

Gahcho Kué Project

2012 EIS Supplement – Project Overview



Outline

- Overview of Project Description
- EIR Submissions
- Key Elements of the Supplemental Mitigation
- Structure of the 2012 EIS Supplement
- Key Findings

Project Description Overview

- Proposed Project Location
- Kennady Lake and location of ore bodies
- Mining method
- Project duration
- Employment
- Waste management
- Water management
- Closure activities

Northwest Territories

Gameti

Wekweeti

Ekati

Diavik

Snap Lake

Gahcho Kué

Whati

Behchokò

Ndilo/Dettah

Yellowknife

Lutsel K'e

Ft. Providence

Ft. Resolution

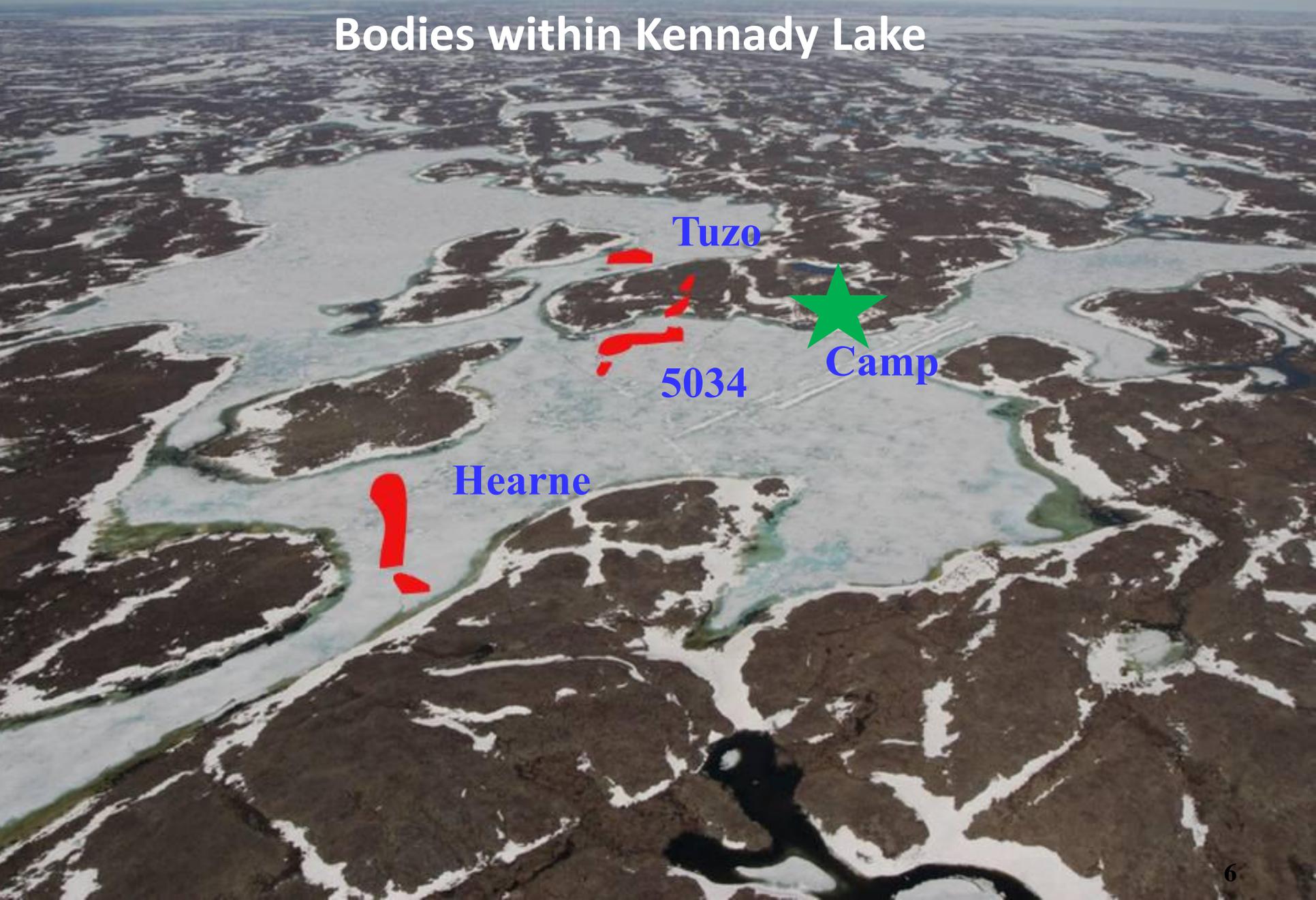
Hay River

Kennady Lake



At 870 hectares, or 8.7 Km², Kennady Lake is about 1% of the size of Lac de Gras.

