Tłı̨cho Government

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April 20, 2012

Chuck Hubert
Mackenzie Valley Review Board
200 Scotia Center
Box 938, 5102 – 50 Avenue
Yellowknife, NT, X1A 2N7

chubert@reviewboard.ca

Cc: The Kwe Beh Working Group (KBWG)

Re: Fortune Minerals Second Round Information Requests

Dear Mr Hubert:

The Tłı̨chǫ Government provides the following information requests (IR's) for Fortune Minerals. The Kwe Beh Working Group feels that this information is necessary for the purposes of the NICO project.

The Tłı̨chǫ Government and its consultants are available to discuss these IR's and their applicable rationale with the Fortune Minerals and the Mackenzie Valley Review Board.

Please be advised that the Tłı̨chǫ Government was unable to review and incorporate new information with its technical report under the timelines specified by the board.

We thank you for the opportunity to provide the requested information. If you have any questions or concerns, please do not hesitate to contact us.

Sincerely,

Laura Duncan
Tłı̨chǫ Executive Officer

Attachment to Kwe Beh Working Group – Second round Information Request Letter
April 2012

As part of the *Fortune Minerals Limited Developer's Assessment Report* (DAR), Site-specific Water Quality Objectives (SSWQOs) were developed for contaminants of potential concern (COPC). The documentation to support the SSWQOs is provided in Appendix 7.VII (Golder 2011):

> Golder Associates (Golder) 2011. *Fortune Minerals Limited Developer's Assessment Report Appendix 7.VII - Site-specific Water Quality Objectives*. May 2011

As requested, the rationale for the setting of the SSWQOs was reviewed and comments have been provided on the appropriateness of the value for each of the COPC and the justification presented.

Several of the SSWQOs need to be revisited as the proposed objectives will not, in our opinion, provide the desired level of environmental protection. In particular, the proposed selenium objective of 5 µg/L is too high, although this is not the only COPC that needs to be revisited.

As stated in Appendix 7.VII, proposed project SSWQOs were derived for the potential discharge receivers (i.e., Nico Lake and Peanut Lake). Site-specific information, such as hardness, pH, temperature, for the receiving waters were used in the selection of an appropriate value and thus these values are applicable only to these specified waterbodies.

One aspect of the development of the SSWQOs that requires additional discussion by the proponent is the level of protection intended when setting SSWQOs. For example, are the SSWQOs intended to correspond to a NOEC, LOEC, EC_{10}, EC_{20} or some other level of protection? The basis used in selecting the SSWQOs should be clearly articulated and justified. This becomes a critical factor in determining which toxicity tests should be used in the setting of the SSWQOs and whether any uncertainty factors need to be applied.

Please be advised that the Tłı̨chǫ Government was unable to review and incorporate new information with its technical report under the timelines specified by the board.

IR Number: TG 1
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: SSWQOs Developed for the Nico Project: Aluminum

DAR Section: 7
Terms of Reference Section: VII

Preamble:

The SSWQO for aluminum was set based on the equation provided by BC MELP (1994) using the measured pH from Peanut Lake and Nico Lake. The pH values provided for Peanut Lake (7.44) and Nico Lake (7.45) do not correspond to the values provided in Table 7.3-3. The discrepancy may be attributable to the use of average statistics while Table 7.3-3 summarizes the minimum, median and maximum values. The transparency of the document would be enhanced by the inclusion of the average value in Table 7.3-3; the average would also provide information on the skewness of the data.

The primary concern relative to the proposed SSWQO for aluminum is that the equation provided by BC MELP is only applicable when the pH is less than 6.5 (as correctly noted on page 7.VII.3). However, for situations where the pH is greater or equal to 6.5, BC MELP recommends a maximum concentration of 0.1 mg/L of dissolved aluminum and a 30-day average of 0.05 mg/L. Thus it is not appropriate to use the BC MELP equation to develop SSWQO for Nico Lake and Peanut Lake.

Request:

1.1 Can Fortune please use either the CCME guideline for aluminum or provide additional rationale for the SSWQO?

IR Number: TG 2
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: SSWQOs Developed for the Nico Project: Ammonia

DAR Section: 7
Terms of Reference Section: VII

Preamble:

It should be acknowledged that the U.S. EPA 2009 report, which was used as the primary source of data, is a draft.

The acceptable level of ammonia is sensitive to temperature with the acceptable level decreasing with increasing temperature. The site-specific parameters used in the calculation of total ammonia were the averages from the open-ice period. This is not necessarily a conservative approach.

Request:

2.1 Please provide additional rationale to support the use of an average temperature value over the summer period as opposed to the expected maximum temperature or alternatively a higher temperature should be used to derive the SSWQO.

IR Number: TG 3
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: SSWQOs Developed for the Nico Project: Arsenic

DAR Section: 7
Terms of Reference Section: VII

Preamble:

The value used as the SSWQO is 50 µg/L which corresponds to the EC_{50} for a 14-day test on the green algae Scenedesmus obliquus.

