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RE: NICO Project - EA0809-004 [2009]

Mackenzie Valley Environmental Impact Review Board
200 Scotia Centre
Box 938, 5102-50th Ave
Yellowknife, NT X1A 2N7

October 17, 2012

Dear Chuck Hubert:

The Tłı̨chǫ Government submits, under separate cover, our Closing Argument. Please do not hesitate to contact myself or my staff with any questions.

We look forward to reviewing the Board's decision in the Report of Environmental Assessment. We wish the Board well in its deliberations.

In Tłı̨chǫ Unity,

for 

Laura Duncan
Tłı̨chǫ Executive Officer



Tł̄ch̄q Government

Closing Argument

on the proposed
Fortune Minerals NICO Project

Submitted to the Review Board for NICO Project – EA0809-004 [2009]

October 17, 2012



Tł̄ch̄q Government

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Executive Summary

The Tłıchǫ Government and its citizens have consistently and with great diligence, engaged in the environmental assessment (EA) of the proposed Fortune Minerals NICO Project located in the heart of Tłıchǫ lands.

In this closing argument, the Tłıchǫ Government identifies six key areas in which there continue to be gaps and uncertainties in the information brought forward by the proponent. The Tłıchǫ Government invites the Review Board to consider in its final deliberations whether adequate information has been provided to move the project to the regulatory phase of permitting, given these uncertainties, or whether, in light of both significant public concern shown by the Tłıchǫ Government and its citizens and the unacceptable risk of significant adverse impacts on the environment, an Environmental Impact Review (EIR) of the project is merited.

If the Review Board determines that an EIR is not required, the Tłıchǫ Government recommends that the Review Board impose certain measures to mitigate against likely significant adverse impacts. Those recommended measures are set out in the fuller written argument.

As was made evident through the proceedings, and especially given the results of the Tłıchǫ traditional land use and traditional knowledge study, the location of this proposed development – the ası ede t'seda dıle area - is a central part of the Tłıchǫ cultural landscape. It must be protected for its biophysical and human environmental values, especially caribou, water, traditional use and social and cultural values, including heritage resources.

The Tłıchǫ Government still does not have enough information to provide a definitive estimation of whether the net positive effects of this proposed mine outweigh the risks of adverse environmental, social and cultural impacts. Some uncertainty can only be cleared up once new technologies are tested in the north; however, a strong labour force survey and assessments of resource royalties and taxation revenues to the Tłıchǫ Government could change understanding of the benefits.

The taxation, royalties, and employment outcomes for the Tłıchǫ region are unclear due to missing data or weak commitments.

There is evidence on the Public Registry indicating that unless additional mitigation and monitoring is put in place, there will remain net negative impacts (that are likely to occur, with a high magnitude, and varying possibility for reversibility).

They include:

- Adverse impacts on traditional use and knowledge, transportation pathways, traditional resources and perception of food safety, and transmission of knowledge;
- An as yet unknown but likely high amount of increased social dysfunction in Whatì associated with population growth in this small and previously remote community, with pressures on health, education, social services and housing due to in and out-migration, and therefore also reduced community cohesion;
- Potential for decreased certainty in the use of water in the ase ede t'seda dìle area, and the associated reduction in use of the region;
- Potential for poor performance of new technologies that have proven uncertainties associated with them; and
- Potential for the delaying of the recovery of the Bathurst caribou herd.

The Tłıchǫ Government has this comment on reversibility: If an area were removed from traditional use by Tłıchǫ citizens for one generation, it is unlikely it could be reintegrated into Tłıchǫ traditional use and imagination in the future. It can be difficult to change perception of risk, after judgements are made, and therefore less likely that the impacts that may be experienced could be reversed.

In the public hearings, Harry Apples (October 11, 2012) said:

Now that mine – once it's open – that area will be considered dead... I do not like it – at all.

The hearings demonstrated that this area is a core cultural corridor in the heart of Tłıchǫ lands. The area is vital to use in the past, present and future.

It was Chief Monfwi's wish to live in the area due to good fishing, good water and was in the middle of various routes to other important areas for the Tłıchǫ. (Zemie Daniels, October 11, 2012).

When Monfwi, before he accepted the treaty, he drew a boundary. No other Chief has ever built a foundation like that, like the way that Chief Monfwi had done. He drew a boundary, but still now we are restricted – restricted to hunt caribou. (Philip Dryneck, October 11, 2012)

At the public hearings, the Review Board heard from:

- Youth, including many who went on the traditional canoe trips, known as the Trails of the Ancestors;
- Women, who expressed concerns for water, their children, and their way of life;

- Harvesters, who spoke of their love of the land and their particular and ongoing use of the land; and
- Elders, who revealed their long-term use of the area, talking about the place “where they go to survive.”

More than 70 people spoke of the Tłı̨chǫ culture and way of life. Many of these people expressed real and considerable fear of impact. The concern for water and traditional use dominated the hearings.

That’s the only thing I’m more worried about, is the water.... Are they – can they pay for it? ...and who’s going to treat the water forever? And it’s probably a long time. Who has that kind of money, and who’s going to monitor it? (George Mackenzie, October 11, 2012)

Based on our own review of the public hearing transcripts, the Tłı̨chǫ Government invites the Review Board to examine closely the question of whether the development is a cause of significant public concern. When there is a finding that the development is a cause of significant public concern the Review Board would typically be required under Section 128.1(c) of the MVRMA to call for an Environmental Impact Review (EIR).

The Tłı̨chǫ Government notes that the anxiety expressed at the public hearings from the Tłı̨chǫ public and associated with this proposed mine is related to key issues. First, the development is very close to Whatı̨, a community that has never been connected by an all season road. Many citizens spoke out against an all season road connection. Second, there are two completely new technologies being proposed: co-disposal and wetlands treatment. They are seemingly “state of the art,” but uncertainties associated with them remain. Third, this area is in the heart of the Tłı̨chǫ lands. Known as *ase ede t’seda dile*, this is where Tłı̨chǫ people have gone to survive in the past, where they go to in the present and where they will go in the future.

Should the Review Board determine that the project does not merit an EIR, the Tłı̨chǫ Government has set out 27 measures for the Review Board’s consideration, such as the expert peer review committee. These proposed measures are set out to provide confidence that the proposed development will not likely be a cause of significant adverse impacts on the biophysical and human environment.

Introduction

This document contains closing argument for the Tłı̨chǫ Government. This report is organized by the key lines of inquiry for the Fortune Minerals Environmental Assessment (EA) Fortune Minerals Ltd. – NICO Project – EA0809-004 [2009] (the “project”).

The Tłı̨chǫ Government has participated in all phases of the environmental assessment, and relies on all documentation for this review, including the Review Board’s Terms of Reference, the Developer’s Assessment Report, the Information Requests, the Technical Reports of all parties, undertakings of the parties, the documents published on the Public Registry and the transcripts of the public hearing (August 27 to 31 and October 10 and 11, 2012), as well as Review Board Operational Guidance.

The Tłı̨chǫ Government would like to thank the Review Board for providing this forum for raising the many and varied concerns about the project, and the proponent for making some incremental improvements to the project planning during the course of the environmental assessment.

The Tłı̨chǫ Government is also grateful for the extra time that was devoted to traditional knowledge. As Chief Eddie Erasmus said in closing comments at the hearings:

Yesterday we made history. For the first time Traditional Knowledge was recognized and is being considered in this process. And we would like to thank the Board for that.

We note that the next stage of the process involves the issuance of the Report of Environmental Assessment (REA).

Each section in this closing argument includes: a summary of the issue; Fortune Minerals commitments; gaps that these commitments leave; and the measures recommended by the Tłıchǫ Government.

A note on our method

This process has involved all levels of government, and many departments. As a result of the questions of the Review Board staff, legal advisors, board members and other parties, the Tłıchǫ Government has refined its approach to the recommended measures. We have sought to provide greater precision. In some areas, we have reduced the number of measures because the proponent closed the gap in question. In other areas, we recognized previous duplication in our approach.

PART 2

Traditional Knowledge

The Tłı̨chǫ Government shared its perspective on the role of the land, in this case specifically the critical cultural area around Hislop Lake and Marian River (Gòlotı Deè), at the public hearing on October 11, 2012. In the closing comments to the hearing, Grand Chief Eddie Erasmus explained:

There are no stories without the lands. The land is the base for our identity, our culture, our language and way of life. The land is the story, and the people's activity on the land reminds them of those stories. The land cannot be separated from language, culture and way of life. One can't be separated from the other...

The Tłı̨chǫ Government went on to identify the substantial nature of the project now before the Review Board, in the context of Tłı̨chǫ lands and resources. As the Grand Chief said:

We're talking about a form of impact that's probably one of the biggest ones in our own history, an impact that is going to alter the kind of life that we know today. Mr. Chair, Tłı̨chǫ Government has suggested some measures and conditions for this proposed mine. This has been hard work. It should be. If this mine goes ahead, it will be the first modern mine in the Tłı̨chǫ lands. What we say and do now is very important, and how we go ahead. This will set a precedent for the future. (October 11, 2012)

The Tłı̨chǫ Nation Traditional Knowledge and Use Study (TKU, 2012) predicted that:

1. The proposed NICO mine will likely impact on traditional use and knowledge;
2. The proposed NICO mine will likely impact on transportation pathways;
3. Tłı̨chǫ citizens, in particular harvesters, will likely suffer the loss of culturally important subsistence resources (fish, medicine, habitat) through a complex variety of means, including reduced numbers of animals due to disturbance and other effects pathways,

potential decreased health status of key species, perceived risk, and reduced enjoyment of the cultural landscape due to industrialization of the land;

4. This could lead to decreased use of traditional foods and water by Tłı̨chǫ citizens; and
5. Decreased intergenerational knowledge transfer and a potential disconnection from this critical portion of the Tłı̨chǫ cultural landscape. When people travel less to this place, the names and information about the area will not be passed on by families to their children. This will likely lead to the knowledge being lost, in addition to causing families to spend less time together on the land speaking their language and passing on skills (Tłı̨chǫ TLU/TK study, p. 50).

