

An aerial photograph of a circular pond or water feature. Several people are visible, each holding a large, flat, circular wooden paddle or drum. They appear to be engaged in a traditional activity or ceremony. The water is a light, milky color, and the surrounding area is a textured, light brown surface.

# Fortune Minerals Public Hearing Water Quality Concepts

Tłı̨chǫ Ndek'awoo



Tłı̨chǫ Government

# BACKGROUND

## *Water and the Tłı̨cho People*



- Chapter 21 - Water Rights and Management in the Tłı̨cho Agreement states that:
  - *21.2.3 Subject to any use of water, deposit of waste or activity referred to in 21.31.2 or 21.3.3 that is authorized issued by the Wek'eezhii Land Water Board or by any other competent water authority, the Tłı̨cho First Nation has the right to have waters which are on or flow through or are adjacent to Tłı̨cho lands remain substantially unaltered as to quality, quantity and rate of flow when such waters are on or flow through or are adjacent to Tłı̨cho lands.*
- Marian River Watershed, including Burke Lake (Det'ot'i), is intrinsically valuable to the Tłı̨cho People who continue to use Det'ot'i for cultural purposes including trapping muskrats and beavers; duck hunting and egg collecting; travel routes (summer and winter); and drinking water source while on the land.
- Det'ot'i is within Tłı̨cho owned lands and must remain substantially unaltered as to quality, quantity and rate of flow.

# BACKGROUND

## *Traditional Uses of Burke Lake Area*

**Reported Tlı̨chǫ  
site-specific use values  
within the vicinity of  
Burke Lake**













Tłı̨chǫ Government

1:50,000

0 0.5 1 1.5 Kms

### Legend

-  Cultural / Spiritual
-  Environmental
-  Habitation
-  Subsistence
-  Transportation
-  Regional study area (RSA)
-  Local study area (LSA)
-  Project footprint (250m)
-  Project footprint
-  Proposed NICO project access road (Nov-10)

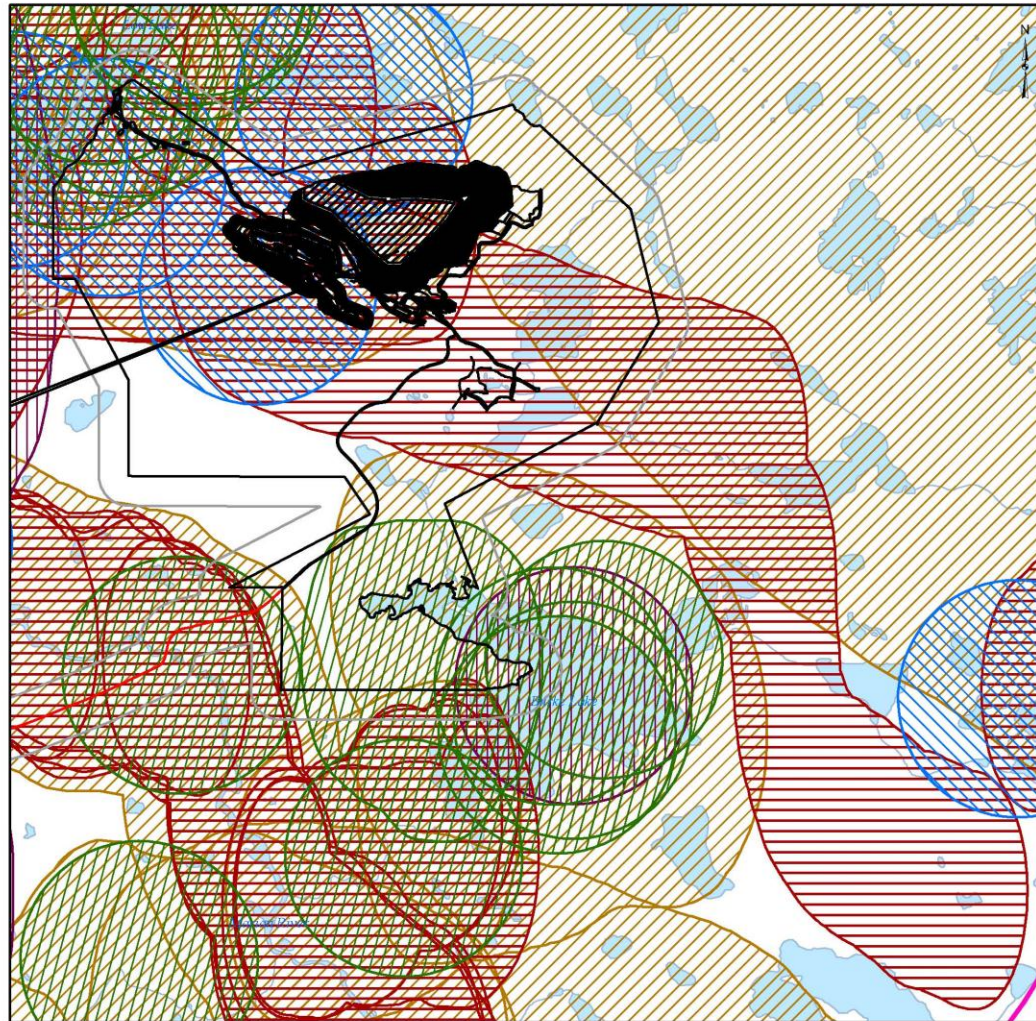
To account for margin of error and protect confidentiality of locations, all reported use value point locations are randomized by 250 metres and are shown with a 1 kilometre buffer. All reported lines and polygons are shown with a 1 kilometre buffer. Absence of site-specific data does not indicate absence of interest or use.

