key Questions
- Study Area
- Design Rationale
- Methods and Analyses

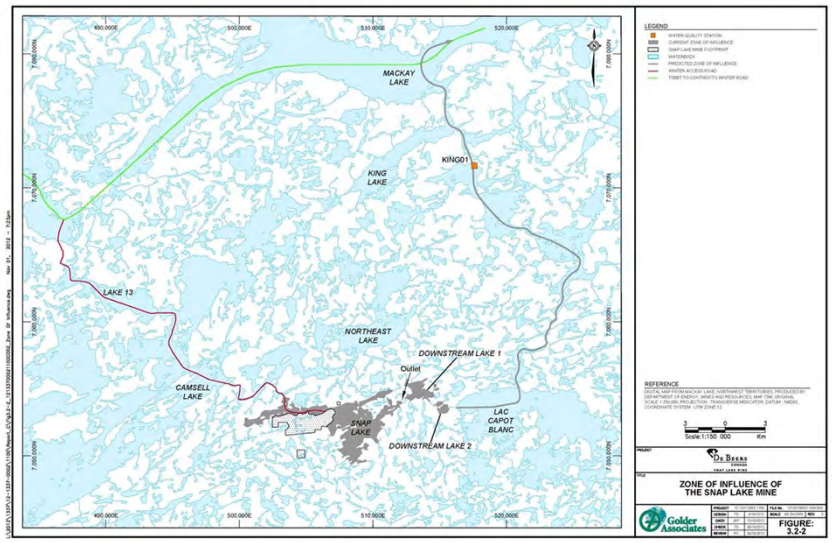


Objectives/Key Questions

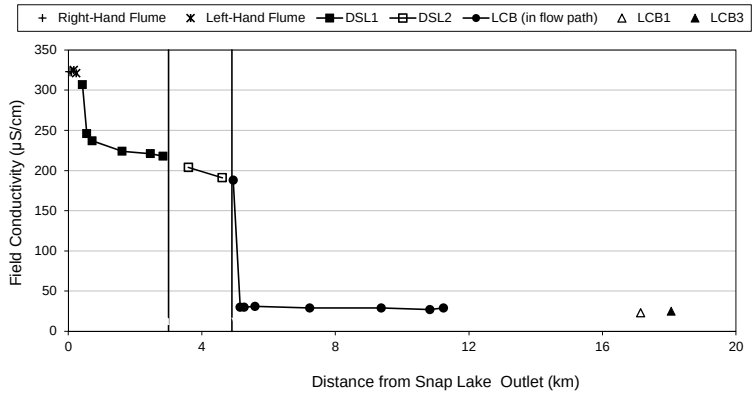
- **Key Question 1:**
  - What is the spatial extent of the treated effluent plume downstream of Snap Lake?

- **Key Question 2:**
  - What are the current water and sediment quality characteristics in the three downstream lakes?

Downstream Locations

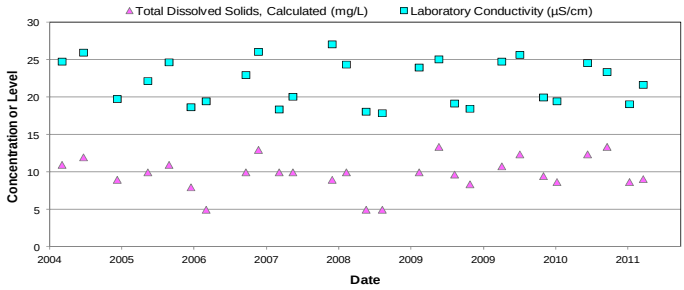


Field Conductivity Downstream of Snap Lake in 2011



Design Rationale continued…

- EAR prediction: Mine-related parameters predicted to reach background ~44 km downstream of Snap Lake
- No increasing trends observed at KING01 (25 km)
- Ongoing effort focussed on lakes immediately downstream of Snap Lake



Summary: Proposed 2013 Downstream Lake Sampling Program

Component	DSL1	DSL2	Lac Capot Blanc	Season	Data Collected
Plume Delineation	Inlet and outlet tributaries			Winter (Apr/May)	Ice thickness; Field measurements
				Summer (July)	Field measurements; Install conductivity loggers at outlets of DSL1, DSL2 and Lac Capot Blanc
				Fall (September)	Field measurements; Retrieve conductivity loggers
Water Quality	1	1	6	Winter (Apr/May)	Profile water column; Mid-depth water sample; AEMP parameter suite
				Fall (September)	
Sediment Quality	3	3	5	Fall (September)	Profile water column AEMP parameter suite

Data Analyses

- **Plume Delineation:**
  - Field measurements used to map the spatial patterns of the treated effluent plume downstream of Snap Lake
- **Water quality:**
  - Compare to reference lakes and AEMP benchmarks
  - Identify temporal trends
  - Compare annual maximum TDS concentrations to EAR predictions
- **Sediment quality:**
  - Compare to appropriate guidelines, trends

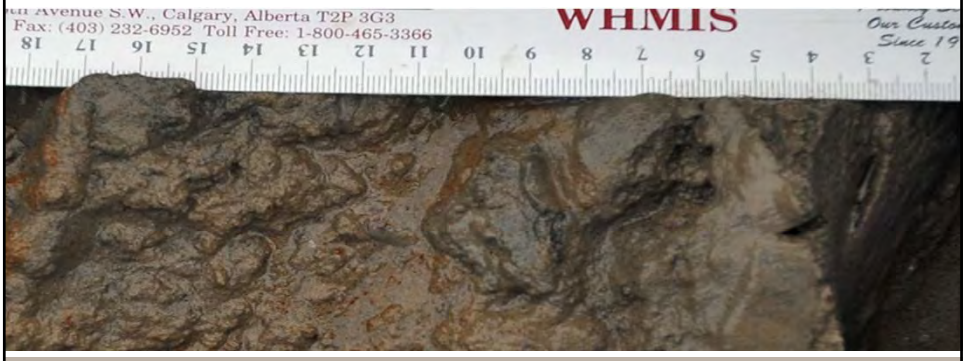
Snap Lake Mine
Aquatic Effects Monitoring Program

Sediment Component

January 24, 2013 Yellowknife

Sediments in the Snap Lake Ecosystem

- Sediments provide habitat for invertebrates
- Sediments also act as a reservoir or “sink” for contaminants
- Sedimentation rates in Arctic and sub-Arctic lakes tend to be very slow



Sediments in the Snap Lake Ecosystem (continued)

- Pathways by which sediments in Snap Lake could adversely affect receptors of potential concern:
  - Direct sediment toxicity – benthic invertebrates have direct exposure to sediments and associated contaminants
  - Indirect toxicity of contaminants leaching to the water column – plankton communities and fish may be exposed to contaminants in the water column
  - Indirect effects through degradation of food supply – zooplankton and benthic invertebrates are food supply for fish; degradation of these communities may affect the fish community

Sediment Quality – Overall Objective and Key Questions

- Overall objective:
  - Determine whether sediment quality in Snap Lake can support a healthy benthic invertebrate community
- Key questions to be addressed:
  - Are concentrations of sediment quality parameters above or below sediment quality guidelines?
  - Are there differences in sediment quality in Snap Lake relative to reference lakes and, if so, are they related to the Mine?
  - Are concentrations of sediment quality parameters increasing over time?

Sediment Quality – 2005 Study Design

- Annual sampling in late winter (April) from 2004 to 2008, then changed to open water in late summer (September) since 2009
  - Sediments collected in conjunction with benthic invertebrate sampling
  - Sample 18 stations in Snap Lake and 5 stations in Northeast Lake, the reference lake; 5 stations in second reference lake, Lake 13, in 2012
  - Three Ekman grab samples per station; sediment from each grab combined to generate one composite sample per station
  - Whole grabs composited from 2004 to 2008; procedure modified in 2007 so that only top 5 cm of sediment is composited for analyses; sediments are unconsolidated so sampling a thinner layer is problematic
- Sediments analysed for organic content, particle size, nutrients, and total metals
- Examine spatial and temporal distributions in Snap Lake; compare to Northeast Lake and Lake 13; compare to sediment quality guidelines; use bottom-water conductivity as an indicator of treated effluent exposure

5

Sediment Quality – Rationale for 2013 Design Plan

- Focus on potential differences or changes in overall sediment quality in Snap Lake relative to reference and (in future) downstream lakes, rather than small-scale spatial changes within main basin of Snap Lake

- Three modifications proposed for sediment quality component:
  - Eliminate 8 stations in Snap Lake main basin, reducing total number of stations in Snap Lake from 18 to 10
  - Monitor the diffuser station (SNP02-20e) annually, but reduce monitoring at other stations from annually to every three years
  - Continue to sample top 5-cm layer from sediments from all stations, but add sampling of top 2-cm layer of sediment at diffuser station

6

Sediment Quality 2013 Design Plan – Number of Stations to be Monitored

- Within Snap Lake, continue to monitor sediment quality at the diffuser station (SNP02-20e) and 3 stations in northwest arm, but reduce the number of main basin stations from 14 to 6
- Consider the Snap Lake main basin as a whole, not as near-field, mid-field, and far-field areas
- Stations being retained have all been monitored since 2004 or 2006
- Confirmation that monitoring fewer stations will continue to be representative of main basin sediment quality; compared summary statistics for 2011 AEMP data based on both 6 and 14 main basin stations, and found relatively little change in ranges and median concentrations for most sediment quality parameters