Request:

3.1 Can Fortune please discuss whether an EC_{50} is an appropriate basis for setting the SSWQO and why?

IR Number: TG 4
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: SSWQOs Developed for the Nico Project: Cadmium

DAR Section: 7
Terms of Reference Section: VII

Preamble:

Hardness can have a significant effect on the toxicity of cadmium. The value adopted as the SSWQO appears to be from Suter and Tsao (1996), along with the consideration of other data. However, it is unclear what the hardness values were for these toxicity tests. As Nico Lake and Peanut Lake have low hardness, this is an important consideration. The discussion could be strengthened through inclusion of the U.S. EPA water quality value for cadmium which is hardness-dependent. For example, based on a hardness of 23 mg/L (as $CaCO_3$) a value of 0.09 µg/L is derived.

Request:

4.1 Please provide further clarification to demonstrate how hardness was considered in developing the cadmium SSWQO. If hardness was not considered, the SSWQO should be revised to take into account the low hardness in Nico and Peanut Lakes.

IR Number: TG 5
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: SSWQOs Developed for the Nico Project: Copper

DAR Section: 7
Terms of Reference Section: VII

Preamble:

The use of the BLM to develop a value for copper appears to be appropriate. The results of the BLM model are very sensitive to pH. It would be beneficial to provide a summary table of the inputs used as the number of samples and values listed in the discussion does not match the information provided in Table 7.3-3. Considering the pH measurements near the minimum reported (6.06 to 6.53), it is unclear what combination of inputs would result in the copper values presented.

Request:

5.1 Please provide the combination of inputs used in the BLM in order for the proposed SSWQO to be evaluated.

IR Number: TG 6
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: SSWQOs Developed for the Nico Project: Iron

DAR Section: 7
Terms of Reference Section: VII

Preamble:

The SSWQO is based on a review by Guay et al. (2000). It is unclear from the discussion what site-specific considerations were used to modify the value from the CCME guideline of 300 µg/L.

Request:

6.1 Can you please provide additional rationale for modifying the CCME along with more detail from the primary reference source.

IR Number: TG 7
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: SSWQOs Developed for the Nico Project: Lead

DAR Section: 7
Terms of Reference Section: VII

Preamble:

The document provides a summary of the potential effects of lead. The final selected value of 7.6 µg/L is based on chronic effects in rainbow trout. It is unclear how the toxicity data for Hyalella azteca from Borgmann et al. (2005) (LC_{50} of 1 µg/L in soft water), provided in the SSWQO rationale, was considered in the setting of the SSWQO as only fish data are discussed.

Request:

7.1 Please provide further clarification as to how toxicity data for aquatic biota other than fish (e.g. Hyalella azteca) was considered in the setting of the SSWQO.

IR Number: TG 8
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: SSWQOs Developed for the Nico Project: Nitrate

DAR Section: 7
Terms of Reference Section: VII

Preamble:

The nitrate SSWQO of 133 mg/L cannot be supported by the literature database. For example, a search of the ECOTOX database revealed the following study:

> McGurk, M.D., F. Landry, A. Tang, and C.C. Hanks 2006. Acute and Chronic Toxicity of Nitrate to Early Life Stages of Lake Trout (Salvelinus namaycush) and Lake Whitefish (Coregonus clupeaformis). Environ. Toxicol. Chem. 25(8): 2187-2196.
>
> Abstract—The acute and chronic toxicity of the nitrate ion (NO_3^-) to the embryos, alevins, and swim-up fry of lake trout (Salvelinus namaycush) and lake whitefish (Coregonus clupeaformis) were tested in laboratory aquaria. The acute (96-h) median lethal concentration (LC50) for swim-up fry was 1,121 mg NO_3-N/L for lake trout and 1,903 mg NO_3-N/L for lake whitefish. The chronic (~130–150-d) LC50s for embryos to swim-up fry were 190 and 64 mg NO_3-N/L, respectively. Sublethal effects on developmental timing and fry body size were observed at concentrations of 6.25 and 25 mg NO_3-N/L, respectively, in the chronic tests. These results confirm that the Canadian nitrate water-quality guideline of 2.9 mg NO_3-N/L, which was derived from chronic tests on a temperate-zone amphibian, is applicable to the early life stages of two species of Arctic fish. However, it does not support use of the guideline for acute exposures during early life stages of salmonid fish or for acute or chronic exposures to adult fish, which are relatively insensitive to nitrate.

The results of this study indicate that effects on early life stages of fish may occur at levels well below 133 mg/L.