The public hearings also revealed a strong fear present about all these types of losses in the Tłı̨chǫ communities. There were strong concerns relayed both in the Traditional Knowledge and Use Study and in the public hearings from Tłı̨chǫ citizens about the potential risks associated with the proposed development for the lands, waters and wildlife in the place where people can survive, or ase ede t'seda dı̨le. These quotations illustrate these themes:

Everything comes from water. It all comes from water. When I listen to this water hearing it scares me. (Julie Mackenzie, October 11, 2012)

I'm so scared to work over there, but I took a chance. Now I just don't know how it's going to be for the land and the water. As everybody knows, we drink water, we live by water. The wild animal live by the water, all the plants on this earth. As a human being we go after money; the money doesn't last long. Our life doesn't last long, animals life. Me, nothing, just the water that can keep everybody alive. (Therese Mackenzie, October 11, 2012)

And because the mine is developing in the in the area, it might create fears of people not going to that area, or even in – not discouraging, not using that area because of possible fears of contamination of fish, water and even caribou and some of the migratory animals in that area. (John B. Zoe, October 11, 2012)

We're fearful of drinking the water as it is. People get sick when they drink the water, their stomach ulcers, and also their throat, and also – all the Tłı̨chǫ citizens with – there's stomach problem within our – maybe it's because of the water. (Mary Jane Daniels, October 11, 2012)

Given the critical nature of the ase ede t'seda dı̨le to Tłı̨chǫ citizens, no industrial development should proceed there without the highest environmental standards in place for management and monitoring by and with the Tłı̨chǫ Government, as well as appropriate protections for the cultural values imbued on the land by countless past and the present generations of Tłı̨chǫ people.

Need for Ongoing Traditional Knowledge Research

If the proposed mine is to proceed, it will be vital to maintain confidence in traditional use and foods, as well as to maintain constant vigilance and trust in the region. This will require innovative measures and ongoing research and commitment to the region.

Proponent Commitments

Section 8.4.2.3 of the proponent's Developer's Assessment Report (DAR) identifies that the proponent will "Consider where appropriate, traditional knowledge." In addition, the proponent commits to "incorporate traditional knowledge into monitoring programs at the NICO Project." (List of Commitments, Golder Associates, 2012, p. 29, Commitment #31).

The Tłıchǰ Government notes that Fortune Minerals stated at the public hearings that, "Fortune is not in a position to make a comment or pose questions to these added recommendations at this time."

At the time of the issuance of the Tłıchǰ Government's traditional knowledge recommendations at the public hearings (October 11, 2012), there was some discussion and feedback from other parties that benefited the Tłıchǰ Government greatly in defining with more precision the appropriate wording of recommendations based on the Traditional Knowledge and Use Study. As a result, the wording is different in this Closing Argument from that earlier iteration. The intent of the recommended measures – the avoidance of significant adverse impacts on Tłıchǰ land use and cultural values in the ase ede t'seda dıle area – has not altered.

Gaps

The Tłıchǰ Government is concerned that the NICO Project will introduce a new, large alienation zone to the Tłıchǰ region, similar to the Rayrock zone, which is now considered a lost area where virtually no traditional use activities occur and where there is little likelihood of future use due to the contamination, risk and stigma attached to the area. Tłıchǰ citizens spoke frequently both during the TLU/TK study and at the hearings about the loss of use because of perceived and real risk in the Rayrock region and concerns about similar alienation occurring in ase ede t'seda dıle should the NICO Project proceed. This alienation could easily extend far beyond the leased lands of the project, should area waters be impacted in the Marian River watershed. The Tłıchǰ Government and Tłıchǰ citizens cannot risk suffering the loss of another area of ancestral lands in this critical cultural area.

In the hearings, Tłıchǰ citizens did not separate historic mining from modern mining.

Look at the old Rayrock Mine because that's always in the back of their mind. (Joe Mantla, October 11, 2012)

It is an emotional topic, with people speaking of deaths from cancer, contaminated water, and dead animals. There has been no reconciliation or accommodation of the harms of historic mining, namely from the Rayrock or Colomac mines. People cannot separate themselves from this past, and the Tłchq Government feels they should not be forced to. Instead, strong communication and mitigation measures are required to mitigate against this kind of transference of the historic lessons to the modern experience of mining.

The best way to avoid the risk of alienation, should the project proceed, is for the Tłchq Government and Tłchq citizens to be directly involved in both environmental monitoring on the ground and continued cultural activities in the ase ede t'seda dıle area, throughout the life cycle of the project. It is with this need for a continued Tłchq presence and meaningful engagement in project monitoring and management that the following measures are recommended.

Recommended Measures

To avoid the currently unacceptably high and likely risk of adverse impacts on Tłchq cultural practices and traditional harvesting in ase ede t'seda dıle area, including the vital importance of maintaining the stories, histories, and place names of the Tłchq people, Tłchq Government recommends that the Review Board impose the following measures in its environmental assessment report (REA):

TG MEASURE 1: The proponent will fund additional traditional knowledge and use studies, including extensive and dedicated ground truthing, run by and for the Tłchq Government, in the mine lease area and NICO Project Access Road (NPAR) zones, prior to the finalization of the mine plan and permitting process.

TG MEASURE 2: The proponent will fund ongoing traditional knowledge and use studies in ase ede t'seda dıle throughout the life of the mine with a schedule, format and budget to be negotiated between the proponent and the Tłchq Government. These ongoing research studies will contribute to the ongoing confidence and use of the Tłchq people throughout the mine life and into the future.

Core areas for research include:

- Critical wildlife and vegetation habitat study;
- Medicinal and plant use study; and
- Documentation and mapping of all core names and stories.

TG MEASURE 3: The proponent will fund independent Tłchq monitoring, integrated with other monitoring in the region, that has strong engagement of the families that use the region, youth and elders, including:

- Long-term, community-based water monitoring, upstream and downstream, and in Behchokò, in collaboration with the Marian River Watershed Program, including seasonal monitoring (so that both running water and snow are monitored); and
- Wildlife monitoring with participation and direction of Tłıchǫ Lands Department, including but not limited to:
 - Responsive testing when elders and land users move through an area and observe differences (or problems such as a dead animal); and
 - Provisions for families that use the area to have a voice in the wildlife monitoring program. (See also TG Measure 12)

TG MEASURE 4: The proponent will fund one culture camp out on the land on k'ìàgotı, to be utilized by harvesters, families, and the Tłıchǫ Government for ongoing research, education, and traditional land use (such as those included in TG Measures 1 and 2 above).

The Tłıchǫ Government invites the Review Board to consider that if these measures are not imposed, it remains likely that significant adverse impacts on the environment will result from the project.

PART 3

Socio-Economic

Employment during operation is estimated to require 188 jobs at the peak (after underground is complete) (Fortune Minerals socio-economic presentation, August 31, 2012). The proponent has proposed flexible shift schedules for the construction period, with an as yet to be determined mix of shift rotations.

The Tłı̨chǫ Government and Tłı̨chǫ citizens have been provided no concrete estimations of the employment benefits likely to accrue from the mine should it proceed. The proponent has developed no concrete targets for northern Aboriginal hires; its estimate of the likely percentage of northern Aboriginal hires appears to be between 15 and 40 per cent. If the lower percentage is the actual amount, it would be among the lowest of all mining companies currently operating in the Northwest Territories.

The proponent has estimated royalties, but statements at the public hearings were never buttressed with data or an economic analysis of the returns to the Tłı̨chǫ Government:

*And some of the things that we've measured out that just from a royalties we see over the life of mine of about approximately \$10 million being paid out to the Tłı̨chǫ government.
(Pat Maloney, August 31, 2012)*

Due to the lack of concrete estimations or targets for Tłı̨chǫ hires, the Tłı̨chǫ Government cannot estimate how much income tax revenue it may generate from the mine, funds that would be required to offset increased governance costs, especially increased strains on social and other services provided by the Tłı̨chǫ Government to its citizens as a result of socio-economic changes causes directly or indirectly, or induced by the NICO mine, should it proceed.

So when you're talking about opening a mine at Hislop Lake, you got to think twice, because this is what will – how we think. Well, we cannot exchange a big value of the land

for just the money, which doesn't – which would no doubt – it's not going to do any good for us." (Liza Mantla, August 27, 2012)

Tłıchǫ people have already experienced major out-migrations from the Tłıchǫ communities, in part because there is a lack of housing in the communities and in part related to changes that have occurred as a result of increased wage economic employment, especially in diamond mines.¹ This out-migration has impacts on the Tłıchǫ Government and the small, tightly knit Tłıchǫ communities. The Tłıchǫ Government does not collect taxation from Tłıchǫ citizens who do not live on Tłıchǫ lands, and as the communities are emptied of key harvesters, miners and other skilled people, the fabric of the community is changed.

In and out-migration from Whatı is a legitimate concern and must be proactively assessed by the proponent in close collaboration with the communities and Tłıchǫ Government. In and out-migration pressures within and between Tłıchǫ communities will be assessed by the Tłıchǫ Government with funds by the proponent. This commitment was made during the August hearings by the proponent.

In the absence of an employment modeling exercise and proper scenario analysis of whether the mine will be a net contributor to in or out-migration pressures, this portion of the socio-economic impact assessment, in the Tłıchǫ Government's opinion, remains incomplete at this late stage in the environmental assessment. The disappointing exclusion of socio-economic issues from the second round of impact reports has effectively allowed the proponent to skirt these issues, many gaps within which were identified during the technical sessions.

There remains substantial uncertainty about socio-economic issues at this time. It therefore continues to be difficult for the Tłıchǫ Government to estimate net benefits (because there is no understanding of the royalties and taxation benefits that will accrue) and because there has been poor modeling of the costs (such as costs that would be assumed in services to manage in-migration as well as increases in social dysfunction in the region).

The Tłıchǫ Government sees this area of socio-economic modeling and prediction as fundamental, but also sees a high level of uncertainty about the predictions made. Certainly many of the predictions, in particular on social dysfunction, were challenged in the hearings. Youth in particular spoke about their concerns there would be increased alcohol and drug problems in the region.

There currently is no Impact and Benefit Agreement (IBA) held with Fortune Minerals. The proponent incorrectly suggested that a Cooperative Relationship Agreement had been signed "that establishes the path forward for further negotiations towards signing an IBA" (Fortune Minerals presentation in Whatı, August 27, 2012).

¹ The Bureau of Statistics Survey of Mining Employees (2009) reports cost of living and cost of housing as major factors in make decisions to relocate in the NWT.

The proponent makes the commitment in 16.2.4.2.5 (List of Commitments, Golder Associates, 2012) to negotiate an IBA that is satisfactory to all parties. The Tłı̨chǫ Government is convinced an IBA is necessary if this proposed mine should be permitted.