Sediment Quality 2013 Design Plan – Monitoring Frequency

- Water License required sediment quality monitoring in the AEMP, but only specific requirement was annual monitoring at the diffuser
- From 2004 to 2012, all stations were monitored once annually
- For the Design Update:
  - Diffuser station (SNP02-20e) will continue annually, to provide an “early warning” indicator of potential changes
  - Other AEMP stations in Snap Lake and reference lakes will be monitored once every three years,
  - Next monitoring cycle in 2015
  - One exception is Lake 13 - monitor again in 2013 to confirm 2012 results and suitability as second reference lake

Sediment Quality 2013 Design Plan – Sediment Sampling Depth

- Top 5-cm layer of sediment sampled for chemistry analyses since 2007; sedimentation rates are low in Arctic lakes so this may be too thick to represent recent Mine-related deposition
- Comparison of chemistry results from sampling both top 5 cm and top 2 cm of sediment in 2011 and 2012, at a total of six Snap Lake stations
- Relative Percent Difference (RPD) used to compare results between sampling depths; same approach for comparing duplicate sample results
- Only the diffuser station had RPDs large enough to be distinguishable from analytical variability and therefore indicative of a Mine-related effect; majority of diffuser station results showed higher concentrations in top 2-cm layer than in top 5-cm layer
- For the Design Update, continue sampling top 5-cm layer at all stations to provide sediment chemistry data relevant to benthic invertebrate component, but sample diffuser station at top 2-cm layer as well

Sediment Quality 2013 Design Plan – Sampling and Analysis Plan

- Continue sediment sampling in late summer (September) in conjunction with benthic invertebrate sampling; annually or every three years
- Use Ekman grab sampler to sample top 5-cm layer at all stations, and corer to sample top 2-cm layer at diffuser station
- Collect at least three grabs or cores per station for compositing; sample processing to be the same as previous years except for sampling depth
- Analyze sediments for same suite of analytes as in previous years: organic carbon, grain size, nutrients, and total metals
- Analysis of sediment chemistry data to involve comparisons to sediment quality guidelines, annual assessment of temporal trends for diffuser station, comparison of whole-lake means for Snap Lake and reference lakes every three years, assessment of temporal trends for Snap Lake and reference lakes every three years; in future, comparison of Snap Lake sediment quality to downstream lakes

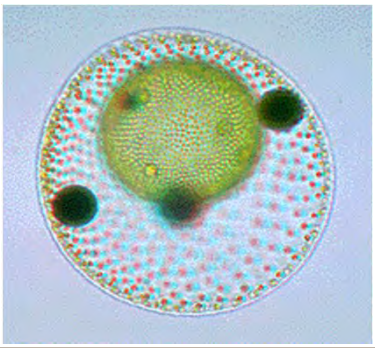
Snap Lake Mine
Aquatic Effects Monitoring Program

Plankton Component

January 24, 2013 Yellowknife

Plankton Objectives

- Objectives:
  - Monitor Project-related effects on phytoplankton and zooplankton
  - Monitor chlorophyll *a* and algal biomass and species composition as indicators of nutrient enrichment
  - Check and update predictions made in the Environmental Assessment Report (EAR) related to trophic status



Plankton - Key Questions

- Key Questions:
  - What are the current concentrations of chlorophyll *a* and *c*, and what do these concentrations indicate about the trophic status of Snap Lake, Northeast Lake, and Lake 13?
  - What is the current status, in terms of abundance, biomass and composition, of the phytoplankton community in Snap Lake, Northeast Lake, and Lake 13?

3

Plankton - Key Questions

- Key Questions:
  - What is the current status, in terms of abundance, biomass and composition, of the zooplankton community in Snap Lake, Northeast Lake, and Lake 13?
  - Do these results suggest signs of Mine-related nutrient enrichment or toxicological impairment?
  - How do observed changes compare to applicable predictions in the EAR?

4

Plankton Proposed Sampling Locations and Frequency

- Sampling stations:
  - Snap Lake:
    - Main Basin: 5 stations
    - Northwest Arm: 5 stations
  - Reference Lakes:
    - Northeast Lake: 5 stations
    - Lake 13: 5 stations

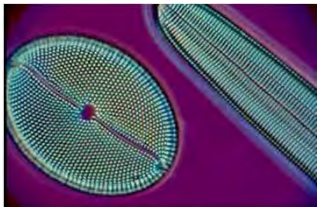
- Frequency: monthly during the open-water season (July, August, September) each year

Plankton Field Measurements

- Variables:
  - Phytoplankton (total abundance, total biomass and community composition) – depth integrated samples
  - Zooplankton (total abundance, total biomass and community composition) – single vertical tow
  - Chlorophyll *a* and *c* – depth-integrated samples
  - Secchi depth
- Water profile data, i.e. pH, DO, temperature and conductivity provided by water quality component
- Total nitrogen, total phosphorus and silica data provided by water quality component

Plankton Data Analyses

- Data analyses are designed to answer the Plankton Key Questions:
  - Look at temporal trends in chlorophyll *a* and *c* and compare to trophic classifications outlined in EAR
  - Look at temporal, seasonal and spatial trends in phytoplankton and zooplankton and compare to EAR predictions
  - Assess edible and inedible phytoplankton
- Statistical analysis every three years



Design Changes and Rationale for Changes

- Harmonize programs:
  - Relocated plankton stations to integrate plankton and water quality programs
  - Supporting limnological data (water profile data) and nutrient data collected by water quality and used by plankton component
- Additions:
  - Addition of 5 stations in the second reference lake, Lake 13

Picoplankton Special Study

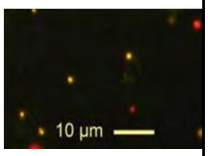
Snap Lake 2013 AEMP Design Plan

What and Why Picoplankton?

- What is picoplankton?
  - Bacteria
  - Very small plankton
- Design Rationale:
  - Sensitive indicators of nutrient enrichment, Inhibited by nutrient additions and outcompeted by larger phytoplankton
  - Study augments the plankton component
  - Earliest warning for biological changes

Special Studies: Picoplankton Special Study

- Objectives:
  - Monitor changes in picoplankton abundance
  - Provide supporting information to the phytoplankton component
- Key Questions:
  - What is the current status, in terms of abundance, of the picoplankton community in Snap Lake, Northeast Lake, and Lake 13, and do these results provide any evidence of Mine-related nutrient enrichment?
  - How do any observed changes in the picoplankton community compare to changes observed in the phytoplankton community?
- Sampling locations, timing and sampling methods:
  - Identical to the plankton program



Littoral Zone Special Study

Snap Lake 2013 AEMP Design Plan

Special Studies: Littoral Zone Special Study

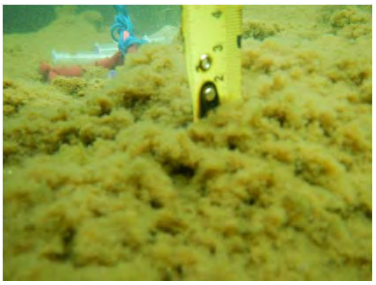
- Design Rationale:
  - Snap Lake and Northeast Lake have rocky shorelines that provide large areas for periphyton growth (algae on rocks)
  - Current AEMP does not monitor the productivity at the shoreline, most stations are in deeper water
  - Design based on 2004 baseline Periphyton Special Study
  - August sampling - the timing of maximum productivity
  - Littoral invertebrates included because they feed on periphyton
  - Completed in 2012, propose conducting in 2013 and 2014, then evaluate

Special Studies: Littoral Zone Special Study continued…

- **Objective:**
  - Determine the importance of the littoral zones to overall productivity in Snap Lake and Northeast Lake
- **Key Questions:**
  - Are the data collected by the Littoral Special Study suitable to detect possible Mine-related effects?
  - What are the current concentrations of chlorophyll *a* in the littoral zone of Snap Lake and Northeast Lake and how do they compare to baseline in Snap Lake?
  - What are the current concentrations of nutrients in the littoral zone of Snap Lake and Northeast Lake?
  - What is the current status (abundance, biomass, and composition of the periphyton communities) in both Snap Lake and Northeast Lake?
  - What is the current invertebrate community composition in the littoral zones of Snap Lake and Northeast Lake?

Special Studies: Littoral Zone Special Study continued…

- Sampling Locations:
  - Five stations in main basin of Snap Lake
  - Three stations in northwest arm of Snap Lake
  - Five stations in Northeast Lake
  - Timing:
    - Occur annually (August) for three years
  - SCUBA-based methods
  - Parameters:
    - Periphyton
    - Littoral invertebrates
    - Particulate nutrients
    - Chlorophyll *a* and *c*
    - Water column nutrients



Snap Lake Mine
Aquatic Effects Monitoring Program

Benthic Invertebrate Component

January 24, 2013 Yellowknife

Benthic Invertebrates - Objectives and Scope

- Objectives:
  - evaluate the effects of the Snap Lake Mine on the benthic invertebrate community due to changes in water or sediment quality in Snap Lake
  - monitor the deep water benthic invertebrate community to assess the EAR predictions relating to the trophic and dissolved oxygen status of Snap Lake

2

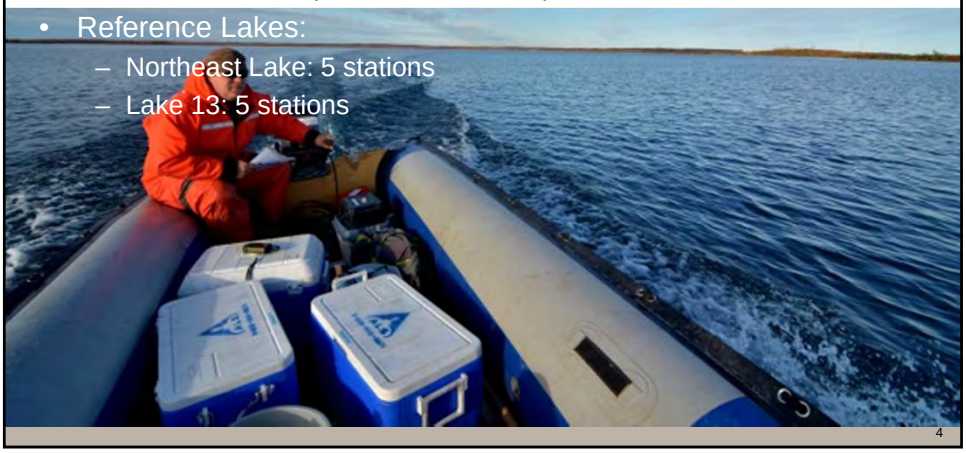
Benthic Invertebrates - Key Questions

- Is the benthic invertebrate community affected by changes in water and sediment quality in Snap Lake?
- If the benthic invertebrate community is affected, is the change greater than stated in the Environmental Assessment Report (EAR)?