Location of Kimberlites Ore Bodies within Kennady Lake

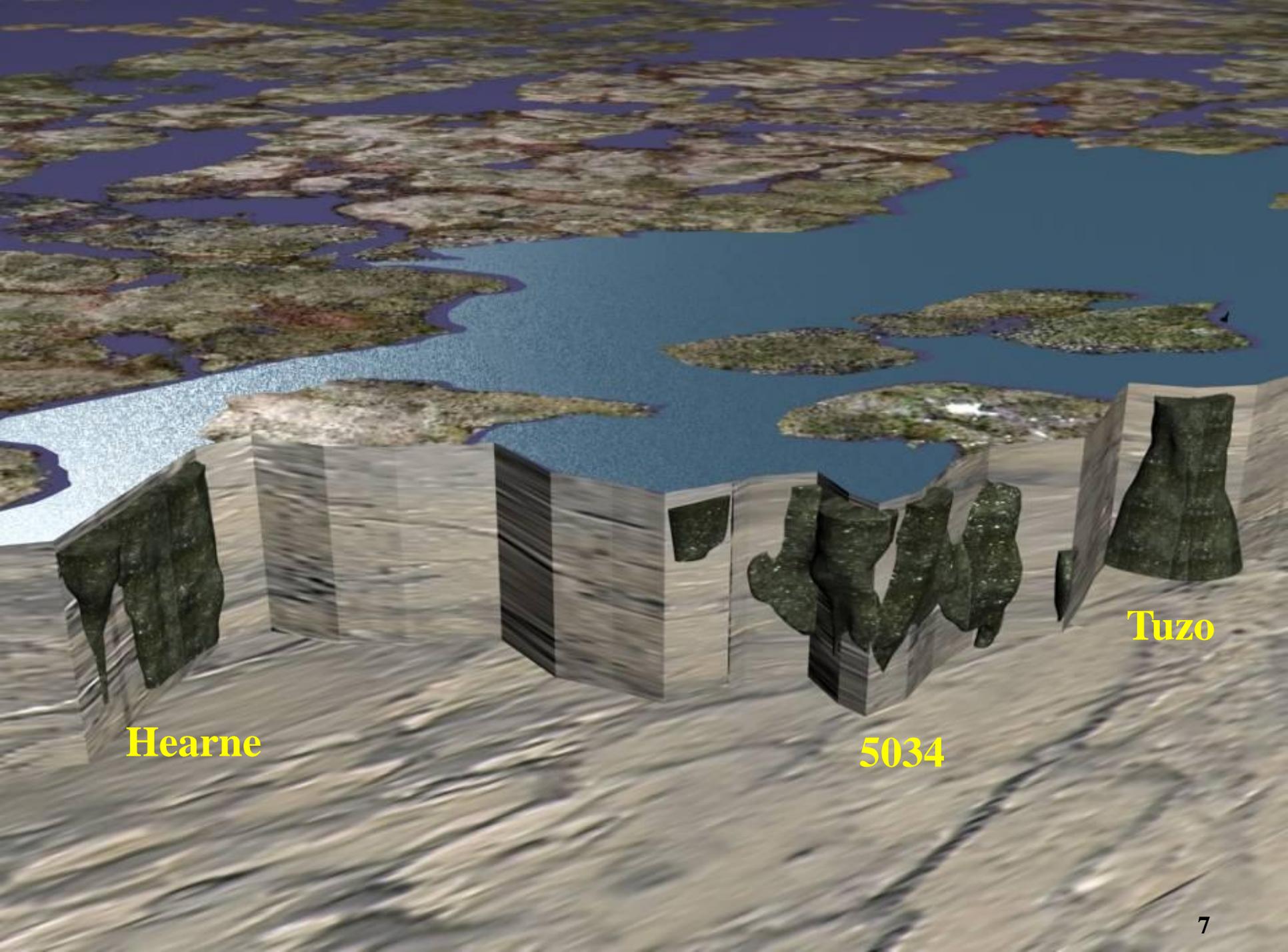


Tuzo

5034

Hearne

Camp



Hearne

5034

Tuzo

Project Duration

Construction Period (Yr -2 to -1)

- Dewatering and infrastructure construction

Operational Period (Yr 1 to 11)