Employment

There is no estimate of actual likely local Aboriginal (i.e., Tłı̨chǫ citizen) workforce engagement, which of course would be lower than the total northern Aboriginal workforce percentage. The proponent has presented no information about the local, regional or territorial labour force currently available to work at the project, or any challenges facing this untapped workforce in terms of engaging in the mining economy; neither has the Government of the Northwest Territories (GNWT). The proponent's argument on this point is that because of the timing challenges of this mine (i.e., no one knows when it is likely to open given, for example, the lack of any proponent, which leads to uncertain timing for an environmental assessment for the necessary all-season road), it is difficult to predict the labour force that will be available at this unknown future time. As a Fortune Mineral's employee said:

And we don't know at this point in time where – where all of our employment is going to be drawing from. Because we don't know until we get closer to the hiring point of – of who's going to be available. There's obviously shifting employment numbers with other mines that are – that are being impacted by their own situations, that, you know, may free up people and then eat up people. (Pat Maloney, October 10, 2012)

Proponent Commitments

Fortune Minerals provides useful commitments in the socio-economic area for the Human Environment in Section 16 of its Developer's Assessment Report, and these are all captured in the List of Commitments (Golder Associates, 2012). Of note are commitments 16.1 through 16.4, which provide strong commitments to Aboriginal women, youth and Tłı̨chǫ men. A range of commitments in these two areas are made:

- 16.4.2.3 Mitigation measures for employment and contracting, including flexible rosters, flexibility on entry requirements, inclusion of summer students, and a strategy directed to women; and
- 16.2.4.2.4 Employment policies for Aboriginal and Other Northern Women.

Gaps

The best efforts of the proponent at socio-economic benefit maximization and adverse effect avoidance or minimization are expressed primarily as loosely worded intentions rather than concrete

commitments. In addition, the proponent's efforts to characterize potential beneficial effects are not based in a credible labour pool analysis and as such are subject to high uncertainty. Nor did the GNWT provide a detailed and in-depth analysis of the likely available labour pool. The Tłıchǵ Government is aware of the many mines that are currently operating, and is concerned there may be so many operating mines that there will be a high dependence on southern labour to construct and operate the proposed NICO mine. If this is the case, the question of net gains to the Tłıchǵ people comes to the forefront. Without further evidence of beneficial returns to offset adverse impacts, natural questions emerge about the desirability of a project that is subject to diminishing returns to Tłıchǵ citizens.

It has not been feasible, with the uncertainty and lack of labour force and other data associated with this mine, to create strong socio-economic mitigation measures. As a result, the Tłıchǵ Government recommends that the Review Board impose strong and cooperative reporting and feedback systems so that there is a good record of information each year from which to base the ongoing adaptation to ensure a strong Tłıchǵ workforce, and the types of mitigation measures that are needed to protect society and culture in the communities.

Recommended Measures

The Tłıchǵ Government recommends that the environmental assessment report require that there be reporting on the employment numbers attained at the proposed NICO mine. There is substantial uncertainty about the net benefits associated with this mine for the Tłıchǵ Government. Therefore, the Tłıchǵ Government recommends the Review Board include the following measure in its environmental assessment report:

- TG MEASURE 5:** The proponent will fund a Tłıchǵ Government study of the likely in and out-migration patterns associated with the proposed development, especially on Whatì, but including all Tłıchǵ communities.
- TG MEASURE 6:** The proponent will work with the Tłıchǵ Government to develop an effective human resources monitoring system, and this will include at base monitoring and reporting related to the numbers of Tłıchǵ citizens employed and trained, including the number of Tłıchǵ women, the advancement of Tłıchǵ people into supervisory roles, the number of summer students employed, and relevant metrics of recruitment, retention and advancement of Tłıchǵ citizens.
- TG MEASURE 7:** The proponent will develop adaptive shifts and flexible rotations to accommodate Tłıchǵ women in particular.

Social Pressures

Concerns regarding social impacts and changes to the community, culture, language and way of life were made clear in the public hearings in both Whatì and Behchokò.

Yes, there will be benefits, but the way of life would be altered forever, and the adjustments would even be greater than the best socio-economic plans would not be able to address. (John B. Zoe, August 27, 2012)

Things will change drastically with an all-season road. Drugs and alcohol will come over and, like, make things ten, twenty times worse than it is now. We have young people drinking every single weekend because they're getting booze by the plane, by the boats, any way they can get it. This road will make it so much easier to get it here. (Janelle Nitsiza, August 27, 2012)

Proponent Commitments

Under 16.2.4.2.3 of the List of Commitments, the proponent proposes to use an Employment and Family Assistance Program (EFAP), to be offered to all employees when working at the mine site, and suggests they will use aboriginal language speaking counsellors.

Gaps

The Tłchq Government operates a daycare as well as providing social/wellness programs in the community of Whatì. Tłchq Community Services Agency provides health, education and social services. It will be vital to ensure strong services and infrastructures are available to families. No real analysis of programing, infrastructure or services was made during the course of this EA.

The Tłchq Government has not seen any evaluation of the proposed EFAP program (or indeed of any of this type of program in the north), but does know from experience that the programs offered by and for Tłchq people are the type of programs that work well. For example, the land can be an excellent counsellor, as are elders when they are out on the land.

Recommended Measures

TG MEASURE 8: The proponent will work with the Tłchq Government to provide adaptive support to social wellness programming, in partnership with the Tłchq Community Services Agency regarding health, education and social services.

TG MEASURE 9: The proponent will fund and support on-the-land counselling programs, and prioritize them over dependence upon standard EFAP programs delivered through services in Yellowknife or through telephone-based counselling.

The Tł̓ch̓q̓ Government invites the Review Board to consider that if these measures are not imposed, it remains likely that significant adverse impacts on the environment will result from the project.

Water Quality

Water quality is vitally important to the Tłıchǫ People and is protected under Chapter 21 in the Tłıchǫ Agreement. Water was the topic of most frequent discussion in the Behchokǫ and Whatı public hearings.

We care for all the waters, especially here within our Tłıchǫ lands. We are definitely impacted as we are downstream from the mine project. The North – our North, with all the lands, water and rivers, and shared with the animals which we have coexisted with since the beginning of time. Our lands and water are beautiful and pure, some might say virgin lands. We always known it to be normal as we travel from one place to another. We could drink directly from many lakes for refreshments. It was Chief Monfwi’s wish to live in the area due to good fishing, good water and was in the middle of various routes to other important areas for the Tłıchǫ. (Zemie Daniels, October 11, 2012)

I just wanted to talk about the water. We all know that water is very important. There’s countries all over who do not have water, who would love to have our clean, fresh water. Ten years, fifteen years from now, what is our water going to look like? If we pollute our water where are we going to get our water from? (Julia Mackenzie, October 11, 2012)

The Marian River watershed, including Burke Lake (Datotı) is intrinsically valuable to the Tłıchǫ people. The Tłıchǫ wish to continue to use Datotı for cultural and subsistence purposes, as suggested by one young woman who was raised in the area, and wants to take her own young sons there once they are old enough:

My parents, and up until my dad got sick in 1999 – he passed away, and that’s when I stopped going there because there’s no one to take my family out there. And then so I resided in Behchokǫ. And so – and now I got two little boys. They’re – let’s see, Gary Issac Zoe-Chocolate, he’s three. And I’ve got another little boy, his name’s Ibay Jeremiah Johnny Zoe-Chocolate (phonetic), and he’s six years old. And as soon as they’re strong enough

and able enough, I really want to bring them out there. And I have plans for them to be out there in Got'tia. (Alice Zoe Chocolate, October 11, 2012)

After listening to the information provided during the hearing, the Tłı̨chǫ Government recommends that five measures related to water quality objectives be included in the environmental assessment report, related to traditional water use – current and future – as well as surface water quality objectives.

Traditional Current and Future Water Use

Traditional trails and transportation corridors are vital, and people use the water as they come through the area for many purposes. The Tłı̨chǫ Government wishes for there to be continued use of this area now and into the future, so that people can feel safe to:

- Drink water when they travel through;
- Canoe to all the areas travelled to by the ancestors;
- Eat the fish in all the areas; and
- Make snow tea as they travel through the area. (Adapted from Tłı̨chǫ Traditional Knowledge Mitigation Measures, Submitted October 10, 2012)

Chapter 21 of the Tłı̨chǫ Agreement has a section on Water Rights and Management. Specifically, 21.2.3 states that:

The Tłı̨chǫ First Nation has the right to have waters which are on or flow through or are adjacent to Tłı̨chǫ lands remain substantially unaltered as to quality, quantity and rate of flow when such waters are on or flow through or are adjacent to Tłı̨chǫ lands.” (Tłı̨chǫ Agreement)

In this section, the phrase used is “substantially unaltered.”

In keeping with traditional values of the Tłı̨chǫ People and the Tłı̨chǫ Agreement, and the need to protect the water and the land for future generations, the REA should include water quality goals that describe the level of protection to be afforded to the aquatic receiving environment. As one young man said in the hearings:

Our normal drinking water from the various lakes should remain as that: normal. Not polluted or contaminated as many southern lakes that are no longer drinkable, swimmable nor fishable for consumption. I want the lakes and rivers to remain normal. Masi.” (Zemie Daniels, October 11, 2012)

Proponent Commitments

In Commitment 7.12, the proponent provides a discussion of the specific objectives of an aquatic effects monitoring program, including: providing information to test predicted impacts; incorporating traditional knowledge; proposing action levels or adaptive management triggers; designing studies and data collection protocols that are consistent with other programs; and considering existing regional and collaborative programs.

Gaps

Monitoring and appropriate reaction to monitoring results is key to ensuring that the waterways remain protected for traditional uses now and into the future.

Commitment 7.12 suggests that the traditional knowledge of the Tłıchǫ people will be included where applicable and available. The knowledge of the Tłıchǫ people comes to the fore only in situations where there is trust and a distinct purpose. With the very intensive commentary by Tłıchǫ citizens in the public hearings on their concerns for water, it is vital that confidence in water be maintained through Tłıchǫ Government controlled community-based water monitoring programs that connect into the Marian River Watershed Program.

Recommended Measures

The proponent's commitments do not ensure that traditional use of Burke Lake and the downstream watershed will remain protected. To address the likelihood of significant adverse impacts, the Tłıchǫ Government recommends the following measures be included in the environmental assessment report:

TG MEASURE 10: The proponent will specifically set out the objectives that, for all areas outside of the mixing zone, which includes all of Burke Lake (Datotı) water quality changes throughout all states of project (construction, operation, active closure, post-closure) will not significantly negatively affect:

- Benthic invertebrate and plankton abundance, taxonomic richness or diversity;
- Fish abundance or diversity or fish consumption at current levels;
- Areas utilized as traditional drinking water sources; and
- Mammals or wildfowl using the area as a drinking water, food source or habitat, or the current ability for people to harvest these animals.