3

Benthic Invertebrates – Proposed Sampling Stations

- Snap Lake:
  - Main Basin: 7 stations
  - Northwest Arm (historical reference): 3 stations
- Reference Lakes:
  - Northeast Lake: 5 stations
  - Lake 13: 5 stations



4

Benthic Invertebrates - Design Rationale

- Conducted every 3 years during the fall open-water season
- Increased frequency in benthic invertebrate sampling could be triggered by present or future mine operations:
  - results of annual water quality and sediment quality monitoring
  - level of effects detected during AEMP benthic study
- Sampling stations will be located at water depths ranging from 10-15 m to eliminate depth as a potential confounding factor

5

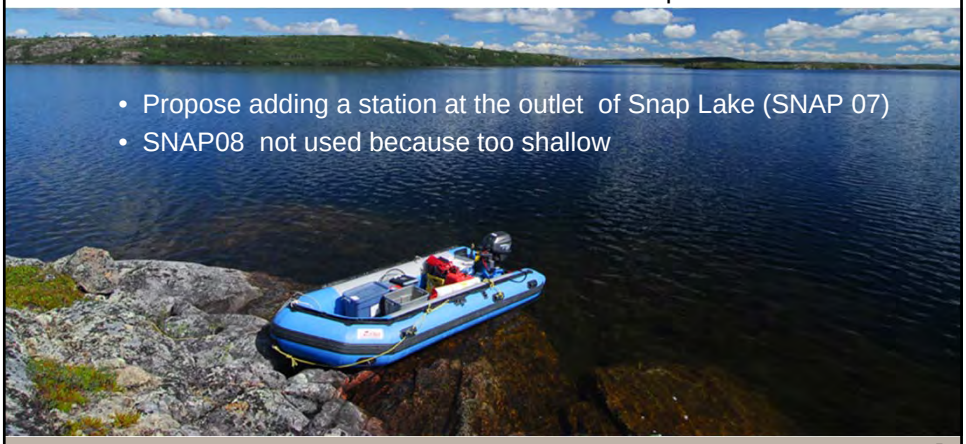
Benthic Invertebrates - Design Rationale

- Attempt to harmonize stations with other components
- Three stations will be unique to benthic invertebrates and sediment (two in the main basin and one in northwest arm)

6

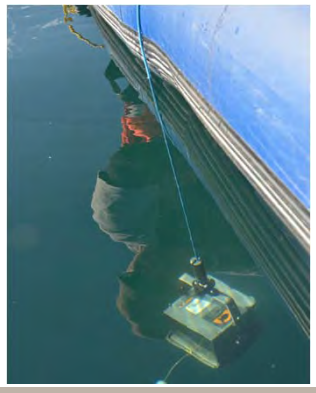
Benthic Invertebrates - Design Rationale

– Exposure Area (Main Basin)
  - SNAP 15 will be monitored in place of water quality station SNAP02-20e because SNAP02-20e too deep



Benthic Invertebrates - Field Methods

- Samples will be collected using a standard Ekman grab
- Sieved through a 500 µm mesh screen and the material retained will be preserved in 10% neutral buffered formalin



Benthic Invertebrates - Field Methods

- Six individual Ekman grabs will be collected at each station
- At one station in each sampling area, each individual Ekman grab sample will be kept separate (placed into an individual sample jar) for a total of 6 discreet samples per station
- At all other stations the six individual Ekman grabs will be combined into a single sample jar to create a composite sample

Benthic Invertebrates - Data Analysis

- Benthic community summary variables:
  - Total invertebrate density (no./m²)
  - Total richness (taxa/station)
  - Simpson's diversity index
  - Evenness
  - Densities of dominant taxa (taxa accounting for > 5% of total invertebrates across all stations)
  - Community composition as percentages of major taxa
  - Bray-Curtis index
  - Biomass (mg, wet weight)

Benthic Invertebrates - Data Analysis

- ***Comparison of Lakes***
  - The three lakes will be compared to one another using Analysis of Variance (ANOVA)
  - Planned comparisons will be run on significant ANOVA results to test for:
    - Differences between Snap Lake and the two reference lakes
    - Differences between the two reference lakes
- ***Multivariate Analysis***
  - To summarize the benthic community structure and evaluate differences in community structure between Snap Lake and the two reference lakes

Benthic Invertebrates - Data Analysis

- ***Temporal Trends***
  - Snap Lake main basin means will be plotted with normal ranges to determine if any variables were outside of the range indicating a difference from the reference condition
  - Trends over time in the Snap Lake main basin will be evaluated
  - Area means for community composition by major taxa will be plotted to determine if changes in benthic community composition have occurred over time in Snap Lake
- ***Presence/absence***
  - Presence/absence data at lowest taxonomic resolution will be compared among lakes and years to evaluate changes in community composition at a finer taxonomic level

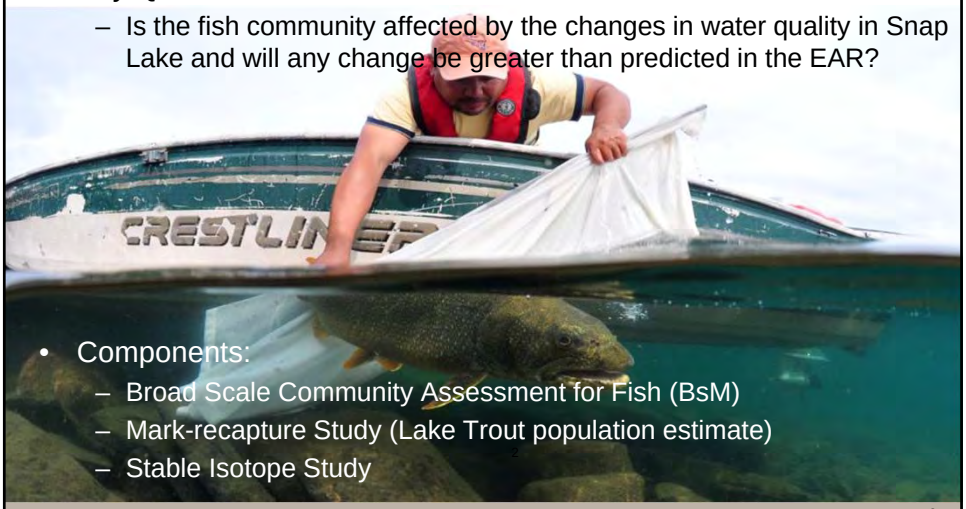
Snap Lake Mine
Aquatic Effects Monitoring Program

Fish Community Component

January 24, 2013 Yellowknife

Fish Community - Overview

- Key Question:
  - Is the fish community affected by the changes in water quality in Snap Lake and will any change be greater than predicted in the EAR?

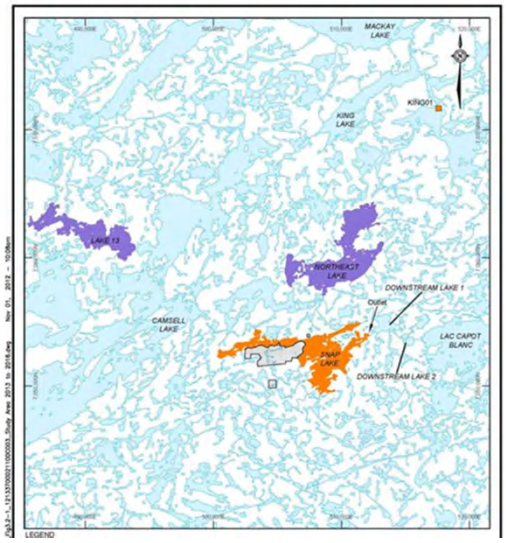


- Components:
  - Broad Scale Community Assessment for Fish (BsM)
  - Mark-recapture Study (Lake Trout population estimate)
  - Stable Isotope Study

Fish Community - Study Area

- Snap Lake [1, 2, 3]
- Northeast Lake (reference)[1]
- Lake 13 (new reference) [1]

- 2013 Activities
  - [1]Community sampling
  - [2]Mark-recapture Study
  - [3]Stable Isotope Study



3

Broad Scale Community Assessment (BsM)

- Used to index the fish community
- Indexes entire fish community: top predators and prey fish, nearshore and offshore
- Provides a relative index of fish abundance or catch per unit effort (CPUE)
- Use to track temporal (within-lake) and spatial (among-lake) variability
- Developed by Ontario Ministry of Natural Resources and endorsed by DFO