- Mining of kimberlite ore and processing
 - 5034 ore body first to be mined, followed by **Hearne in Yr 4**, and **Tuzo in Yr 5**
 - 5034 backfilled mine rock and fine PK starting in Yr 5
 - Hearne backfilled with fine PK starting in Yr 8
 - Where possible, progressive decommissioning and reclamation

Closure Period (Yr 12+)

- Reclamation (to end of Yr 13)
 - Refilling Kennady Lake
 - Reclamation Monitoring
 - Removal of site infrastructure and disposal of materials on site or off site as appropriate
- Closure monitoring

Employment

- Peak of nearly **700** Full Time Employees during construction
 - ❖ Includes on-site and off-site employees
 - ❖ Camp capacity of 432 persons (or 216 double occupancy rooms)
- **372** Full Time Employees during operations (11 years)
- **100** or less Full Time Employees during closure & reclamation

- Although smaller than Ekati and Diavik, the proposed Gahcho Kué is an important project for the NWT's economic sustainability

Kimberlite Processing

- 3 Mt Kimberlite will be mechanically processed on site annually
- Ore will be crushed and screened through a staged process to separate diamonds
 - Fine and coarse processed kimberlite material will be generated for disposal
 - Fine PK associated with a slurry
- Process water will be sourced and recycled from the water management pond

Waste Management

Lake-bed sediment and overburden

- Approximately **6.5 Mt** removed
- Used for dykes and dams

Mine rock

- Granite surrounding the kimberlite ore bodies
- Approximately **226 Mt** will be mined
 - **4 Mt** used in roads, dykes, berms and reclamation
 - **142 Mt** placed in two mine rock piles
 - **80 Mt** deposited in 5034 pit
- Potentially acid generating rock will be sequestered within the mine rock piles

Processed kimberlite

- **Fine PK** will be deposited in the Fine PKC Facility (3.3 Mt) and then 5034 (1.5 Mt) and Hearne (3 Mt) pits
- **Coarse PK** will be deposited in the Coarse PK pile (9.4 Mt) and in the West Mine Rock Pile (12.3 Mt), and also used in dyke and berm construction (1.8 Mt)

General waste

- Domestic, industrial, hazardous materials, and sewage

Water Management

Key Objectives

- **Dewater Kennady Lake to the maximum extent possible** to safely access and mine the ore bodies
- Utilize **passive treatment in the controlled area** and **discharge water when the water quality meets discharge requirement**
- Utilize **available containment volumes within the controlled area for water management as required**, e.g., the mined-out pits for water storage
- **Minimize environmental impacts** to adjacent and downstream waters during construction, operations, and closure phases of the Project
- **Re-establish a flow regime and self-sustaining ecosystem** in the refilled Kennady Lake after closure