TG MEASURE 11: The proponent will ensure that final site-specific water quality objectives (SSWQOs) are based upon the Tłı̨chǰ Peoples' traditional use of the downstream aquatic environment (including Burke or Datotı), now and into the future.

TG MEASURE 12: The proponent will ensure that the Tłı̨chǰ Government and Tłı̨chǰ citizens actively participate in the development, approval and implementation of the environmental monitoring program, as the downstream receiving environment is located on Tłı̨chǰ owned lands, with mandatory warning of spills and strong communication with the Tłı̨chǰ Government.

Surface Water Quality Objectives

Fortune Minerals proposed site-specific water quality objectives (SSWQOs) and discussed how they would be applied at the site. During the hearing, it was clarified that all of Peanut Lake will be considered a mixing zone.

Further work on the SSWQOs is required; this corresponds with the position of Environment Canada presented in its technical report. Environment Canada did not agree with the proposed SSWQOs, and recommended they not be used as a basis for assessing receiving water impacts, nor for developing effluent quality criteria. However, Environment Canada was of the opinion that this type of work could be delayed until the regulatory phase (Environment Canada Technical Report, June 15, 2012).

Aboriginal Affairs and Northern Development Canada suggested in its technical report dated June 15, 2012, that qualitative measures be expressly included in the REA to assist in the development of appropriate SSWQOs. The Tłı̨chǰ Government reviewed these qualitative expressions and agree they should be incorporated into the REA as a foundation for future work on the SSWQOs (Tłı̨chǰ Government Water Quality Presentation, August 30, 2012).

The Tłı̨chǰ Government also points out that the first downstream receiving body changes at different phases in the mine life cycle and the SSWQOs need to be re-evaluated at each of the phases to ensure they remain appropriate. A one-stop process is simply not suitable for the designs thresholds presented by the proponent.

Proponent Commitments

Fortune Minerals has made some commitments on water quality, including:

- Thresholds will be developed according to the principles and approach outlined in the Water and Effluent Quality Management Policy and will be identified in the permitting phase;

- Commitment #11: Further discuss the determination of site water quality objectives and significance of water quality impacts in relation to the Tłı̨chǫ Agreement with the Tłı̨chǫ Government; and
- Commitment #13: Develop a formal surveillance program for mine operations.

(All identified in the List of Commitments, Golder Associates 2012, p. 27.)

Gaps

Since Burke Lake, which is located just downstream of Peanut Lake, is culturally important, the Tłı̨chǫ Government considers the setting of the SSWQOs in a rigorous and thorough manner to be critical to protect Burke Lake. In addition, the Tłı̨chǫ people must be confident that the monitoring program will be sufficiently robust to detect any exceedances of the SSWQOs in a timely manner. For these reasons, the Tłı̨chǫ Government remains unconvinced there are sufficient protections provided in the commitments (11 or 13) or in the assurance that this will be managed in the permitting phase.

Recommended Measures

Tłı̨chǫ principles are conservative and precautionary because future changes in or pressures to watersheds cannot be known with certainty. Therefore, the Tłı̨chǫ Government recommends that the Review Board impose the following measures:

TG MEASURE 13: The proponent will consider, in deriving the SSWQOs:

- Expected receiving environment water quality based on the effluent quality (using the practically achievable concentrations demonstrated for the reverse osmosis effluent treatment system and/or the expected performance of the wetland) and dilution within the mixing zone;
- Existing background concentrations;
- Canadian Council of Ministers of the Environment guidelines for the protection of freshwater aquatic life;
- Health Canada drinking water quality guidelines; and
- Review of available toxicity literature and/or developing new toxicological information, conducting of ecological risk assessments, and other investigations

TG MEASURE 14: The proponent will apply SSWQOs appropriately at all phases in the mining lifecycle, including operations, active closure and post closure, and will re-

evaluate SSWQOs when the first downstream receiving water bodies change during the course of the mine cycle.

The Tłıchǫ Government invites the Review Board to consider that if these measures are not imposed, it remains likely that significant adverse impacts on the environment will result from the project.

Closure

With an estimated mine life of only 18 years, the legacy of the proposed mine will soon be upon the Tłıchǵ people. What this legacy looks like and how it will impact Tłıchǵ citizens living in the four communities surrounding the proposed mine site will depend primarily on the success of the closure plan. The success of the closure plan in turn depends on designing the mine with closure in mind and adaptively managing the site during planning and operations to maximize the success of closure. Adaptive management requires appropriate monitoring during operations.

The Tłıchǵ Government notes that residents of all four communities have raised public concern about the potential long-term effects of the project on water and wildlife in the heart of the Tłıchǵ Region.

The Tłıchǵ Government fully accepts that co-disposal and wetlands treatment are good technologies that have the potential to be successful. However, many uncertainties and knowledge gaps remain with the design and operation of these two experimental technologies in the north.

After closely examining all of the information on the public record and listening to the information provided during the public hearings, the Tłıchǵ Government recommends that four measures related to co-disposal and closure be included in the REA to address the uncertainties associated with these technologies, which do not have any direct analogues in the climate and environmental conditions of the project area.

Co-Disposal Issues

The proponent proposes to use a co-disposal facility (CDF) in place of having separate storage facilities for mine rock and tailings. The proponent argues that co-disposal will work in the north; however, case studies provided to support their arguments are not direct analogues.

Proponent Commitments

The proponent makes commitments regarding the co-disposal facility, including in relation to:

- Maintaining the physical stability of the CDF;
- Monitoring the volume and chemistry of the leachate from the three cells (to be designed over the next few years);
- Development of test plots to select suitable re-vegetation techniques;
- Including the Tłı̨chǫ people in consideration of the vegetation cover;
- Progressive re-vegetation;
- Covering the CDF; and
- Design of a CDF performance monitoring program. (Table 1-2 Post-Developer's Assessment Submission: Summary of Commitments by Category, pp. 22-25).

Gaps

Uncertainties with CDF performance remain because co-disposal, as proposed by Fortune Minerals, is new technology for Canada's north and thickener performance is key to the success of CDF performance (i.e. controlling water volumes and tailings placement in the CDF) and must be monitored carefully, among other technical issues. Operating on their own, this junior mining company with limited research and development capacity and minimal financial flexibility may not be able to manage all the complex and potentially costly technical issues associated with building, operating and, as necessary, revising, two major new experimental technologies simultaneously. Major challenges will almost certainly arise, and only dedicated independent review and study of the performance (including regular inspections of the facilities) will ensure that ongoing problems will be caught and fixed during the design, construction and operation of the CDF.

Fundamental changes to landforms, whether by mechanical means, such as creation of open pits and new hills for a co-disposal facility, or through chemical changes, as are likely to be encountered in the wetlands complex contemplated by the proponent, are of the utmost concern to Tłı̨chǫ citizens. Tłı̨chǫ people know themselves, know where to hunt, know their history, and know their connection to the land through visible and other sensory relationships with country. When these things change, there is a very real risk that values imbued on the land by ancestors and through oral history and experience can be lost, to the detriment of the culture and its holders.

The proponent has suggested that the summary of examples it provided during the technical hearings (see Golder Associates 2012, Summary of Co-disposal Cases presented in Technical Hearings) provides substantive detail of where co-disposal has worked in similar climatic conditions. The Tłı̨chǫ Government disagrees. There is no existing example of a CDF working in a northern

region under similar climatic conditions. The table below was released in the Tłı̨chǫ Government Technical Report (June 15, 2012). In the description of each area, we reveal why the example is not relevant.

DISCUSSION OF CO-DISPOSAL EXAMPLES PROVIDED BY GOLDER ASSOCIATES (2012)		
Mine	Description of tailings and waste rock disposal strategy	Relevance to NICO project assessment
Neves Corvo Mine, Portugal	Operating conventional disposal methods since 1988; new co-disposal operation proposed to be added; partially constructed; no performance data.	Not relevant
Greens Creek, Alaska, US	Operating since 1989; uses filtered tailings disposal with segregated waste rock dump to 2009; now co-mingling waste rock and tailings with bulldozers; lab geochem testwork predicts improved drainage quality; no field tests; no actual environmental performance results.	Not relevant
Cerro de Maimon, Dominican Republic	Co-disposal of ARD tailings and waste rock is proposed; facility not constructed yet; field tests of disposal methods revealed co-disposal of thickened tailings and waste rock would not be effective; selected inter-layering of rock and tailings instead; no environmental performance results.	Not relevant
Krumovgrad, Bulgaria	Mine not operating yet; proposed concept uses paste tailings in waste rock cells similar to NICO; no performance data.	Not relevant
Nunavik Nickel Mine, Quebec	Mine not operating yet; codisposal of ARD tailings and waste rock is proposed for two constructed cells in waste rock; no performance data.	Not relevant
Unnamed Mine, South Africa	Conventional segregated waste disposal mine; major expansion commenced in 2006 to incorporate co-disposal of 18% of tailings stream with overburden waste; no environmental performance data.	Not relevant

Brukunga Remediation Project, Australia	Abandoned mine site with ARD legacy; plan is to remediate site by co-disposing tailings and waste rock and compacting them, with limestone addition for neutralizing capacity; will require a containment dam to prevent seepage; not operational; field tests showed that sulphide oxidation rates could be reduced to 'effectively zero' if wastes remain 'near-saturated.'	Not relevant
Snap Lake, NWT	Paste tailings deposited into specially constructed cells was the original plan; tailings slurries with high water content are the reality; not clear if small portions of waste rock are being co-disposed or simply dumped in the cells; situation not comparable to NICO concept; no performance data provided.	Not relevant

Recommended Measures

To prevent likely adverse impacts on the environment and in partial response to statements of public concern, the Tłı̨chǫ Government recommends the Review Board include the following measure in its environmental assessment report:

TG MEASURE 15: The proponent will provide a mechanism for continual monitoring and assessment of thickener and CDF monitoring, and will establish and fund an independent peer review committee, such as that used for the Island Copper Mine (See Undertaking #2 regarding Island Copper Mine), prior to the commencement of mining operations. This peer review committee will consist of engineers or qualified scientists technically capable of reviewing progress in the design of the CDF.