4

BsM - Design

- Conducted every 3 years
- Occurs immediately after ice-out when fish are randomly distributed in the lake
- 13 small mesh and 18 large mesh nets sets are used for a single assessment in each lake
- Nets are fished over an 18-24 hour period

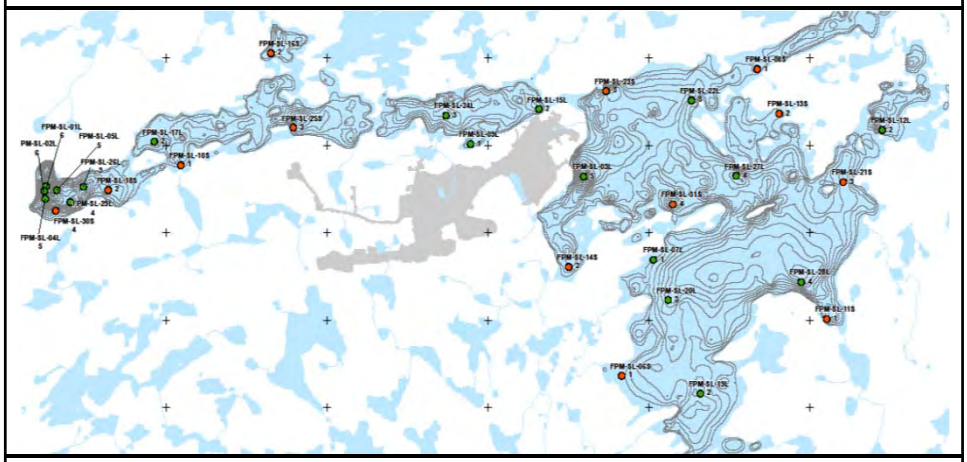
5

Community Monitoring Design

- Live fish are measured and released
- Dead fish are assessed for:
  - length
  - weight
  - sex and state of maturity
- Dead fish also used for stable isotope and metals
- Data interpretation: mortality rate, growth rate, life span, age of maturity, maximum size, diet and trace metals

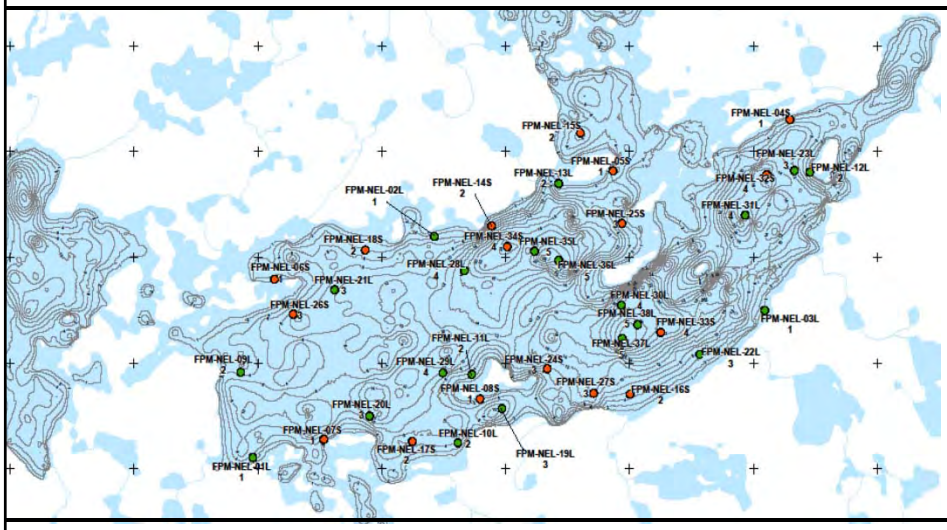
6

Proposed Gill Net Locations in Snap Lake



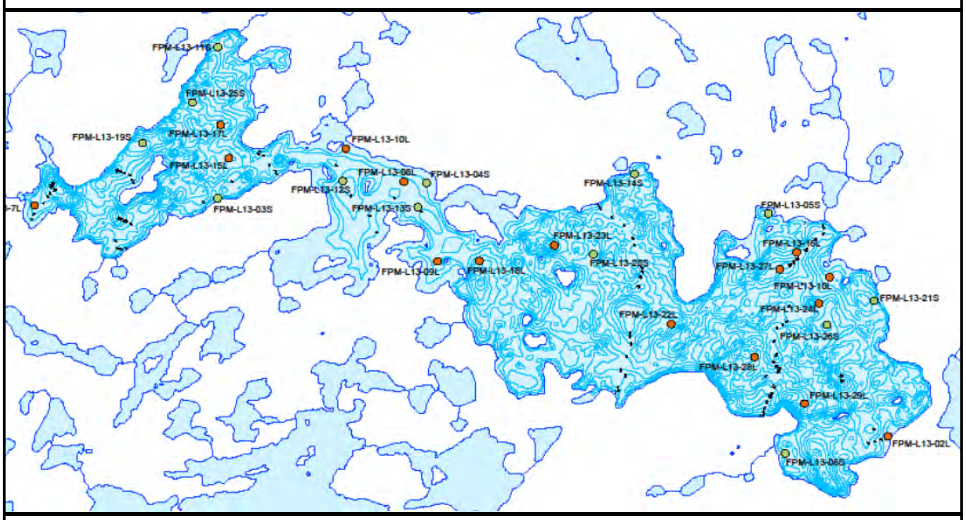
7

Proposed Gill Net Locations in Northeast Lake



8

Proposed Gill Net Locations in Lake 13



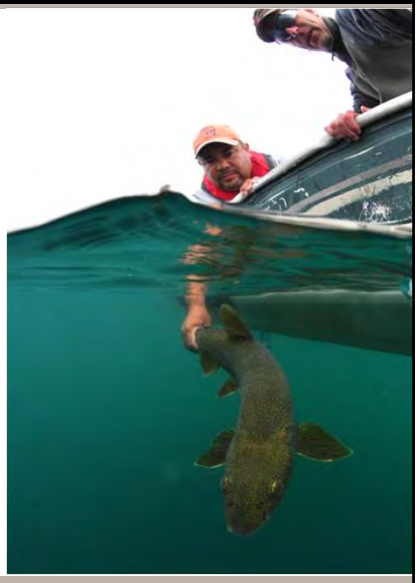
9

Lake Trout Population Estimate Special Study

January 24, 2013 Yellowknife

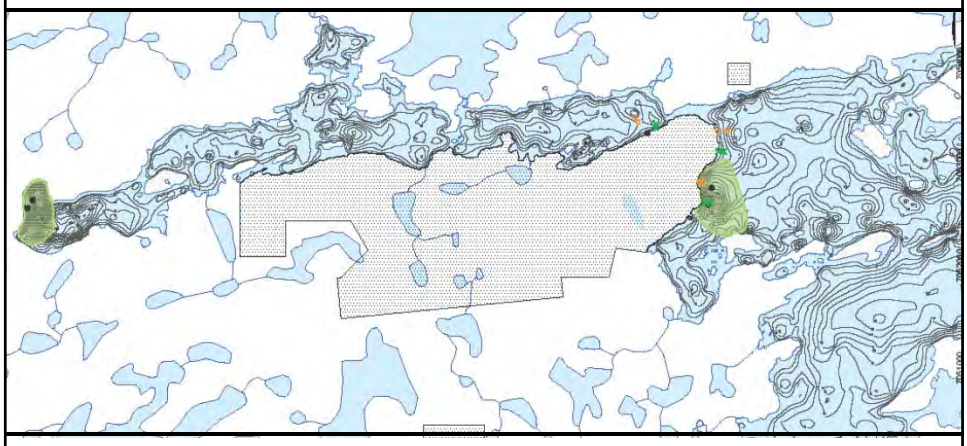
Lake Trout Population Estimate – Special Study

- Provides an estimate of the size of the Lake Trout population in Snap Lake
- The estimate serves as a reference value for the CPUE from the BsM
- Fish were initially caught using angling in 2012 and a subsample will be re-captured in 2013
- Fish are measured for length and weight, tagged with a PIT tag, and released
- Will use MARK software to estimate abundance



11

Population Estimate – Proposed Sample Locations



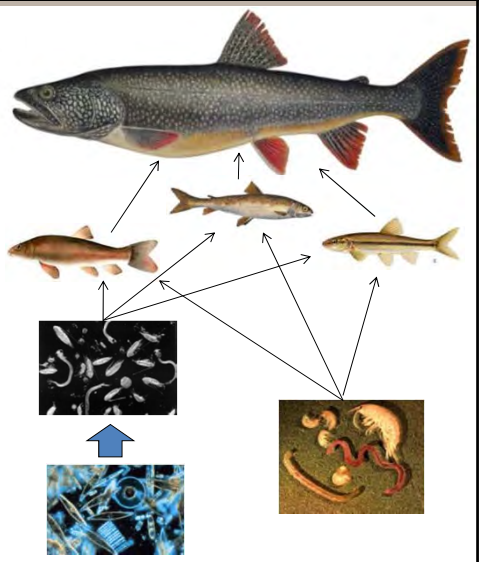
12

Food Web – Stable Isotope Special Study

January 24, 2013 Yellowknife

Food Chain - Stable Isotope – Special Study

- Stable isotope signatures of ^{13}C and ^{15}N for predators and prey used to examine food chain, trophic structure, and niche size
- Can determine the relative importance of pelagic and benthic organisms
- Provides a basis for examining change over time or among lakes
- Samples will be obtained from AEMP program and additional sampling as required



14

Snap Lake Mine
Aquatic Effects Monitoring Program

Fish Health Component

January 24, 2013 Yellowknife

Fish Health - Objective

- Objective of the fish health program: *to evaluate effects of the Snap Lake Mine treated effluent on fish health in Snap Lake due to changes in water/sediment quality*

Fish Health - Objective

- Overall fish health AEMP design rationale based on guidance from Federal Environmental Effects Monitoring programs
- Fish health is assessed by examining the following:
  - Survival: *age, length frequency*
  - Energy storage: *weight, condition, relative liver size*
  - Energy Use: *length, size at age, relative gonad size, fecundity*
  - Other: *tissue chemistry, parasites*

3

Fish Health – Key Questions

- Fish Health AEMP study design driven by two key questions:
  - Is fish health affected by changes in water and sediment chemistry in Snap Lake?
  - Are changes observed in fish health greater than those predicted in the EAR?
- Fish tissue specifically driven by additional two key questions:
  - Are tissue metal concentrations in fish from Snap Lake increasing relative to baseline?
  - Are tissue metal concentrations in fish from Snap Lake increasing relative to reference lakes?