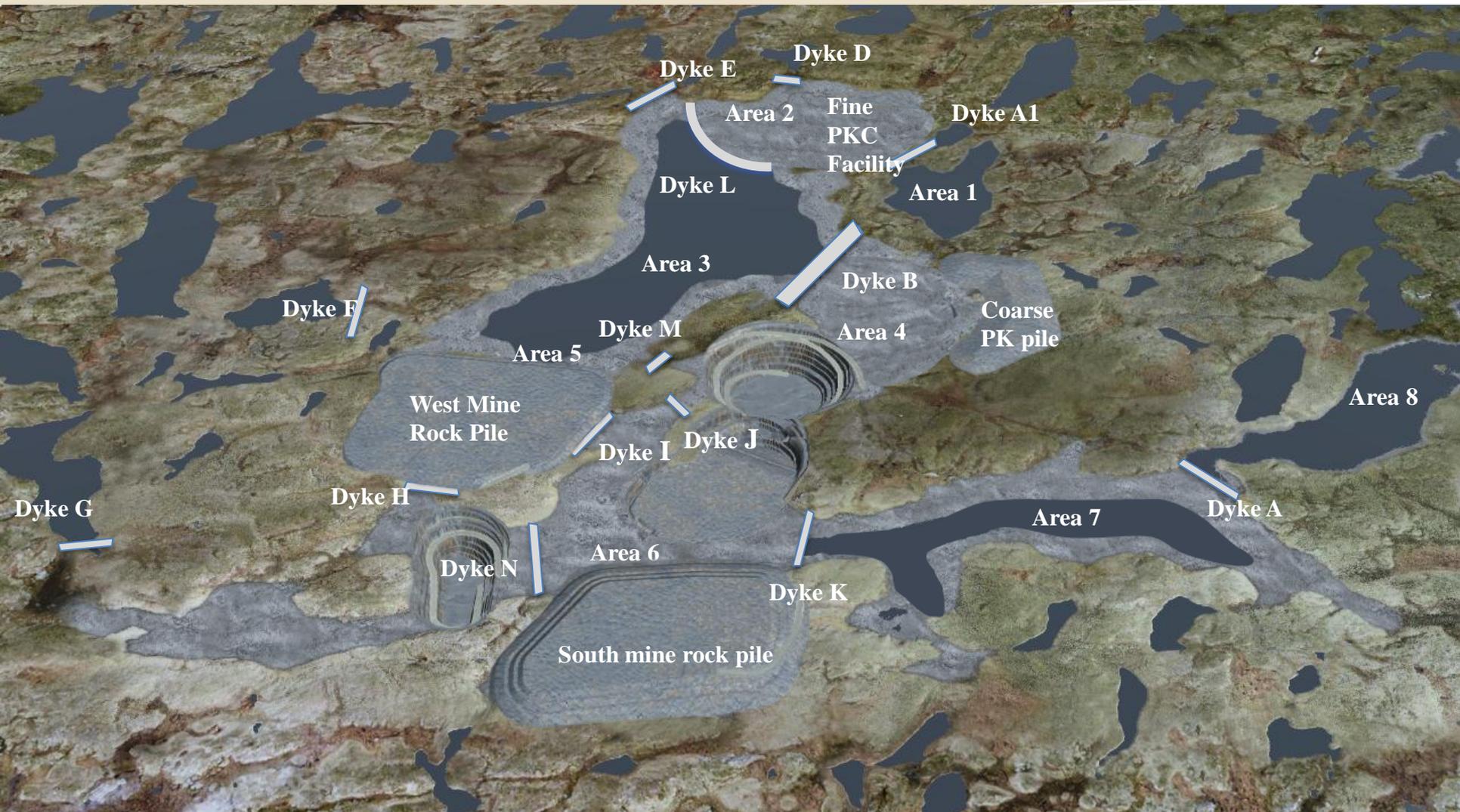
Construction (Year -1)