This peer review committee should also have a mandatory reporting requirement to Tłı̨chǫ citizens. It should be for the experimental technologies of both the wetlands and the co-disposal facility. Tłı̨chǫ people may be concerned about end use of these areas, naming of the areas, Tłı̨chǫ monitors or monitoring for these technologies, and return of key species to the landforms themselves.

The Tłı̨chǫ Government invites the Review Board to consider that if these measures are not imposed, it remains likely that significant adverse impacts on the environment will result from the project.

Wetlands Issues

The proponent proposes to treat water that comes off of the co-disposal pile with passive treatment (a system that does not require constant work by people with technology), so that the wetlands or reactors built by the proponent remove metals that could impact on the environment and human health.

The proponent suggests a wetlands system would require maintenance for 25 to 100 years and the biochemical reactor would require maintenance every 10 to 20 years.

The proponent now contends that wetlands treatment will work, but at the same time acknowledges that years of design and testing are required to prove the efficacy of this technology at the proposed site. Therefore, minimizing the amount of water flowing through the CDF is key to minimizing impacts on water quality caused by seepage from the CDF.

Proponent Commitments

With respect to wetlands design and testing, Fortune Minerals has contracted Contango Strategies Ltd. to design and test wetlands systems suitable for the proposed site.

With respect to minimizing the volume of water entering the CDF, the proponent commits to establishing a cover system of 0.5 metres of glacial till underlain by 0.25 metres of sand on the top of the CDF, and 1 metre of glacial till on the sloped perimeter dyke. The top surface of the closed CDF will be sloped at about 2% (Table 1-2 Post-Developer's Assessment Submission: Summary of Commitments by Category, p. 25).

Gaps

Despite Fortune Mineral's commitments identified above, many uncertainties about the use of wetlands remain; these need to be addressed through appropriate contingencies. The uncertainties include the following:

- Operational challenges – For example, low biochemical reaction rates; freezing of wetland media causing flows to by-pass the treatment path);
- Hydrology considerations – The highest volume of water occurs during freshet when frozen conditions may still persist, exacerbating the above-noted operational challenges;
- On-going care and maintenance – Seasonal treatment with collection and storage of water during cold months is a potential solution but will require on-going care and maintenance and as such would not be passive;

- Seepage quality – Design requirements for wetlands are uncertain at this time because seepage quality from the CDF is uncertain and will not be known until actual operations begin – long-term seepage quality from the CDF remains uncertain due to CDF performance uncertainties and waste rock characterization questions (e.g., oxygen penetration into the CDF; use of 0.3% sulphur cut-off for benign rock); and
- Long term performance – Wetland performance in extreme cold conditions is unknown and requirements for reconstruction, operation and maintenance are not well defined at this time.

Recommended Measures

The proponent’s commitments do not go far enough to allow a confident prediction that there will not likely be a significant adverse impact on the environment. To address the unacceptable risk for significant adverse impacts on long-term local water quality, the Tłchq Government recommends the Review Board impose the following measures in its environmental assessment report:

TG MEASURE 16: The proponent will provide financial assurance for the collection and mechanical treatment of seepage until such time that the testing confirms the success of wetlands. The success of the wetlands can be measured by the quality of water emerging from the wetlands and whether that water negatively impacts the receiving water bodies. (See Tłchq Government Closure Presentation, August 31, 2012.)

TG MEASURE 17: The proponent will include within its conceptual closure plan the use of an impervious cover at closure to essentially eliminate long-term seepage. (See Tłchq Government Closure Presentation, August 31, 2012.)

Waste Rock Characterization

No suitable protocols for waste rock characterization have been developed (e.g., sampling method and frequency, analytical tests, number of samples, classification criteria), although waste rock will be managed based on its geochemical properties (sulphide, sulphur, arsenic and bismuth contents). Since some of the infrastructure constructed of “benign” rock will remain on site following closure, managing waste rock during operations is critical for ensuring no subsequent acid rock drainage or metal leaching issues occur in the long term.

Fortune Minerals contends that 0.3% sulphur is a safe cut-off value. There is no data presented anywhere on the public record to support this contention. The data the Tłchq Government and its consultants have reviewed is insufficient to support the contention and in fact demonstrates that

this is not the case (SENES Consultants Limited, Memorandum to the Kwe Beh Working Group, January 12, 2012).

Proponent Commitments

At the present time, Fortune Minerals commits to a monitoring plan to be developed during operation. Mine rock contact water will be assessed as part of the environmental monitoring plan (see Mine Rock Monitoring Plan, Appendix 3.1 of the DAR). The monitoring plan is expected to include: testing for ARD potential and testing to characterize the type of mine rock.

The geochemical criteria developed to classify the rocks will be confirmed prior to their use during operations (Table 1-2 Post-Developer's Assessment Submission: Summary of Commitments by Category, p. 27).

Gaps

Fortune Minerals contends that no rock samples below 0.3% sulphur produced acidity. This statement is hard to justify given that only 3 samples were Net Acid Generation (NAG) tested and all samples contained less than 0.05% sulphur and had Acid Neutralization Potential (NP) / Acid Generation Potential (AP) ratios of >7.0. It is inexplicable why the proponent chose to test only three samples, especially samples with virtually no sulphur and very high NP/AP ratios. These samples were almost certain to produce non-acid conditions in a NAG test.

There is limited data from humidity cells and results are summarized in Table 5-15 of Annex A to the Developer's Assessment Report – Geochemical Characterization of Waste Rock, Ore and Tailings. As shown on the Table, 12 samples were tested. One sample contained 0.27% sulphur and one sample 0.49% sulphur. Both samples at 0.27% sulphur and 0.49% sulphur generated acid during the test. Of the remaining samples, one sample at 0.04% sulphur was projected to produce a small amount of acid (i.e. this sample is net acid generating based upon this test).

Without an appropriate sample size, the use of non-representative samples, and non-standard methodologies, the proposed sulphur content cutoff value for mine rock classification cannot be defended. From a closer look at the data one could conclude that rock samples with less than or equal to 0.04% S are unlikely to produce acidity, not those with less than or equal to 0.03% sulphur. Of samples tested at >0.04% sulphur, all were acid generating in the humidity cell test.

Another consideration is the form of the NP minerals and their reactivity. For a conservative assessment, one would use carbonate NP (CaNP) in the initial assessment of Net Neutralization Potential. This is done because CaNP is reactive while other minerals contributing NP such as silicates react more slowly. If one looks at acid generation potential using CaNP, many samples at low sulphur (<.3 %) content would be classified as acid generating. As a general comment CaNP levels are very low. No samples of waste between 0.04 % sulphur and 0.27% sulphur were tested using NAG or other kinetic test to confirm whether samples with low CaNP would be acid generating.

Since no samples of waste rock between 0.04 and 0.3% sulphur have been NAG tested, the use of 0.3% sulphur content as a classification criterion for mine rock cannot be supported. At best one could weakly support a cutoff of 0.04% with an NP/AP ratio of >7.

Recommended Measures

The proponent's commitments do not go far enough to support a conclusion that there will not likely be a significant adverse impact on the environment from acid generating waste rock. Given the long-term temporal scope of potential effects, the critical context in which the effect would occur (waters essential to the Tłı̨cẖo people), and the potentially high magnitude of adverse impact outcomes if there is substantial acid mine rock generation, it is absolutely essential that proper management and monitoring systems to reduce and control acid rock generation are in place from the outset, should the project proceed.

To address the unacceptable risk of significant adverse impacts, the Tłı̨cẖo Government recommends the Review Board impose the following measure in its environmental assessment report:

TG MEASURE 18: The proponent will include suitable protocols for waste rock characterization, subject to approval by the MVLWB. (See Tłı̨cẖo Government Presentation, August 30, 2012).

Thiosalts Formation

The issue of thiosalts, which are sulphur oxides, was raised. Fortune Minerals state they are not expected. To the knowledge of the Tłı̨cẖo Government and its consultants, this will be the first base metal mine that will not produce thiosalts by alkaline oxidation in the process plant. The proponent suggests they will deal with the problem if and when it arises. However, this simple statement leaves substantial concern given that no real reasonable management strategy for thiosalts has been developed after 40 years of study.

Proponent Commitments

Fortune Minerals makes no commitments with respect to thiosalts.

Gaps

Thiosalts are formed during milling of sulphidic ores and, when they enter a water environment, they oxidize and form acid. This can impact on seepage quality and tailings water quality. Thiosalts do not appear to be assessed in any of the testing provided in the DAR or subsequent documentation and as

such their level and effects are unknown. The consultant to the proponent made the following statement in relation to thiosalts at the public hearings:

And what happens when those thiosalts would hit a wetland is, instead of oxidizing, they may oxidize fully to a sulphate or they may reduce fully into a – back into a sulphide mineral, which get – would get retained in the soils of the wetland. So we don't expect that thiosalts, even if they are produced in the – and that's something that would be monitored for, we don't expect that they would persist in the environment. Even if they did persist in the environment they would simply revert to a sulphate form in the environment. Now the trouble is that during that process some acidity may be released, so a very simple solution to that would be to add some alkalinity during the process. So you add a little bit of neutralizing agent during the process to counteract the acidity that might be produced with the thiosalt oxidation. (Public Hearing Transcripts, August 31, 2012)

The Tł̓ch̓q̓ Government notes that this amounts to a recognition by the proponent that thiosalts may well be formed, which contradicts previous information provided by the proponent. Nonetheless, there is no commitment to the reduction, management or monitoring of thiosalts by the proponent. This is a concern because thiosalts can create acidic conditions once they enter the water environment.

The Tł̓ch̓q̓ Government also notes that this is an area in which the proponent would benefit greatly from review by the independent peer review committee.

Recommended Measures

The proponent's analysis and commitments do not go far enough to draw a conclusion that there will not likely be a significant adverse impact on the environment from thiosalts formation. To address the unacceptable risk of significant adverse impact, the Tł̓ch̓q̓ Government recommends the Review Board impose the following measure in its environmental assessment report:

TG MEASURE 19: The proponent will include monitoring, assessment and management of thiosalts in an independently peer reviewed mine waste management plan, to be approved by the MVLWB prior to the start of milling.

The Tł̓ch̓q̓ Government invites the Review Board to consider that if these measures are not imposed, it remains likely that significant adverse impacts on the environment will result from the project.