Map produced by Steven DeRoy  
of the Firelight Group on  
Wednesday, August 22, 2012.



Base map data originates from the Tlı̨chǫ Government, the National Topographic System, Geobase, and Geogratis (Natural Resources Canada). Map projected to UTM, Zone 11, NAD 83.

This map does not capture the complexity of the Tlı̨chǫ Government's relationship to their traditional lands or the extent of the practice of treaty and aboriginal rights. This map is a living document and is intended to be amended and refined over time. The data used to produce this map originate from multiple sources. This map is property of the Tlı̨chǫ Government and may only be reproduced with written permission.



# BACKGROUND

## *Approach to Making Recommendations*



- As part of the DAR, Site-Specific Water Quality Objectives (SSWQOs) were developed for Contaminants of Potential Concern (COPC)
- On behalf of Tłjcho Government, SENES Consultants reviewed initial SSWQOs (April 2012), updated SSWQOs (May 2012), and August 20 submissions from Fortune.
- Tłjcho Elders, Leaders and Youth came together to risk assess the SSWQO using information provided in the DAR, from its technical consultants, technical reports from other parties such as AANDC, and their own indigenous knowledge.
- Tłjcho acceptance of the risks associated with the SSWQO remains conditional as long as the Tłjcho Government's recommendations are implemented.

# RECOMMENDATION #1

## *Water Quality Goals*



- In keeping with traditional values of the Tłı̨cho People and the Tłı̨cho Agreement, and the need to protect the water and the land for future generations, the Report of EA should include water quality goals that describe the level of protection to be afforded to the aquatic receiving environment.
- The water quality goals should be applied to Burke Lake in order to protect the ongoing use of the area for cultural, spiritual and subsistence purposes.

# RECOMMENDATION #1

## *Water Quality Goals Continued*



The specific water quality goals that should be applied to all areas outside of the mixing zone include:

- Water quality changes due to mining activities will not significantly affect benthic macro-invertebrate and plankton abundance, taxonomic richness or diversity.
- Water quality changes due to mining activities will not significantly alter fish abundance or diversity or fish consumption at current levels.
- Water quality changes due to mining activities will not negatively affect areas utilized as traditional drinking water sources.
- Water quality changes due to mining activities will not significantly affect mammals or wildfowl using the area as a drinking water, food source or habitat, or the current ability for people to harvest these animals.

The specific water quality goal that should be applied to the Marian River is:

- Water quality in the Marian River remains unchanged.

## RECOMMENDATION #2

### *Objective of the SSWQOs*



- Ongoing protection of the Tłı̨cho Peoples' use of Burke Lake for the following purposes is critical to maintain their traditional way of life:
  - muskrat and beaver trapping
  - travel route (summer and winter)
  - drinking water source while on the land
  - duck hunting and duck egg collection
- The Report of EA should require that the final SSWQOs be based upon the Tłı̨cho Peoples' traditional use of the downstream aquatic environment, now and into the future.

# RECOMMENDATION #3

## *Approach for Defining SSWQOs*



- Tłjcho principles are conservative and precautionary because future changes in or pressures to watersheds cannot be known with certainty. Therefore, the Report of EA should require that derivation of the SSWQOs consider the following:
  - practically achievable concentrations demonstrated for the RO effluent treatment system (to avoid high SSWQO)
  - expected performance of the wetlands during post-closure (to avoid high SSWQO)
  - existing background concentrations
  - CCME Guidelines for the Protection of Freshwater Aquatic Life
  - review of available toxicity literature and/or developing new toxicological information, conducting of ecological risk assessments, and other investigations
  - consistency with the Tłjcho Agreement 21.2.3

# RECOMMENDATION #4

## *Application of SSWQOs*

- SSWQO must be applied appropriately at all phases in the mining lifecycle, including operations, active closure and post closure. Different SSWQOs may need to be applied at each of these phases because the first downstream receiving water body changes during the life of the mine.
- The Report of EA should stipulate that SSWQOs apply at the edge of a defined mixing zone within Peanut Lake during operations and, in the long term (after closure), to all of Peanut Lake and Nico Lake.

# RECOMMENDATION #5

## *Specific SSWQO Values*



- SSWQOs proposed for arsenic, cobalt, iron, lead and selenium (August 20, 2012 memo from Fortune)
- We agree with the proposed values for cobalt, iron and lead as outlined in the August 20 memo from Fortune
- Further work required for arsenic and selenium

# RECOMMENDATION #5B

## *Specific SSWQO - Arsenic*



- Proposed SSWQO based on EC<sub>50</sub> for a 14-day test on green algae

	CCME Guideline (µg/L)	SSWQO (µg/L)
Nico Lake	5	50
Peanut Lake		50

•Assessment

- Selected toxicity test (effects on green algae) appropriate
  - An EC<sub>50</sub> would correspond to noticeable effects in half (50%) of the algae (phytoplankton) in the lake
- Recommendation
  - Fortune needs to provide sufficient evidence that use of an EC<sub>50</sub> is appropriate

# RECOMMENDATION #5A

## *Specific SSWQOs - Selenium*

- Proposed SSWQO - based on protection of fish using site-specific information

	CCME Guideline (µg/L)	SSWQO (µg/L)
Nico Lake	1	3.5
Peanut Lake		

- Assessment
  - Endpoint selected (fish health) appropriate
  - Fortune have not demonstrated that a water concentration of 3.5 µg/L would not result in effects in fish
- Recommendation
  - Approach to handling detection limit needs further consideration

# SUMMARY

- The Tłjcho Government has made recommendations for five measures to be included in the Report of EA.
- We require these measures to be addressed.