4

Fish Health – Changes from 2005 Design

- Change to a lethal and non-lethal small-bodied Lake Chub program with increased sample size
  - Intention to reduce sampling-related mortality on large-bodied fish populations in Snap Lake (i.e., Lake Trout and Round Whitefish)
- Addition of a second reference lake, Lake 13*
  - Intention to further understand natural variability in the region
- Change from once every 5 years to once every 3 years*
  - Intention to better capture fish health trends with increased sampling frequency
- Inclusion of new types of data (e.g., liver lipids*, sex ratios, proportion of fish captured in spawning condition, size at maturity)
  - Intention to better characterize fish health changes in context of nutrient enrichment hypothesis versus toxicological impairment

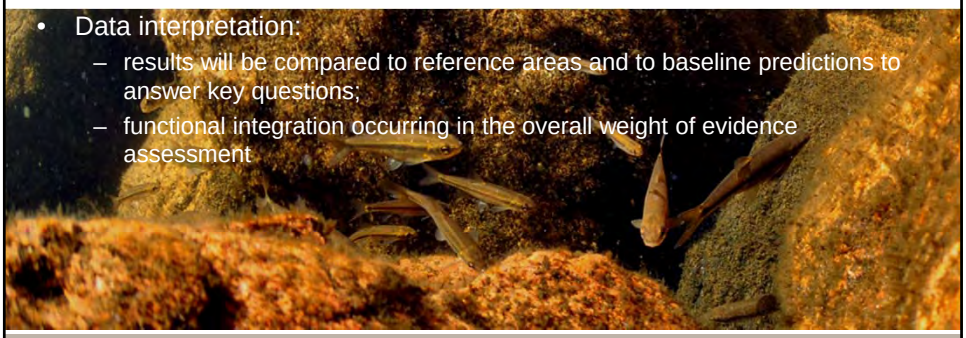
* Initiated in 2012 and continued in 2013 design plan

Fish Health – Proposed Design

- Lake Chub lethal survey: 40 adult males, 40 adult females, 40 juveniles to be collected in July 2015 from each of Snap Lake (main basin), Northeast Lake and Lake 13
  - Sample size increases from previous programs from 30 to 40

Fish Health – Proposed Design

- Lake Chub non-lethal survey:
  - 100-400 fish measured and live-released in July 2015 from each of Snap Lake, Northeast Lake and Lake 13
  - Field program schedule: early to mid July 2015 to maximize pre-spawning development



- Data interpretation:
  - results will be compared to reference areas and to baseline predictions to answer key questions;
  - functional integration occurring in the overall weight of evidence assessment

Fish Health - Analysis Approach

Key Question	Overview of Analysis Approach
1. Is fish health affected by changes in water and sediment quality in Snap Lake?	Fish abundance as estimated by CPUE will be calculated in all water bodies. A lethal and non-lethal small-bodied fish health survey using Lake Chub will measure fish health endpoints related to survival (e.g., age), growth (e.g., size at age), reproduction (e.g., relative gonad size, relative fecundity), and condition (e.g., condition, relative liver size) and will compare these endpoints from Snap Lake with the reference lakes, taking into consideration sex, state of maturity and parasite presence/absence. Additional analyses from Lake Chub including stomach contents and liver lipid and protein concentrations will be analyzed and compared between Snap Lake and the reference lakes.
2. Are changes observed in fish health greater than those predicted in the EAR?	Fish health endpoints related to survival (e.g., age), growth (e.g., size at age), reproduction (e.g., relative gonad size, relative fecundity), and condition (e.g., condition, relative liver size) measured as part of the small-bodied fish health survey using Lake Chub will be compared to applicable EAR predictions.

Fish Tissue - Analysis Approach

Key Question	Overview of Analysis Approach
1. Are tissue metal concentrations in fish from Snap Lake increasing relative to baseline?	Tissue chemistry concentrations from Lake Chub (i.e., carcass), and the large-bodied fish Lake Trout and Round Whitefish (i.e., liver, kidney, and flesh) will be compared to the normal range of baseline tissue concentrations, where possible.
2. Are tissue metal concentrations in fish from Snap Lake increasing relative to reference lakes?	Tissue chemistry analyses will be performed on Lake Chub carcass as well as large-bodied fish tissues (i.e., liver, kidney and muscle tissue from Lake Trout and Round Whitefish) from Snap Lake and will be compared to the tissue concentrations in the reference lakes, as well as the normal range (i.e., reference lake tissue concentration ± 2 standard deviations).

Snap Lake Mine
Aquatic Effects Monitoring Program

Fish Tasting

January 24, 2013 Yellowknife

Fish Tasting – Objective

- Get feedback from community members on Lake Trout and Round Whitefish from Snap Lake:
  - taste
  - texture
  - general condition
  - health
- Key Question:
  - Are the taste and texture of fish captured in Snap Lake acceptable to community members?

Fish Tasting - Methods

- Catching the fish
  - Community members fish with nets and angling in September
  - Fish captured only from main basin of Snap Lake

3

Fish Tasting - Methods

- Preparing the fish
  - Filleting conducted at outdoor gazebo
  - Observations on fish health recorded
- Cooking the fish
  - Cooked according to traditional cooking methods
- Evaluating the fish
  - Texture and taste evaluated

4

Fish Tasting- Analysis Approach

Key Question	Overview of Analysis Approach
1. Are the taste and texture of fish captured in Snap Lake acceptable to community members?	A summary of the number of participants who found the taste acceptable will be made along with their comments and evaluation.

Snap Lake Mine
Aquatic Effects Monitoring Program

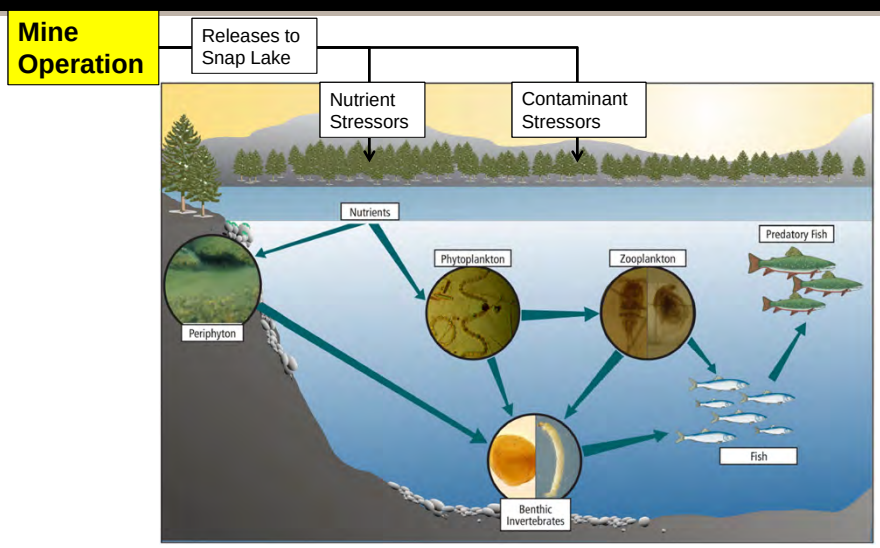
Weight of Evidence

January 24, 2013 Yellowknife

Weight of Evidence

- **Weight of Evidence (WOE)** = systematic and transparent method for integrating complex data generated in environmental assessment programs.
- Assessment Endpoints:
  - Fish are healthy
  - The ecological integrity of Snap Lake is preserved.
- Integrates the AEMP findings to distinguish between:
  - Toxicological Impairment
  - Nutrient Enrichment
- **Informs Adaptive Management Response Framework**

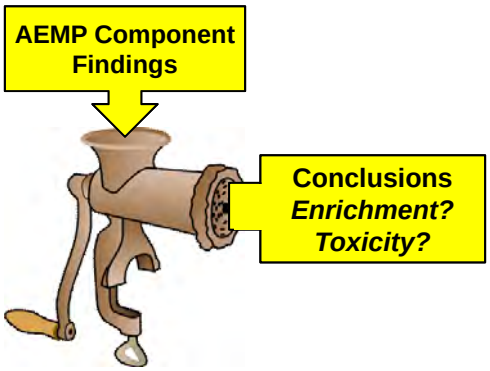
Conceptual Model



Two Hypotheses

- **Toxicological Impairment Hypothesis:** Toxicity to aquatic organisms could occur due to substances of toxicological concern (primarily metals and TDS) released to Snap Lake.
- **Nutrient Enrichment Hypothesis:** Eutrophication could occur due to the release of nutrients (primarily phosphorus and nitrogen and, for some species, TDS) to Snap Lake.