PART 6

Caribou

The intimate connection between the Tłıchǫ and barren-ground caribou cannot be understated, as has been underscored throughout this environmental assessment process (e.g., Hearings Transcript, August 27; Ası Edee T'seda Dıle: Tłıchǫ Nation Traditional Knowledge and Use Study, submitted September 15, 2012; statements of Chiefs and Tłıchǫ people at Public Hearings in Whatı, Yellowknife and Behchokǝ).

Caribou are essential to Tłıchǫ language, culture, and way of life. Continued existence and availability of caribou harvesting is of critical importance to the Tłıchǫ Government and the Tłıchǫ citizenry.

The precipitous decline of Bathurst caribou – from over 450,000 in 1986, to approximately 126,000 in 2006, and approximately 32,000 in 2009 – was set out for the Review Board in the Tłıchǫ Government's presentation on Tłıchǫ and Caribou, August 30, 2012. The decline of the Bathurst caribou herd and the restrictions of harvest – to 150 Bathurst caribou for Tłıchǫ communities and 150 for the Yellowknives Dene First Nation (YKDNF) – has led to sacrifice and challenges for Tłıchǫ citizens (Hearings Transcript, August 30, 2012, p. 223). The proposed development is occurring in a context in which there are already substantial impacts existing on the Tłıchǫ people and environment.

In terms of context, this means that even prior to the introduction of a new development like the NICO Project, public concern about caribou was already beyond a threshold of significance. The same can be stated for impact significance: the declining population health status of the caribou that Tłıchǫ citizens rely upon has created a pre-existing, significant adverse impact from biophysical, socio-economic, and cultural perspectives.

The Tłıchǫ Government, having made these difficult and costly decisions in favour of precaution in the management of caribou, considers any unmitigated and additional risk factors introduced by third parties such as Fortune Minerals – which may negatively influence caribou populations and

population health – to be unacceptable at this time. Therefore, the Tłıchǫ Government urges the Review Board to adopt a precautionary approach to the identification, characterization, and management of potential impacts on this most vital resource.

Bathurst Caribou Issues

Without proper mitigations, the proposed NICO project – together with related road and cumulative impacts – will likely add additional, unacceptable risk and significant adverse impacts on the continued existence and use of Bathurst caribou by the Tłıchǫ, other Aboriginal people, and Northerners overall. These impacts would derive from increased sensory disturbance on caribou during construction, operations due to traffic, and the linear developments associated with the development, which are known to increase hunter access.

Proponent Commitments

The proponent has made commitments with respect to caribou (Table 1-2 Post-Developers Assessment Submission: Summary of Commitments by Category, p. 4-5). Regarding monitoring and follow up, the proponent has committed to the development of Fortune Minerals' NICO project Wildlife Effects Monitoring Program (Table 1-2 Post-Developers Assessment Submission: Summary of Commitments by Category, pp. 4-5; Developer's Wildlife Effects Monitoring Program presentation to the Board, August 30, 2012).

Gaps

Wildlife Effects Monitoring Program

The proponent has made commitments to develop a wildlife effects monitoring program (WEMP), and has similarly committed to engaging with the Tłıchǫ Government and citizens, co-management authorities, and other interested parties to develop the WEMP. The proponent has committed to hosting a workshop as a starting point for these discussions and to use this initial workshop to develop a work plan to move forward (Hearings Transcript, August 27, 2012, p. 178).

The Tłıchǫ Government is of the view that the WEMP must be developed and approved by all parties prior to the permitting process. Many commitments have been made by Fortune Minerals in the process of this environmental assessment, and the Tłıchǫ cannot risk the WEMP's design, implementation and enforcement not being of highest priority for all parties – especially Fortune Minerals. Since the proponent has not fully committed to a proper timeline for development of a coordinated and consultative WEMP, the Tłıchǫ Government is of the opinion that this requirement can only be filled through a measure, or measures, imposed by the Review Board.

If the Bathurst caribou were not in a state of significant decline, and there were not extensive harvest restrictions placed on the Tłıchǫ and others, the commitments made by Fortune Minerals in regard to caribou might have been sufficient. However, in this critical time for the caribou population, the Tłıchǫ Government strongly recommends that the Review Board, the proponent, and all parties to the environmental assessment proceed in the same fashion the Tłıchǫ Government has: using a precautionary approach.

The Tłıchǫ Government invites the Review Board to consider that if these measures are not imposed, it remains likely that significant adverse impacts on the environment will result from the project.

Enforcement of WEMP

One of the important factors regarding the WEMP is that, regardless of the intention and development of the program, the question of enforcement is a tangible and important issue. This issue was raised by the YKDFN in its questions and comments (Hearing Transcript, August 30, 2012, p. 179), supported by the Tłıchǫ Government. Concerns about whether and how a WEMP could be implemented were also supported in the public hearing on August 30, 2012 by the Department of Environment and Natural Resources of the GNWT. In that hearing (p. 273 of the transcript), ENR states that:

...such a program [the Wildlife Effects Monitoring Program] wouldn't be enforceable, I guess, by law. We have to rely on commitments and the good nature of the company to do that.

However, in ENR's response to an undertaking filed on October 2, 2012, it stated that wildlife is within the mandate of the Land and Water Board (ENR Response to Undertaking #3, October 2, 2012). The Tłıchǫ Government sees this inconsistency as a major gap in regards to the implementation and enforcement of any WEMP associated with the proposed NICO Project.

The lack of a clear enforcement mechanism for the WEMP further adds to the Tłıchǫ Government's assertion that the WEMP needs to be agreed to and in place through a multi-party process prior to the permitting stage to ensure that a monitoring program is designed that:

- Asks the right questions;
- Determines what data needs to be collected and the methods that will be used, relying on science and traditional knowledge; and
- Has the mandate, capacity and funding to follow through with data collection and incorporation of data into a broader adaptive management and decision making process.

A fully functioning WEMP will be crucial to test Fortune Minerals' predicted impacts on the Bathurst caribou herd and the management of any unpredicted impacts threatening the population health of this critical resource for the Tłıchǫ people. The WEMP needs to be developed and implemented in a

timely fashion, or the Tłıchǵ Government estimates that adverse impact on the Bathurst caribou herd will likely prove unmanageable. Without proper measures, the health and status of the population could be very hard to track.

Fortune Minerals Impact on Wintering Range of Caribou

Fortune Minerals argues in its DAR and in subsequent informal analyses (Golder Associates Memorandum, April 13, 2012) that the potential effect of the proposed mine to caribou and habitat in winter should be negligible. The proponent's conclusion was based on an analysis of satellite-collared caribou maintained by the GNWT from 1995 to 2010, and its own field data, including aerial surveys, winter track counts, and caribou fecal pellet transects from 2004 to 2010. Together, those data provided the baseline by which the proponent suggested that the area around the proposed mine (i.e., the local and regional study areas) was little used by boreal and barren-ground caribou.

However, the data used by the proponent to establish a natural baseline for winter distribution and habitat use of caribou is of limited value because the data were collected over relatively short time-frames (15 and 6 years for satellite-collars and field surveys respectively). Furthermore, the collar data were collected during a decline of the Bathurst herd and reflect a contraction in range use. Together, these issues severely limit the relevance and strength of the proponent's conclusion that the proposed mine would have negligible effects on caribou, and represents an important knowledge gap and limitation of the DAR.

In contrast, the Tłıchǵ traditional knowledge study provides a relevant, long-term baseline to develop an informed assessment of the true potential impacts of the proposed mine and associated roads on both boreal and barren-ground caribou. The Tłıchǵ traditional knowledge study clearly establishes the occupancy and use of the long-term importance of this portion of the winter range to Barren-ground caribou (Tłıchǵ TK study, September 15, 2012, pp. 12, 79). The Tłıchǵ TK study provides a relevant, long-term understanding of dynamic use of winter habitat by caribou in the area, and is an appropriate baseline from which to evaluate the potential impacts of the proposed mine over the short and long term. This traditional knowledge information helps us to understand the need for further consideration and study of the potential impacts of the Fortune Minerals project on the wintering range of the caribou, as per the following measures.

Recommended Measures

To avoid additional likely adverse impacts on already significantly impacted and critically important caribou herds, the Tłıchǵ Government recommends the Review Board impose the following measures in its environmental assessment report:

TG MEASURE 20: The proponent will test for direct and indirect effects (i.e., Zone of Influence) of the mine and associated road in a WEMP by using science and traditional knowledge to monitor distribution, abundance and behaviour of Barren-ground and Boreal caribou.

TG MEASURE 21: The proponent will, through discussions with the Tłı̨chǫ Government, other Aboriginal groups and peoples, GNWT’s Department of Environment and Natural Resources, and the Wek’eezhii Renewable Resources Board, develop, fund, and implement a community-based monitoring program that will contribute to better mitigation and understanding of cumulative effects to caribou.

TG MEASURE 22: The proponent will provide as evidence, prior to the permitting stage, the development of a Wildlife Effects Monitoring Program in a collaborative manner involving the parties and to be approved and supported by all parties. (Tłı̨chǫ Government Response to Undertaking #1, submitted September 14, 2012). The proponent will fund the WEMP including a community-driven traditional knowledge component, for the life of project; the WEMP must include best practices; it must be enforceable and follow adaptive management principles.

TG MEASURE 23: The proponent will ensure that an independent watchdog will monitor the data collected and consequent management actions.

TG MEASURE 24: The proponent will make a financial commitment to a Tłı̨chǫ wildlife and water monitoring program – on and off site including monitoring access and harvest.

Boreal Caribou

Fortunes Minerals did not consider the potential impacts of the NICO mine and associated roads for Boreal Caribou (DAR, May 2011, 8-8). Following an Information Request from the Tłı̨chǫ Government, Fortune Minerals further explained that “it is anticipated that the NICO project will likely alter the behaviour and movement of a few woodland caribou; however because of the low frequency of presence and the low number of individuals influenced, the NICO Project is predicted to have a negligible effect on the population size and distribution of the (Boreal) herd” (Information Request TG_12, December 2011). In answer, Chief Clifford Daniels explained at the technical sessions in February 2012 that:

I myself have seen Boreal caribou in the Hislop [Lake] area, and I don’t know why it is not part of the study. It should be. If there’s one, there’s probably more...the boreal caribou should be really seriously considered in this – be included as part of the study. (Technical meeting transcripts, February 7, 2012, pp. 150-151)

Proponent Commitments

Fortune Minerals explained, in its Response to TG’s Information Request 12, that:

...all mitigation to reduce effects to caribou will be equally effective for woodland and barren-ground caribou. Increased woodland caribou abundance in the study area will be detected by continual environmental monitoring; observations of caribou during the summer and fall will be assumed to be woodland caribou. Should this occur, the observations will be reported and adaptive management may be implemented through the environmental management system. (FM IR Response TG_12-1, December 2011)

Gaps

The proponent's initial dismissal of Boreal caribou as part of its study was based on limited data – in both scientific and traditional knowledge. Since then, other sources of information have come to light, including the Boreal Caribou and Boreal Caribou Habitat in Wek'eezhii (submitted to the Board Registry by WRRB, May 24, 2012). This study provides evidence that this area is part of Boreal caribou habitat. Fortune Minerals described in its response (above) that the monitoring system it will employ will adequately detect woodland caribou and any observations will be reported and adaptive management may be implemented.