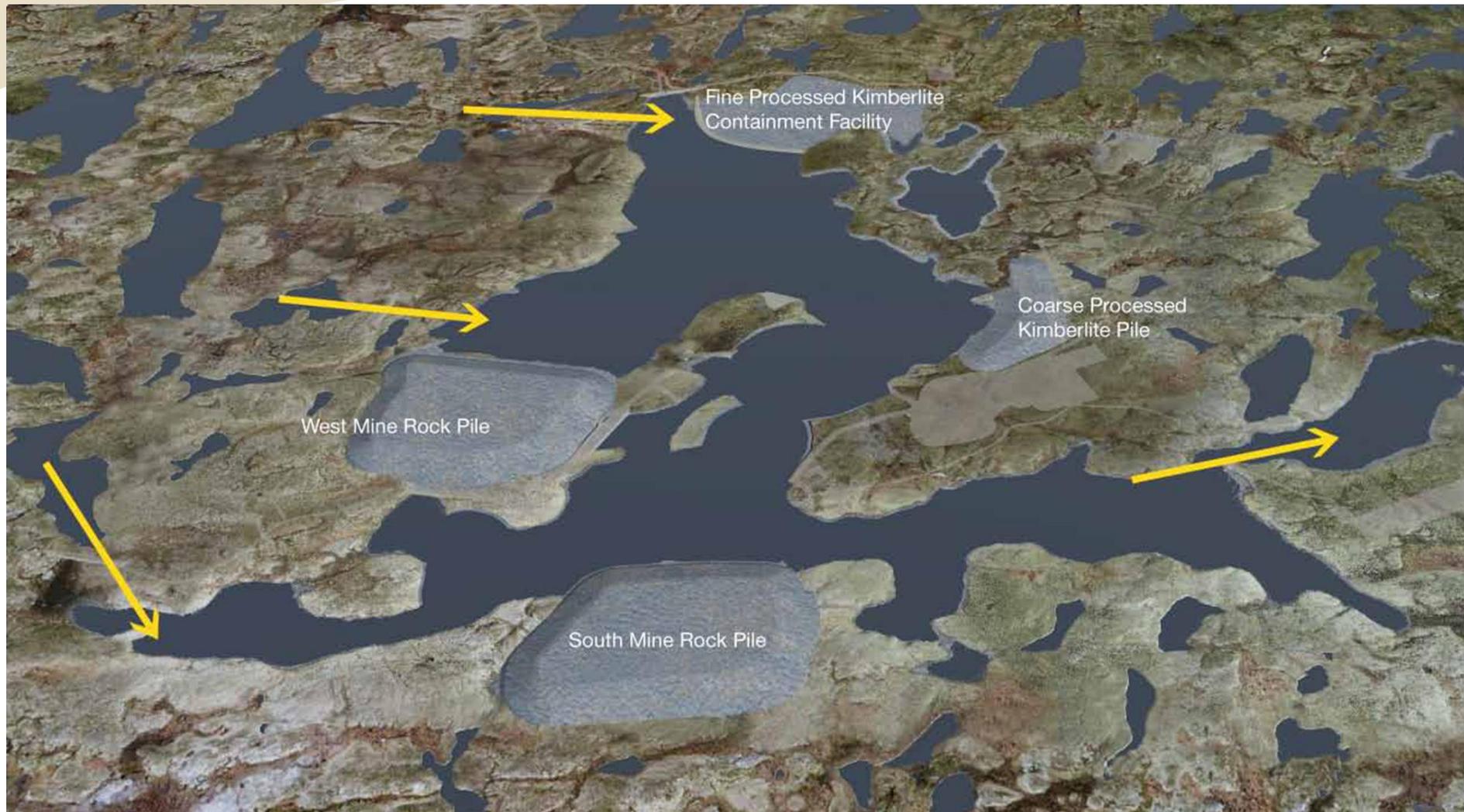
Construction (Year -2)