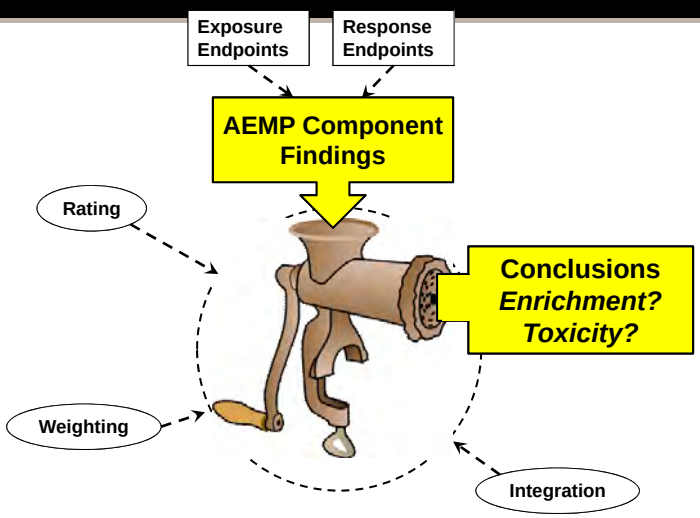
Why Weight of Evidence?



5

RS5

Why Weight of Evidence?



6

Slide 6

RS5 Use this slide on it's own. Or use the next two slides together.
Ryan Stevenson, 1/20/2013

Measurement Endpoints

- **Exposure:** Measures of the potential exposure of receptors to Mine-related chemicals and nutrients.
  - water quality
  - sediment quality
  - fish tissue
- **Field Biological Responses:** Measures of potential ecological changes.
  - plankton
  - benthic invertebrates
  - fish

Endpoint Response Ratings

- Endpoints from AEMP components are ***rated*** = what degree of response are we seeing in exposure or field biological response
  - ***No Response***
  - ***Rating 1*** (first indication of change)
  - ***Rating 2*** (fairly significant change)
  - ***Rating 3*** (very significant change)

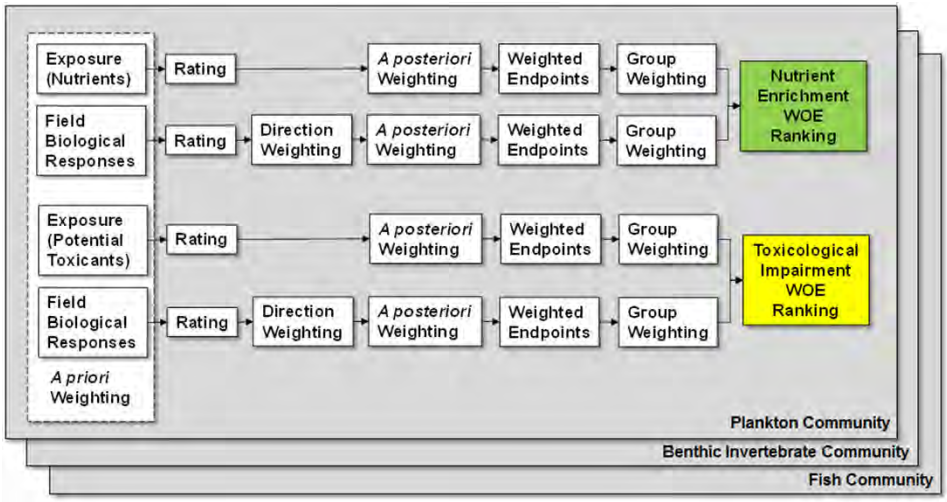
Weighting Considerations

- **A *priori* Weighting** = how well does an endpoint indicate an actual impact? Once set, do not change year to year. Biological Responses > Exposure
- **Direction Weighting** = which hypothesis does it support? Contingencies for various findings. Contingencies do not change from year to year but weight does.
- **A *posteriori* Weighting** = how well are endpoints corresponding; what other factors make us think more or less significant. Subjective judgement based on current results. Rationale provided.

Integration and Ranking

- Integrate the results of endpoints for exposure and field biological responses to determine the level of support for each impact hypothesis
  - ***WOE Rank 0*** – Hypothesis not supported by the combined endpoint findings;
  - ***WOE Rank 1*** – Hypothesis has weak support from the combined endpoint findings;
  - ***WOE Rank 2*** – Hypothesis has moderate support from the combined endpoint findings; and,
  - ***WOE Rank 3*** – Hypothesis has strong support from the combined endpoint findings

Qualitative or Quantitative Integration



Linkage to Response Framework

- Action Levels are set for individual components:
  - Water Quality, Sediment Quality + Fish Tissue = **Exposure**
  - Plankton, Benthos, Fish = **Field-measured Biological Effects**

- Weight of Evidence allows us to understand which Exposure variables are contributing to any observed Biological Effects
- Weight of Evidence results from year to year allow us to examine larger scale interactions and trends over time.
- Weight of Evidence, if effects are detected, provides the basis for any necessary future causation investigations.

Snap Lake Mine
Aquatic Effects Monitoring Program

Response Framework

January 24, 2013 Yellowknife

AEMP Response Framework Definitions

- Follows the Water Licence requirements and the Boards' guidance on AEMP response frameworks
- Significance Threshold – 'No Go Zone'
- Action Level – if an effect is detected, take action; degree of action depends on severity of effect
    - Negligible
    - Low
    - Medium
    - High
    - 'No Go Zone' (Significance Threshold)

Response Framework

- Attempted to make it straightforward by setting 'thresholds' based on Snap Lake core values:
  - Water to drink - Fish to eat - Lake ecosystem is stable

What is the magic number for action?

Water to Drink – 75%

Tiered Action Level	Drinking Water for Humans
Key Information	Drinking water parameters (metals, nutrients, and major ions) measured in AEMP samples (all stations) and SNP samples (Station SNP 02-15 only) Microcystin measured in AEMP samples (all stations) and SNP samples (Station SNP 02-15 only)
Negligible	Drinking water parameters <75% Health Canada (HC) human health drinking WQG AND Microcystin <75% of HC human health drinking WQG
Low	Drinking water parameter at any location is within 75% of HC human health drinking WQG OR Microcystin at any location is within 75% of HC human health drinking WQG
Medium	TBD
High	TBD
Significance Threshold	Water in whole lake not drinkable (human health risk)

5

Fish to Eat – 75% and taste good

Tiered Action Level	Fish Consumption by Humans Fish Safe to Eat
Key Information	Fish taste and texture Metal concentrations in edible fish tissue
Negligible	Taste and texture good (TK input) AND Metals in edible fish tissue below 75% of HC consumption guidelines, where available and applicable
Low	Fish taste and/or texture not acceptable. OR Metals in edible fish tissue within 75% of HC consumption guidelines, where available and applicable and are beyond normal range.
Medium	TBD
High	TBD
Significance Threshold	Fish are not safe or not palatable for consumption by humans (human health risk) and/or wildlife

6

Ecological Stability of Snap Lake

- Two categories:
  - 1) effects due to toxicity
  - 2) effects due to nutrient enrichment
- Different thresholds and actions for each
- Nutrients – might see parameter rise
- Toxicity – might see parameter fall
- Need to set different actions based on toxicity and nutrient enrichment

Ecological Stability – Toxicity effect

Tiered Action Level	Water Quality	
Key Information	Differences between Snap Lake and reference lakes or normal range[c] EAR benchmarks and site-specific benchmarks	Toxicity results for edge of mixing zone
Negligible	Concentration not exceeding AEMP benchmarks[b] where they exist, or if exceeding, not due to Mine[c] AND Within normal range lake-wide	No persistent sublethal toxic effects for either Pseudokirchneriella subcapitata or Ceriodaphnia dubia in mixing zone samples
Low	Concentration greater than normal range lake-wide AND Concentration exceeds AEMP benchmark at the edge of the mixing zone (i.e., diffuser station) BUT Below site-specific objective at the edge of mixing zone, if one exists.	Persistent sublethal toxic effects detected for either P. subcapitata or C. dubia in mixing zone samples. AND No sublethal toxic effects for Fish Early Life Stage test in mixing zone samples.
Medium		
High		
Significance Threshold	Exceeding a site-specific effects benchmark downstream of Snap Lake (Lac Capot Blanc) AND/OR Ecological stability of Snap Lake system compromised (i.e., significant biological effect linked to Mine operation) AND/OR Confirmed acute lethal toxicity to fish at edge of mixing zone.	

Ecological Integrity – Toxicity effect

Tiered Action Level	Fish Health	Fish Community
Key Information	Differences between Snap Lake and reference lakes or normal range	Differences between Snap Lake and reference lakes or normal range
Negligible	No statistically significant changes beyond normal range in fish health endpoints	No decrease in number of species in Snap Lake
Low	Statistically significant change beyond normal range in key fish health endpoints AND Change is in direction indicative of an impairment to fish health	Indication from catch rates of a significant decrease population size of a species from Snap Lake
Medium	TBD	
High	TBD	
Significance Threshold	Monitoring indicates that reproduction is severely impaired (i.e., reproductive failure) in any target species AND/OR Sustained absence of any normally-occurring (i.e., according to baseline) fish species in Snap Lake for 3 consecutive years	

(a) "Normal Range" is determined based on +/- 2SD in Snap Lake Main Basin baseline and +/- 2SD in reference lakes, and/or other appropriate considerations.