The Tłı̨chǫ Government recommends that the Board consider requiring that a more rigorous study method be included to monitor boreal caribou habitat disturbance and mitigate the potentials for the NICO Project and access road to likely adversely impact Boreal caribou.

Recommended Measures

The Tłı̨chǫ Government is of the view that the proponent must implement the same measures as previously discussed in the above section in consideration of Barren-ground caribou, in relation to boreal caribou. The WEMP and cumulative effects monitoring program will be developed in a manner that considers both Barren-ground and Boreal caribou and these mitigations are required to ensure no likely significant impacts on either species.

The Tłı̨chǫ Government invites the Review Board to consider that if these measures are not imposed, it remains likely that significant adverse impacts on the environment will result from the project.

NICO Project Access Road

Fortune Minerals is proposing a 27 km access road to link the mine to a future all-weather road. There are four small stream crossings and a requirement for a bridge across Gòlotı Deè (Marian River). Related to the proposal for this access road, Tłıchq Government has identified four areas of comment: engineering, public safety, wildlife and, socio-economic.

Engineering

Fortune Minerals made commitments in relation to the construction of a permanent bridge across Gòlotı Deè (Marian River), the installation of culverts and the design and construction of the road surface. Natural Resources Canada (NRCan) and the Department of Fisheries and Oceans (DFO) have made presentations at the public hearings on these aspects. NRCan made recommendations related to impacts to water quality, terrain and soils associated with the construction and operation of the proposed access road (NRCan submission to public hearings submitted August 24, 2012). NRCan is satisfied with Fortunes Minerals' response that their recommendations will be addressed in the final road design.

The Department of Fisheries and Oceans (DFO) examined the proposed access road for potential physical impacts to fish habitat. DFO made two recommendations related to the use of its NWT Clear-Span bridge Operational Statements which include mitigations measures. They also recommended the development of a comprehensive Sediment and Erosion Control Plan for the construction, operation and decommissioning of all components of the project located near the water, including the bridge. (DFO submission to public hearings, submitted August 22, 2012.)

Tłıchq Government agrees that the mitigation measures set out by DFO are necessary and should be fully implemented to avoid, minimize and manage potential adverse impacts of the access road and bridge across Gòlotı Deè .

Tłıchǫ citizens have raised concerns about the specific location of the access road, particularly in the narrow corridor between K'ı̀àgotı and Rabbit Lake (kegloti). There may be unmarked graves in the area, according to traditional knowledge. An essential measure will be for the proponent to work with the Tłıchǫ Lands Department in comprehensive pre-construction lands surveys prior to finalizing the detailed access road location, including Tłıchǫ elders and youth in all fieldwork.

Socio-Economic

The socio-economic issues related to the access road have been addressed as part of our submission under Part 3: Socio-economic above.

Public Safety

Fortune Minerals has stated that there will be daily traffic along this access road. This will create potential public safety concerns.

FA new access road in an area in which wildlife traverses will tempt some to consider hunting directly from the access road itself. Fortune Minerals recommends a “no hunting” corridor along the access road to mitigate this safety concern (Fortune Minerals Access Road Presentation submitted August 23, 2012, Page 9). The Tłıchǫ Government agrees that a no hunting corridor will help to mitigate safety concerns. However, Tłıchǫ Government’s expectation is that this “no hunting” corridor will be a narrow strip that will follow the access road route and this consideration of the need for a “no hunting” corridor should not be misinterpreted as a decision in favour of a more general hunting ban in the area. We say this because of the recent restrictions on Aboriginal harvesting in the area that have had a deep and personal impact on Tłıchǫ people.

Wildlife

Fortune Minerals has committed to assist communities with monitoring the use of the proposed Tłıchǫ road route and NPAR if requested to do so by the Tłıchǫ Government (Fortune Minerals, Information Request Responses, TG_10, submitted Dec 13, 2011). Since this IR response, Fortune Minerals has proposed that the imposition of a no hunting corridor is sufficient to mitigate impacts on Barrenground caribou as it relates to the access road (Fortune Minerals Access Road Presentation submitted August 23, 2012, page 9).

The Tłıchǫ Government is of the view that these commitments have a narrow focus and do not consider a more comprehensive approach that will allow for immediate reaction and adaptive management decisions to be made as issues arise. The Tłıchǫ Government estimates that without the imposition of further mitigations, there will be a likely significant impact on Barrenground caribou. The Tłıchǫ Government agrees with the interpretation that in finding an impact is ‘likely’, the Review Board is making an informed subjective decision (Review Board; Operational Interpretation of Key Terminology: Part 5 of MVRMA, Page 7). In the Tłıchǫ Government’s presentation to the public hearings, the precipitous decline of the caribou was set out (Tłıchǫ

Government, Tłı̨chǫ and Caribou Presentation submitted August 24, 2012). This decline constitutes a crisis of significant proportions which resulted in the emergency actions of a hunting ban and further restrictions of harvest of the Bathurst Herd for Tłı̨chǫ and all others. There is no evidence to suggest that these low numbers are about to stabilize or dramatically improve (Tłı̨chǫ Government, Response to Undertaking #1, Submitted September 14, 2012). The existence of any new access road, including the one proposed by Fortune Minerals, introduces a new linear development that both increases predation risk and human harvesting risks on Barrenground caribou, and as such will significantly increase access to both herds.

Any increased harvesting pressures have the potential to delay the recovery of the Bathurst caribou herd and a potential to increase the harvest of the Bluenose East herd (Tłı̨chǫ Government, Tłı̨chǫ and Caribou Presentation submitted August 24, 2012). Consequently, and in the context of this precipitous decline, all proposals for further development must make as a priority the minimization of risk to the caribou. While one cannot quantify a 'tipping point' from either human, project or climate related activities that will cause an irreversible effect, it is the job of everyone to maximize the chances of herd recovery.

Recommended Measures

The Tłı̨chǫ Government recommends the Review Board impose the following measures in its environmental assessment report:

TG MEASURE 25: The proponent will ensure collaborative development by Fortune Minerals, Tłı̨chǫ Government, GNWT, WRRB, and other necessary parties, of a wildlife effects monitoring program, prior to the permitting process, along with a commitment to its implementation. This monitoring program is expected to:

- Include the incorporation of both traditional knowledge and scientific knowledge;
- Be an adaptive management approach where adaptive management implies testing the impact predictions, assessing the efficacy of the mitigation measures and adopting new approaches if necessary;
- Include best practices;
- Involve monitoring and testing site specific impacts and mitigation measures related to caribou sensory disturbance, energetic costs, an estimated ZOI, permeability of the road by caribou and harvest through all mine phases;
- Entail a site specific monitoring program that is consistent with a cumulative impact monitoring framework developed and supported by the partners – GNWT, TG, YKDFN, WRRB, CIMP (AANDC) and perhaps others; and

- Have strong community participation and a communications component to ensure that the results of the WEMP are being reported back to community members and Tł̓ch̓q Government on a regular basis.

TG MEASURE 26: The proponent will ensure avoidance of burial sites and highly valued areas in the local study area, and inclusion of elders as designated by the Tł̓ch̓q Government in the review of the access.

TG MEASURE 27: The proponent will work with the Tł̓ch̓q Lands Department in comprehensive pre-construction lands surveys (to avoid the valued cultural areas identified through TK research identified in TG Measure 1) prior to finalizing the detailed access road location, including Tł̓ch̓q elders and youth in all fieldwork.

The Tł̓ch̓q Government invites the Review Board to consider that if these measures are not imposed, it remains likely that significant adverse impacts on the environment will result from the project.

Public Concern

At the public hearings, the Review Board heard from a broad cross-section of the Tłıchǫ public, including from more than 70 citizens who spoke from their hearts. In the following quotes, which represent a slim portion of the actual statements, comment is made about how close the mine is to the community and how central the region is to Tłıchǫ identity. It is in a vital area for language, culture and way of life. It is also known for the richness of the harvest. People spoke with concern about the experimental technologies (see, for example, Lucy Lafferty's letter to the public record, October 11, 2012, in which she asks, "Who will pay for the 'Oops?'").

The vast majority of testimonials offered by Tłıchǫ citizens were not in support of this development, and they expressed significant concern. The youth, women, male harvesters and elders are all particularly concerned for their land, water, language, culture and way of life.