Operation (Year 1-11)



Closure (Year 12-20+)



Closure Activities

Closure Phase:

- **Remove all** potentially hazardous materials from site
- **Construct additional fish** compensation habitat/enhancement structures near Kennady Lake
- **Refill Kennady Lake** using natural runoff supplemented by water drawn from Lake N11
- Upon refilling the lake and **achieving appropriate water quality**, breach and/or partially remove Dyke A to connect the reclaimed portions of Kennady Lake with Area 8
- **Monitor conditions** over time

Gahcho Kué Project 2012 EIS Supplement

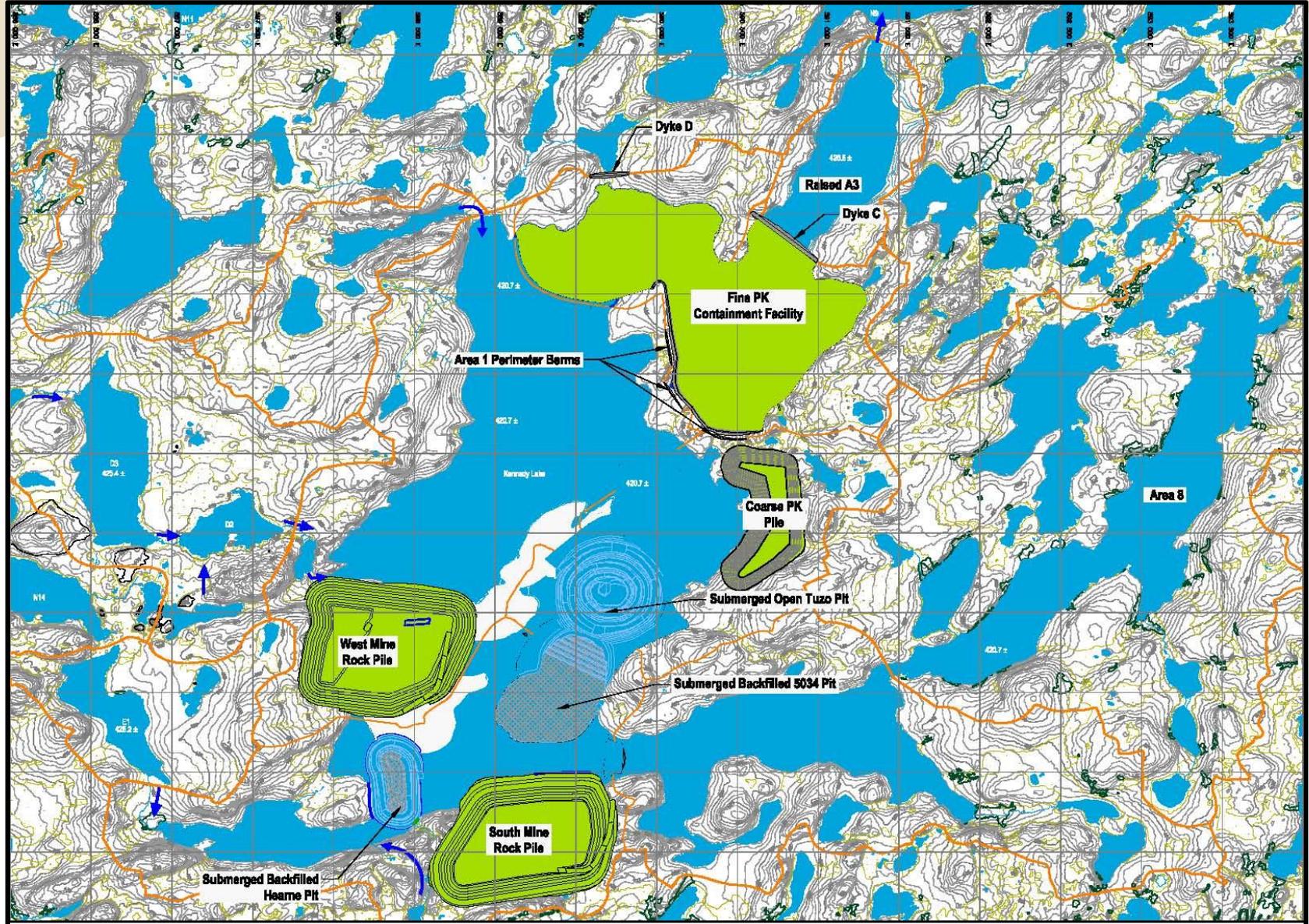


May 22, 2012

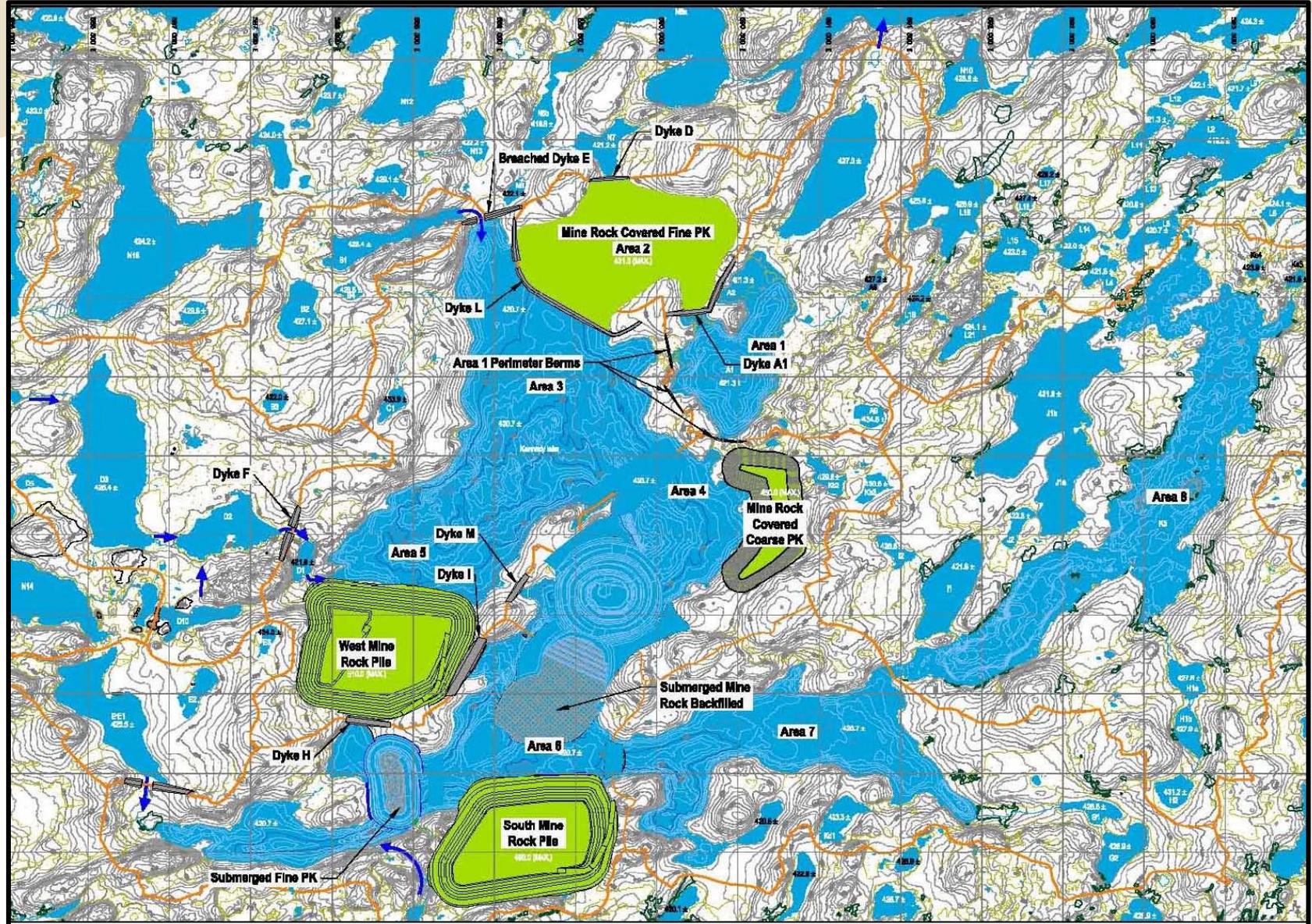
EIR Submissions to MVEIRB

- EIS submitted to MVEIRB on December 23, 2010
- 2011 EIS Update submitted on July 15, 2011
 - Included revisions to Sections 8, 9, and 10
 - Identified the need for supplemental mitigation to address potential increases of phosphorus in Kennady Lake related to the long-term storage of PK
- 2012 EIS Supplement submitted on April 23, 2012
 - Describes the supplemental mitigation of the Fine PKC Facility
 - Assesses the effects of the supplemental mitigation on the aquatic and terrestrial environments, and any other components potentially affected
- IR Response Round 1 submitted - March 30 to April 6, 2012
- Supplemental monitoring documentation also submitted March 20 to May 1, 2012

Reclamation – 2010 EIS



Reclamation – 2012 EIS Supplement



Supplemental Mitigation

Key Changes to Mine Plan:

- The area of the Fine PKC Facility reduced by 83 ha
- Fine PKC Facility no longer covers Lakes A1 and A2
- The A watershed is diverted during operations
 - Lake A1 diverted to Area 8 (via Lake J1b)
 - Lake A3 no longer permanently diverted to N watershed
- Fine PK deposited in 5034 and Hearne pits
- West Mine Rock Pile height increases by 24 m, but base area remains the same

EIS Supplement

- Purpose