What types of Action will be taken

1. Develop specific response plan for approval
2. Best Practice - Desktop
   - Evaluate if the mine is the cause
   - Examine trend
   - Predict trend (if possible)
   - Examine Weight of Evidence linkage
   - Examine how significant the effect observed is
3. Confirm that the result is real – Field/Lab
4. Increase monitoring – Field/Lab
5. Consider additional investigation studies – Field/Lab
6. Reverse trend – Mine Management

Appendix I

Let's Talk Newsletters

2013 ICRP Engagement Schedule	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Letters to Community Leadership requesting meetings with land & wildlife committees		■										
Meetings with Community Land & Wildlife Committees to update status of Plan.		■	■									
Technical Workshop in Yellowknife with Communities and Regulators			■									
Updated Snap Lake Mine Interim Closure & Reclamation Plan submitted to Mackenzie Valley Land & Water Board				■	■							
Summer site visits to Snap Lake for Aboriginal Leadership, Elders, Lands & Environment members							■	■				
Snap Lake Fish Tasting - opportunity for elders to provide additional input									■			

Incorporating Traditional Knowledge

We look forward to working with elders and community residents to learn from their experience and to incorporate their expertise and Traditional Knowledge into our plans. Some of the questions we have are questions we anticipate you can help answer.

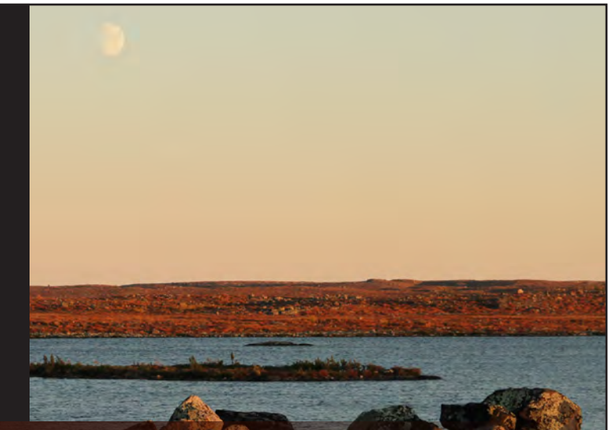
1. What can we learn from natural land features to contour the North Pile and other features on the mine site?
2. What plants grow best at Snap Lake?
3. Are there signs we should be looking for during reclamation to know if our efforts are working?
4. What questions or advice do you have?

If you would like more information, would like to provide us comments, or would simply like to talk about our Interim Closure and Reclamation Plan, please call at 867-766-7301 or from in the NWT at our toll free line 1-888-762-7525, or write or e-mail us at:

De Beers - Snap Lake Mine
Suite 300, 5102-50th Avenue
Yellowknife, NT X1A 3S8
Email: info@debeerscanada.com
Website: www.debeersgroup.com/canada

DE BEERS
GROUP OF COMPANIES

DE BEERS
GROUP OF COMPANIES



Let's talk

An opportunity to update plans for Closure and Reclamation of the Snap Lake Mine

FEBRUARY 2013

Introduction

Planning for the closure of a mine is something companies need to do early in the development of a mine, so that the design of the mine takes into consideration the things that will make closure successful. De Beers developed a preliminary closure plan during the Environmental Assessment, which was updated following approvals.

After De Beers received approval to build and operate the Snap Lake Mine, we developed our first Interim Closure & Reclamation Plan (ICRP) in 2006. It outlines how we will close the mine and reclaim the land upon completion of mining – which is predicted to occur around the year 2030.

The ICRP is a "living document" that is updated every three years once approved to reflect new

understanding or changes at the mine.

Although the Snap Lake Mine has a long life ahead, closure objectives established in the ICRP are an important guide to inform mining plans and research.

The plan describes, for example, how we will cap the North Pile, take away buildings and equipment, remove hazardous waste, seal off the underground mine workings, prepare the land for re-vegetation and restore the natural flow of water.

Throughout 2013 and beyond, we will work with community leadership, elders, land & wildlife staff and regulators to gather information, including Traditional Knowledge, that will help us fcontinue to progress the plan. This will include meetings with community land & wildlife staff and committee members, technical workshops, summer visits to the Snap Lake Mine, and the MVLWB approval process.

This newsletter is a snapshot of what we are doing in 2013 to update the ICRP.

An ongoing process

Work on closure and reclamation began during the Environmental

Continued on next page

Continued from previous page

Assessment and a Preliminary Closure & Reclamation Plan was filed with the Mackenzie Valley Land & Water Board (MVLWB) in 2003. In 2006, an Interim Closure & Reclamation Plan, required under the Snap Lake Mine's water license, was approved by the MVLWB. In 2011, a revised ICRP was submitted as part of the Mine's water license renewal process. This was followed by a technical meeting.

In November 2012, the board approved draft closure objectives for an updated Snap Lake ICRP, but we still have some more work to do this year to update the plan.

In February/March, we're offering a series of community-based meetings with lands and wildlife department staff and committee members.

These workshops will include information about the ICRP, and will focus on three areas:

- Mine components and closure objectives
- Closure criteria
- Options and research

We look forward to hearing from community participants about how we can best incorporate community and Traditional Knowledge.

We have already heard some ideas about the need to study naturally occurring land forms, develop a better understanding of the plants found around the mine site, and develop terminology that will help us explain closure and reclamation in Chipewyan and Tlicho languages. In March, a technical workshop is planned for Yellowknife where community representatives will be able to review the focus areas of the ICRP in more depth with us.

With the input received in February and March, we will update our ICRP and send it to the Mackenzie Valley Land and Water Board for review.

Informing through involvement

An important objective for De Beers is to ensure that people in communities close to the mine understand the Snap Lake Mine's closure objectives and that we provide opportunities for input and Traditional Knowledge that will inform our planning.

While we have some specific activities planned for February and March before we submit the plan to the MVLWB, engagement with communities about the ICRP will continue over life of mine.

This summer communities will be invited to participate in site visits/workshops at the Snap Lake Mine. During these visits, leadership, elders, and lands & wildlife staff and committee members will tour the mine and get a first-hand understanding of what we have built at Snap Lake and how our mine is developing, and they will have opportunities to provide advice and comments regarding our interim closure and reclamation planning.

As a living document, the ICRP will be updated every three years over the life of the Snap Lake Mine, providing regular opportunities for communities to provide advice and input that will help De Beers plan and eventually close the Mine.

Closing the Mine

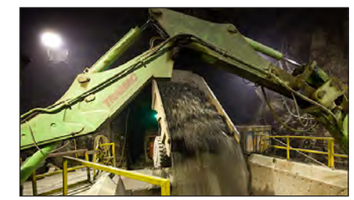
De Beers is committed to minimizing the environmental impacts on the Snap Lake site. Surface facilities are designed to minimize reclamation requirements following closure to enhance the natural recovery of areas affected by mining operations. Through progressive reclamation of areas that are no longer in use we expect active closure to take two years, from 2030-2032 which will be followed by monitoring and adaptive management. We are also researching revegetation and how to best close and cap the North Pile. It is important to remember that while the phase of the mine called "closure" is only a two year period, it will take many years for the site to return to a natural state during the "post closure" period and we are working to ensure that our ICRP is aimed at minimizing the period it takes to return to that state.

The North Pile

This engineered containment facility is being developed in three phases (Starter Cell, East Cell, West Cell) and is where De Beers deposits processed kimberlite, waste rock and non-hazardous waste on surface

Closure and Reclamation plans include:

- progressive reclamation, including capping cells with a rock cover when they are no longer used
- reshaping the sides the facility to blend into the land
- the final surface of the pile will be graded to be consistent with surround topography
- maximum height will be no higher than the highest point of land nearby

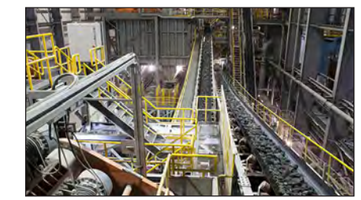


Underground Mine

Beneath Snap Lake Mine, we have developed a network of drifts and ramps totaling over 60 km in length by the end of 2012. This is where we mine the 2.5 metre thick kimberlite dyke.

Closure and Reclamation plans include:

- progressive reclamation by filling mined-out areas with kimberlite/concrete paste
- unsalvageable and non-hazardous equipment will be left underground
- all hazardous waste will be removed
- the mine workings will be flooded
- all access points, including portals and air vents will be sealed to prevent access



Infrastructure

Infrastructure includes the buildings and physical structures, including the accommodations complex, process plant, maintenance shops, fuel storage, water management facilities and more.

Closure and Reclamation plans include:

- demolishing buildings and putting non-salvageable, non-hazardous material in the North Pile
- recontouring the land, roads and airstrip to blend with the natural topography and encourage revegetation
- water management structures will be the last components to be demolished, once monitoring shows that treatment is no longer necessary

Have your say...

The summer site visits are intended to build upon information shared during community workshops held this spring. We look forward to hearing your feedback and answering any questions you may have.

Question 1:
What do you think about water management improvements at the Snap Lake Mine?

Question 2:
Are you satisfied with what you saw today?

Question 3:
Do you like this format of sharing information and gathering community input?

Question 4:
Is there anything else about water management at the Snap Lake Mine that you would receive more information?