Youth

My main concern is for my grandchildren... I want them to know the knowledge that was passed on by our ancestors. In the area that was located for Fortune Minerals, that's one of the locations. If that comes into effect, how am I supposed to teach my children that area? It's probably one of the most beautiful areas in our Tłıchǫ lands. (April Alexis, August 27, 2012)

And I'd like to avoid this opportunity because – there's fish – the location... is right in the middle of the Tłıchǫ region. And the territorial government, federal government, they don't respect the agreements, or they don't abide each agreement. (Marvis Migwi, October 11, 2012)

Women

*I know that mining will bring in money to the people, to the company and to the governments BUT I am so afraid of the damage the mine will do to the land. **I am speaking for the land.** The land will always remain with us and K'ìàgotì is at the heart of Tł̥ch̥ land with the four Tł̥ch̥ communities surrounding it. If the heart of the land is damaged then the surrounding areas will also be damaged. (Emphasis in original, letter from Lucy Lafferty to the Review Board, October 11, 2012)*

This is where my heart is. This is where the heart of the people is, and I'm going to be giving all that up if they put up the mine. And there's plants too, some plants that are used for medicine. And the rivers, the waters that flow, that is our lifeline to survival. That was the survival for our elders... (Mary Adele Wetrade, August 27, 2012)

Harvesters

So, for example, if the road, the all-season road, is going to be open, everyone's going to share our tears. Many of us are going to have a share. If we talk and we say, we can't say yes to the mines because, you know, we have to take – we're not going to take everything out to say yes to it. We're not going to take the minerals out today. We cannot take all the minerals out today. Because we have to think about our future generation for young people. (Albert Nitsiza, August 27, 2012)

Well, I am really concerned for caribous because that is what we depended on for centuries. Since we have other mines open on our land, our caribous population has gone down. (Nick Lamouelle, August 27, 2012)

The water is going to be treated. They said that... they're going to have to treat the water forever. (George Mackenzie, October 11, 2012)

Elders

What I'm thinking about today is the Fortune Minerals Mine. That's what I'm worried about, concerned. (Alex Black, October 11, 2012)

It is a good, beautiful land, good for muskrat. We can spring the springtime, going through some lakes, going from one lake to another, small little lake. It's good for ridding, good for spring hunting, good for waterfowls such as ducks, things that we can eat, and it's a good nice rocky area. It's a good, nice country where you can spend some nights out in the land. We used to go around the Fortune Minerals mine area and we used to go to Hislop Lake, but still – I personally think that I do not want to lose my people due to the mine and how it's going to attract illness. (Louie Zoe, October 11, 2012)

On Hislop Lake, it's really a beautiful site. There so many of our people have survived. They use it just like their own freezer. It's storage, everything, for them. All kinds of animals that I've mentioned it was for them. (Melanie Weyellon, October 11, 2012)

The determination of significant public concern is a responsibility of the Review Board. The Tłı̨chǫ Government relied on the Review Board's own Operational Interpretation of Key Terminology (2006) and previous Review Board environmental assessments, and suggests the Tłı̨chǫ citizenry has expressed significant public concern.

In addition, the Tłı̨chǫ Government has identified information gaps that contribute to a high potential for public concern. The Tłı̨chǫ Government respectfully requests strong consideration by the Review Board of these two factors when making its Section 128 determination.

Summary of Recommended Measures

Traditional Knowledge

TG MEASURE 1: The proponent will fund additional traditional knowledge and use studies, including extensive and dedicated ground truthing, run by and for the Tłıchǫ Government, in the mine lease area and NICO Project Access Road (NPAR) zones, prior to the finalization of the mine plan and permitting process.

TG MEASURE 2: The proponent will fund ongoing traditional knowledge and use studies in a schedule, format and budget to be negotiated between the proponent and the Tłıchǫ Government. These ongoing research studies will contribute to the ongoing confidence and use of the Tłıchǫ people throughout the mine life and into the future.

Core areas for research include:

- Critical wildlife and vegetation habitat study;
- Medicinal and plant use study; and
- Documentation and mapping of all core names and stories.

TG MEASURE 3: The proponent will fund independent Tłıchǫ monitoring, integrated with other monitoring in the region, that has strong engagement of the families that use the region, youth and elders, including:

- Long-term, community-based water monitoring, upstream and downstream, and in Behchokò, in collaboration with the Marian River Watershed Program, including seasonal monitoring (so that both running water and snow are monitored); and
- Wildlife monitoring with participation and direction of Tłıchǫ Lands Department, including but not limited to:
 - Responsive testing when elders and land users move through an area and observe differences (or problems such as a dead animal); and
 - Provisions for families that use the area to have a voice in the wildlife monitoring program. (See also TG Measure 12)

TG MEASURE 4: The proponent will fund one culture camp out on the land on k'ìàgotı, to be utilized by harvesters, families, and the Tłıchǫ Government for ongoing research, education, and traditional land use (such as those included in TG Measures 1 and 2 above).

Socio-Economic

TG MEASURE 5: The proponent will fund a Tłıchǫ Government study of the likely in and out-migration patterns associated with the proposed development, especially on Whatı, but including all Tłıchǫ communities.

TG MEASURE 6: The proponent will work with the Tłıchǫ Government to develop an effective human resources monitoring system, and this will include at base monitoring and reporting related to the numbers of Tłıchǫ citizens employed and trained, including the number of Tłıchǫ women, the advancement of Tłıchǫ people into supervisory roles, the number of summer students employed, and relevant metrics of recruitment, retention and advancement of Tłıchǫ citizens.

TG MEASURE 7: The proponent will develop adaptive shifts and flexible rotations to

TG MEASURE 8: The proponent will work with the Tłıchǫ Government to provide adaptive support to social wellness programming, in partnership with the Tłıchǫ Community Services Agency regarding health, education and social services.

TG MEASURE 9: The proponent will fund and support on-the-land counselling programs, and prioritize them over dependence upon standard EFAP programs delivered through services in Yellowknife or through telephone-based counselling.

Water Quality

TG MEASURE 10: The proponent will specifically set out the objectives that, for all areas outside of the mixing zone, which includes all of Burke Lake (Datotı) water quality changes throughout all states of project (construction, operation, active closure, post-closure) will not significantly negatively affect:

- Benthic invertebrate and plankton abundance, taxonomic richness or diversity;
- Fish abundance or diversity or fish consumption at current levels;
- Areas utilized as traditional drinking water sources; and
- Mammals or wildfowl using the area as a drinking water, food source or habitat, or the current ability for people to harvest these animals.

TG MEASURE 11: The proponent will ensure that final site-specific water quality objectives (SSWQOs) are based upon the Tłıchǝ Peoples' traditional use of the downstream aquatic environment (including Burke or Datotı), now and into the future.

TG MEASURE 12: The proponent will ensure that the Tłıchǝ Government and Tłıchǝ citizens actively participate in the development, approval and implementation of the environmental monitoring program, as the downstream receiving environment is located on Tłıchǝ owned lands, with mandatory warning of spills and strong communication with the Tłıchǝ Government.

TG MEASURE 13: The proponent will consider, in deriving the SSWQOs:

- Expected receiving environment water quality based on the effluent quality (using the practically achievable concentrations demonstrated for the reverse osmosis effluent treatment system and/or the expected performance of the wetland) and dilution within the mixing zone;
- Existing background concentrations;
- Canadian Council of Ministers of the Environment guidelines for the protection of freshwater aquatic life;
- Health Canada drinking water quality guidelines; and
- Review of available toxicity literature and/or developing new toxicological information, conducting of ecological risk assessments, and other investigations

TG MEASURE 14: The proponent will apply SSWQOs appropriately at all phases in the mining lifecycle, including operations, active closure and post closure, and will re-

evaluate SSWQOs when the first downstream receiving water bodies change during the course of the mine cycle.

Closure

- TG MEASURE 15:** The proponent will provide a mechanism for continual monitoring and assessment of thickener and CDF monitoring, and will establish and fund an independent peer review committee, such as that used for the Island Copper Mine (See Undertaking #2 regarding Island Copper Mine), prior to the commencement of mining operations. This peer review committee will consist of engineers or qualified scientists technically capable of reviewing progress in the design of the CDF.
- TG MEASURE 16:** The proponent will provide financial assurance for the collection and mechanical treatment of seepage until such time that the testing confirms the success of wetlands. The success of the wetlands can be measured by the quality of water emerging from the wetlands and whether that water negatively impacts the receiving water bodies. (See Tłıchǫ Government Closure Presentation, August 31, 2012.)
- TG MEASURE 17:** The proponent will include within its conceptual closure plan the use of an impervious cover at closure to essentially eliminate long-term seepage. (See Tłıchǫ Government Closure Presentation, August 31, 2012.)
- TG MEASURE 18:** The proponent will include suitable protocols for waste rock characterization, subject to approval by the MVLWB. (See Tłıchǫ Government Presentation, August 30, 2012).
- TG MEASURE 19:** The proponent will include monitoring, assessment and management of thiosalts in an independently peer reviewed mine waste management plan, to be approved by the MVLWB prior to the start of milling.

Caribou

- TG MEASURE 20:** The proponent will test for direct and indirect effects (i.e., Zone of Influence) of the mine and associated road in a WEMP by using science and traditional knowledge to monitor distribution, abundance and behaviour of Barren-ground and Boreal caribou.
- TG MEASURE 21:** The proponent will, through discussions with the Tłıchǫ Government, other Aboriginal groups and peoples, GNWT's Department of Environment and Natural Resources, and the Wek'eezhii Renewable Resources Board, develop, fund, and

implement a community-based monitoring program that will contribute to better mitigation and understanding of cumulative effects to caribou.

TG MEASURE 22: The proponent will provide as evidence, prior to the permitting stage, the development of a Wildlife Effects Monitoring Program in a collaborative manner involving the parties and to be approved and supported by all parties. (Tłı̨chǫ Government Response to Undertaking #1, submitted September 14, 2012). The proponent will fund the WEMP including a community-driven traditional knowledge component, for the life of project; the WEMP must include best practices; it must be enforceable and follow adaptive management principles.

TG MEASURE 23: The proponent will ensure that an independent watchdog will monitor the data collected and consequent management actions.

TG MEASURE 24: The proponent will make a financial commitment to a Tłı̨chǫ wildlife and water monitoring program – on and off site including monitoring access and harvest.

NICO Project Access Road

TG MEASURE 25: The proponent will ensure collaborative development by Fortune Minerals, Tłı̨chǫ Government, GNWT, WRRB, and other necessary parties, of a wildlife effects monitoring program, prior to the permitting process, along with a commitment to its implementation. This monitoring program is expected to:

- Include the incorporation of both traditional knowledge and scientific knowledge;
- Be an adaptive management approach where adaptive management implies testing the impact predictions, assessing the efficacy of the mitigation measures and adopting new approaches if necessary;
- Include best practices;
- Involve monitoring and testing site specific impacts and mitigation measures related to caribou sensory disturbance, energetic costs, an estimated ZOI, permeability of the road by caribou and harvest through all mine phases;
- Entail a site specific monitoring program that is consistent with a cumulative impact monitoring framework developed and supported by the partners – GNWT, TG, YKDFN, WRRB, CIMP (AANDC) and perhaps others; and
- Have strong community participation and a communications component to ensure that the results of the WEMP are being reported back to community members and Tłı̨chǫ Government on a regular basis.

TG MEASURE 26: The proponent will ensure avoidance of burial sites and highly valued areas in the local study area, and inclusion of elders as designated by the Tł̓ch̓q Government in the review of the access.

TG MEASURE 27: The proponent will work with the Tł̓ch̓q Lands Department in comprehensive pre-construction lands surveys (to avoid the valued cultural areas identified through TK research identified in TG Measure 1) prior to finalizing the detailed access road location, including Tł̓ch̓q elders and youth in all fieldwork.