 - describe the supplemental mitigation of the Fine Processed Kimberlite Containment (PKC) Facility; and
 - assess the effects of this mitigation on the aquatic and terrestrial environments, and any other components potentially affected by these changes
- Document retains the primary structure of the 2010 EIS
 - Chapters match the layout of the EIS
 - Key Lines of Inquiry and Subjects of Note

2012 EIS Supplement - Outline

Section from the 2010 EIS	Updated in 2011	Updated in 2012	Nature of Update in 2012
1 Introduction	no	yes	Section was simplified
2 Project Alternatives	no	yes	Relevant EIS summary information and updates provided
3 Project Description	no	yes	A “word-for-word” update of the 2010 EIS (De Beers 2010) Section 3, with revisions highlighted in yellow
4 Community, Regulatory, and Public Engagement	no	no	-
5 Traditional Knowledge	no	yes	Minor wording changes provided
6 Assessment Approach	no	yes	Section was summarized
7 Key Line of Inquiry: Caribou	no	yes	Relevant EIS summary information and updates provided
8 Key Line of Inquiry: Water Quality and Fish in Kennady Lake	yes	yes	Relevant EIS summary information and updates provided
9 Key Line of Inquiry: Downstream Water Effects	yes	yes	Relevant EIS summary information and updates provided
10 Key Line of Inquiry: Long-term Biophysical Effects, Closure and Reclamation	yes	yes	Relevant EIS summary information and updates provided
11 Biophysical Subjects of Note	no	yes/no	Updates were made to the following Biophysical Subjects of Note: Section 11.5 Mine Rock and Processed Kimberlite Storage Section 11.7 Vegetation Section 11.10 Carnivore Mortality Section 11.11 Other Ungulates Section 11.12 Species at Risk and Birds
12 Socio-economic Impact Assessment	no	no	-
13 Cumulative Effects	no	yes	Relevant EIS summary information and updates provided
14 Summary and Conclusions	no	yes	Relevant EIS Supplement summary information and updates to conclusions provided