Fast facts

Capital cost	$975M
Mine life	2030
Mine-site area	>500 ha
Tonnes processed in 2012	918,000
Carats recovered in 2012	870,000
Production workforce	757 PY (2012)
Northern workforce	275 PY (2012)
Aboriginal workforce	149 PY (2012)
Total trainees to date (2012)	81
Total Investment to date (December 2012)	$1.89B
NWT spend to date (December 2012)	$1.3B
Aboriginal spend to date (December 2012)	$768M
Corporate Social Investment in 2012	$3.3M
Corporate Social Investment since 2008	$13.3M

Quick Terms

Here are some common terms you can expect to hear during your tour of the Snap Lake Mine:

Paste - Paste is a form of processed kimberlite where water does not bleed from the material. Developing a paste that is thin enough to be pumped but thick enough to maintain its shape when pumped into the underground has been challenging for the Snap Lake Mine. The mine plan was developed based upon backfilling mined-out areas underground with kimberlite paste. Trial pumping of paste underground began during the first quarter of 2013.

Sump - A sump is a pit or pond, where water is collected prior to be pumped to the Water Management Pond or into the Water Treatment Plant.

TDS - This stands for "Total Dissolved Solids" which are the salts that naturally occur in water trapped in rock. At Snap Lake, underground water trapped within the rock is released as mining progresses, releasing these dissolved salts.

AEMP - "Aquatic Effects Monitoring Program" is the program that monitors benthics (bugs in the sediment), sediment, plankton (the tiny plants and animals in the water) as well as fish, including fish health and population. Results of the AEMP are used by De Beers to understand if mining is having an impact on Snap Lake. Results of the monitoring are reported annually, on the public record, to the Mackenzie Valley Land and Water Board.

PAG - This term stands for "Potentially Acid Generating" rock that when exposed to air has the potential to generate acid as it weathers. All PAG rock is deposited deep within the North Pile where it will not be exposed to the elements that will result in acid being generated.

NAG - This refers to "Non-Acid Generating" Rock that has no potential to generate acids.

EQC - This means "Effluent Quality Criteria" and refers to the levels of components in the water that can be released into Snap Lake.

De Beers
Group of Companies

Let's Talk

An opportunity to discuss water management at the Snap Lake Mine

SUMMER 2013 SITE WORKSHOP

Maxwell Morapeli
Mine General Manager

Message from the Mine General Manager

It's my pleasure to welcome you to De Beers' Snap Lake Mine. The summer site workshop has been designed to help you understand how we manage water on the mine site.

Snap Lake's water management infrastructure was originally designed based on approved assumptions made during the Environmental Assessment, using test holes drilled almost a decade ago. Our understanding of water in the mine is growing as mining continues.

Over the past three years, we have invested about $12 million to enhance water management infrastructure at Snap Lake, including increased pumping capacity to allow us to manage the higher-than-predicted flow of water from the underground mine, and improvements to the water treatment plant.

Through adaptive management, our mine plan and water management practises will continue to evolve and will continue to be updated over time. Our investment is planned to help us successfully manage water now and over the long term.

We look forward to hearing your comments and ideas about managing water at the Snap Lake Mine.

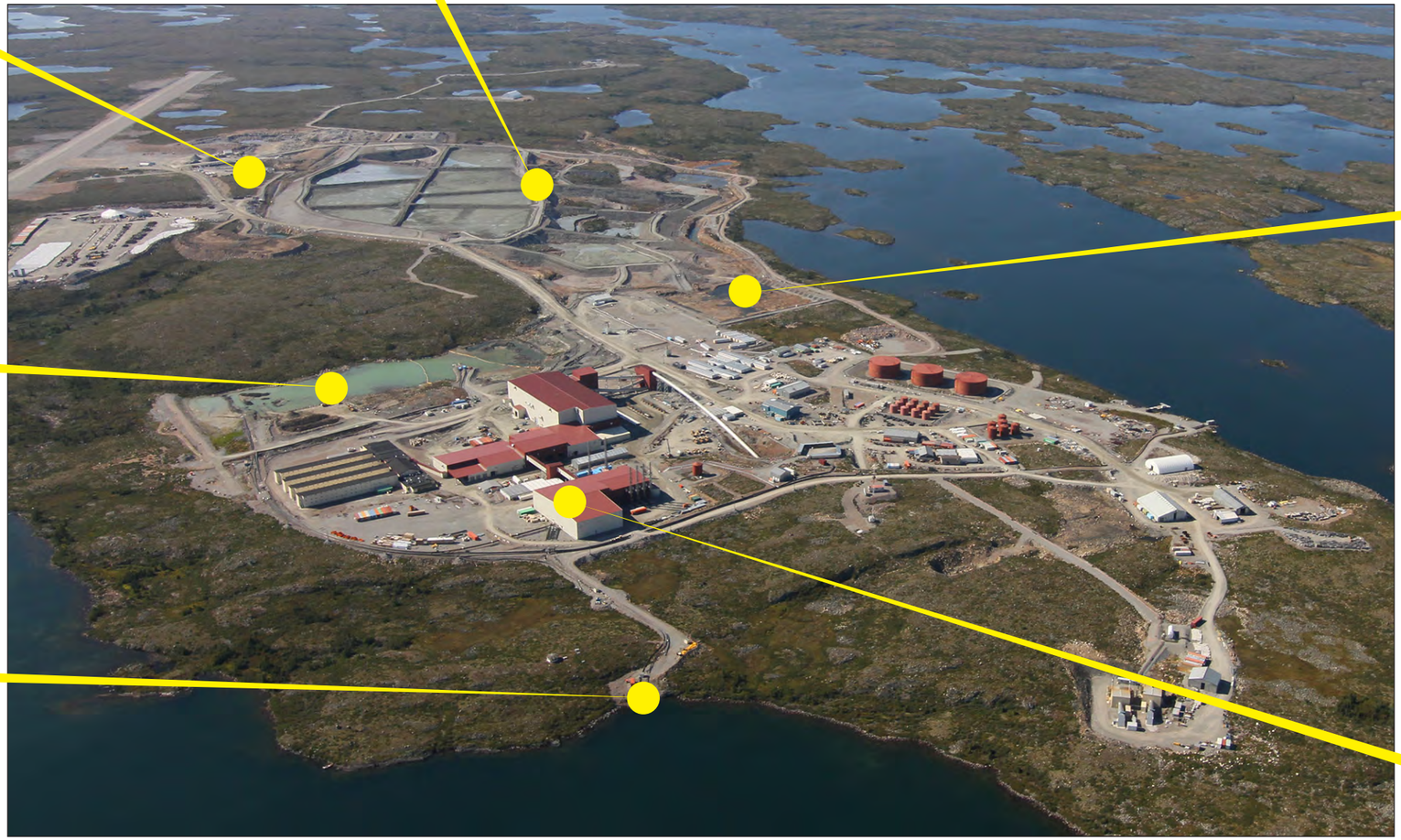
SURFACE TOUR MAP

Waste Management Area

The waste management area is where materials are staged prior to disposal either on or off site. Waste is sorted into the appropriately labeled container to facilitate shipment and disposal. As well, in this area is the burn pit where clean material such as unpainted pallets are burned. New incinerators are installed within the waste management area and have been operational since June. All hazardous waste is shipped off site for appropriate disposal.

North Pile

The North Pile facility is designed to contain processed kimberlite, waste rock and landfill waste. The engineered berms surrounding the facility are designed to act as a large coffee filter where water slowly filters into surrounding catchment sumps and ditches, and then sent for treatment. We are currently depositing into the Starter cell, which is the first phase of the containment facility, and the East Cell, which is the second phase. The West Cell will be constructed when the East Cell is nearing capacity. The berms around the North Pile are engineered for permanent stability and built to blend in with the landscape and be safe for animals. Test caps have been constructed to help determine the best way to cap the North Pile during reclamation.



Water Management Structures

Ditches and water collection sumps located around the North Pile are designed to collect water seeping from the containment facility and the surrounding landscape. "Temporary Sumps", collect water from a "phase" of the North Pile but are buried when the next phase is constructed. "Perimeter Sumps" are permanent structures which collect water around the outskirts of the Pile. Water is moved between sumps through ditches, pipes and pumps to the Water Management Pond. To better manage water in the last two years De Beers has installed pressure sensors in the sumps that allow for 24/7 monitoring to prevent water in the sumps from exceeding design criteria. This remote monitoring is supplemented by regular visual checks by site services personnel. During the past winter, three kilometres of new piping and new enclosed high-volume pumps were installed to enhance our ability to move water around on surface.

Water Management Pond

All water collected on surface is pumped to the Water Management Pond prior to being sent to the Water Treatment Plant before being discharged into Snap Lake. The Pond is also used to hold water that does not meet discharge criteria so that it can be re-treated prior to release.

Diffuser

Once water meets water license criteria, it is discharged into Snap Lake via a diffuser. A diffuser is like a sprinkler head and allows us to release treated water so that it mixes evenly into Snap Lake. A new diffuser was installed in the lake in the fall of 2011.

Water Treatment Plant

Water from the underground and surface is pumped to the Water Treatment Plant to be treated. Here, we ensure water meets all discharge criteria prior to release. Using sensors linked to a central control room and through ongoing testing by water treatment plant personnel, water is constantly monitored during treatment. Water samples collected here are sent for independent testing every six days to verify we are meeting water license requirements. These results are reported publicly each month to the Mackenzie Valley Land and Water Board.

Environmental Lab

The Environmental Laboratory houses equipment for in-house testing of water quality in addition to the inline meters and other site facilities. It is staffed by highly skilled laboratory technicians who perform a variety of tasks related to our regulatory and corporate requirements. In addition to monitoring water quality, environment staff are also responsible for monitoring of various other environmental parameters such as air quality, waste management, water quantity, water levels and water temperature. Hydrology and Aquatic studies, as well as ad-hoc special studies within and outside of the immediate footprint of the mine are done as and when required.