2012 EIS Supplement - Outline

Appendices from the 2010 EIS/2011 EIS Update	Updated in 2012	Appendix Number within the 2012 EIS Supplement
Section 8		
	new	Appendix 8.I Hydrology Assessment Update
Appendix 8.I Water Quality Model Report	yes	Appendix 8.II
Appendix 8.II Metal Leaching and Acid/Alkaline Rock Drainage Report	yes	Appendix 8.III
Appendix 8.III Time Series Plots	yes	Appendix 8.IV
Appendix 8.IV Aquatic Health: Derivation of Chronic Effects Benchmarks	yes	Appendix 8.VI
Appendix 8.V Empirical Dissolved Oxygen Modelling	yes	Appendix 8.V Dissolved Oxygen and Nutrient Model Report
Section 9		
Appendix 9.I Time Series Plots	yes	Appendix 9.II
	new	Appendix 9.I Hydrology Assessment Update
	new	Appendix 9.III Aquatic Health
Section 11		
Appendix 11.7.I Geology, Terrain, and Soils	yes	Updated information presented in Section 11.7.3 of this supplement

Key Findings - Terrestrial

Section 7 – KLOI: Caribou

- Supplemental mitigation results in a smaller area of disturbed habitat in the LSA than assessed in the 2010 EIS
 - Disturbed habitat reduced by 82.6 ha
 - From 1,235.4 ha to 1,152.8 ha
 - Impacts on the abundance and distribution of caribou from direct changes to habitat remain unchanged from 2010 EIS
 - No significant effects

Key Findings - Terrestrial

Based on the reduction of the Project footprint by 82.6 ha, conclusions remain unchanged from the 2010 EIS:

- Section 11.7 – Vegetation
 - No significant adverse effects are predicted to vegetation ecosystems and listed plant species, or to the continued opportunities for the use of traditional plants
- Section 11.10 – Carnivore Mortality
- Section 11.11 – Ungulates
- Section 11.12 – Species at Risk and Birds
 - No significant effects are predicted to the abundance or distribution of species assessed within these Subjects of Note, or to the continued opportunities for traditional and non-traditional use of these species

Key Findings - Aquatics

Sections 8, 9, and 10 – KLOI: Water Quality and Fish in Kennady Lake, Downstream Water Effects, and Long-term Biophysical Effects, Closure and Reclamation

- Based on the reduction of the Fine PKC Facility by 82.6 ha, conclusions remain unchanged from the 2011 EIS:
 - Sources of phosphorus concentrations to Kennady Lake lower than projected in the 2011 EIS Update
 - Supplemental geochemistry testing
- Hydrology
 - No changes to assessment of flows and water levels
- Water Quality
 - Kennady Lake returns to oligotrophic conditions
 - Maximum concentrations of fewer metals are projected to be higher than CCME water quality guidelines (copper and cadmium)

Key Findings - Aquatics

- Aquatic Health
 - Conclusions of the aquatic health assessment remain unchanged
 - Copper is only SOPC in Kennady Lake above a CEB; however, potential for adverse effects to aquatic organisms in Kennady Lake is considered low
- Fish and Fish Habitat
 - Lower trophic communities will be more productive than baseline, but remain consistent with oligotrophic conditions
 - Because of increased food base, may also increase growth and production of forage and large-bodied fish
 - Overwintering habitat will be suitable in the refilled Kennady Lake during post-closure for all fish species currently in the lake
 - The fish species assemblage within Kennady Lake will be similar baseline

Key Findings - Aquatics

- Recovery of Kennady Lake
 - Timeline for recovery unchanged (functional aquatic ecosystem within 5 years including presence of fish species, and steady state conditions within 65 years)
 - Refilled Kennady Lake will return to oligotrophic conditions, but as a result of increased nutrients, more productive than baseline
 - Impacts on
 - the suitability of water within the Kennady Lake watershed and downstream water bodies to support a viable and self-sustaining aquatic ecosystem, and
 - the abundance of Arctic grayling, lake trout, and northern pike
- Remain unchanged from 2011 EIS
- No significant effects are predicted

Summary

- Supplemental mitigation
 - Smaller Fine PKC Facility
 - Modified mine rock and PK management
- Disturbed habitat area reduced within the LSA
- Reduced phosphorus concentrations in Kennady Lake
 - Returns to oligotrophic condition
 - Increased productivity
 - Sufficient overwintering habitat
- Assessment conclusions for terrestrial and aquatic environments remain unchanged from the 2010 and 2011 EIS



Gancho Kué Project Questions?

November 28-December 2, 2011