Request:

8.1 Can Fortune please identify an SSWQO that is protective of early life stages of fish?

8.2 Please clarify whether the SSWQO value is expressed as mg-N/L or mg-NO_3/L.

IR Number: TG 9
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: SSWQOs Developed for the Nico Project: Selenium

DAR Section: 7
Terms of Reference Section: VII

Preamble:

An SSWQO value of 5 µg/L cannot be supported; it was developed by the U.S. EPA in 1995 and does not reflect the current state of knowledge of the effects of selenium. If the approach is to adopt the currently accepted chronic water quality criterion then the CCME value of 1 µg/L is the appropriate value. Experience at other mine sites has shown that selenium levels above 1 µg/L in water can result in fish tissue selenium levels above toxicity thresholds.

Request:

9.1 Can Fortune please identify an SSWQO that is protective of fish?

IR Number: TG 10
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: SSWQOs Developed for the Nico Project: Uranium

DAR Section: 7
Terms of Reference Section: VII

Preamble:

The document indicates that there is no CWQG for uranium; however, CCME did adopt a value of 15 µg/L in January 2011. The toxicity data summary provided by CCME should be considered as there is information for Hyalella azteca (28d EC_{10} – growth of 12 µg/L) which was not considered in the setting of the SSWQO.

Request:

10.1 Can Fortune please identify an SSWQO that considers information for Hyalella azteca?

IR Number: TG 11
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: SSWQOs Developed for the Nico Project: Zinc

DAR Section: 7
Terms of Reference Section: VII

Preamble:

The SSWQO value of 110 µg/L does not reflect the database of information. A search of the ECOTOX database indicated studies where the toxicity information for fish was below the level of 110 µg/L including:

> Chapman, G.A. 1978. Toxicities of Cadmium, Copper, and Zinc to Four Juvenile Stages of Chinook Salmon and Steelhead. Trans. Am. Fish. Soc. 107(6):841-847.
>
> Cusimano, R.F., D.F. Brakke, and G.A. Chapman 1986. Effects of pH on the Toxicities of Cadmium, Copper, and Zinc to Steelhead Trout (Salmo gairdneri). Can. J. Fish. Aquat. Sci. 43(8):1497-1503.

In addition, effects on other aquatic biota have been observed at concentrations below 110 µg/L. For example Borgmann et al. (2005) provides an LC_{50} of 70 µg/L for Hyalella azteca following a 7 day test in soft water. This value was consistent with other data from a 10 day test which was presented in the paper for comparison.

> Borgmann, U., Y. Couillard, P. Doyle, and D.G. Dixon 2005. Toxicity of Sixty-Three Metals and Metalloids to Hyalella azteca at Two Levels of Water Hardness. Environ. Toxicol. Chem. 24(3):641-652

Request:

11.1 Can Fortune please identify an SSWQO for zinc that considers information for aquatic biota such as Hyalella azteca?

IR Number: TG 12
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: SSWQOs Developed for the Nico Project: Effluent Treatment

DAR Section: 7
Terms of Reference Section: VII

Preamble:

Overall, the approach taken to develop SSWQO is appropriate; however, important considerations in evaluating individual SSWQO are unclear. During the Technical Sessions, Fortune indicated that that the SSWQO apply to discharges from the site to the receiving environment (i.e. end-of-pipe); however, this is contradictory to the statements made in the DAR and in other documentation. In addition, the level of protection that the SSWQOs are meant to achieve is not discussed within the DAR.

Request:

12.1 As noted above, one aspect of the development of the SSWQOs that needs to be discussed is the level of protection used in setting the SSWQOs. For example, are the SSWQOs intended to correspond to a NOEC, LOEC, EC10, EC20 or some other level of protection?

12.2 Can Fortune please confirm in writing whether SSWQOs will be applied to effluent discharges (i.e. end-of-pipe) or to the receiving environment?

Following the Technical Sessions, the Mackenzie Valley Environmental Impact Review Board (MVEIRB) provided parties to the environmental assessment of the NICO Project proposed by Fortune Minerals Limited (Fortune) an opportunity to submit a second round of Information Requests (IRs). To assist the Kwe Beh Working Group in its preparation of IRs, we have prepared comments on the proposed mine waste management, effluent treatment and closure methodologies based on a review of the following documents:

- Sections related to mine waste management, effluent treatment and closure in the transcripts from the Technical Sessions held on February 7-9, 2012
- Letter report from Golder Associates to Fortune dated February 14, 2012 summarizing meeting held with NRCan regarding Fortune's responses to NRCan's first round of information requests
- Report of a meeting between Fortune and Natural Resources Canada (NRCan) dated February 15, 2012 regarding Total Dissolved Solids concentrations and borehole data
- Letter from Aboriginal Affairs and Northern Development Canada to MVEIRB dated February 29, 2012 regarding water treatment
- Letter from MVEIRB to Fortune dated February 24, 2012 requesting clarification on Undertakings 1, 3 and 14.
- Letter from Fortune to MVEIRB dated February 29, 2012 providing clarification on Undertakings 1, 3 and 14.
- Fortune's response to Undertaking 1 – Effluent Treatment Facility
- Fortune's response to Undertaking 6 – Covers for Co-Disposal Facilities
- Fortune's response to Undertaking 12 – Viability of NICO Project

After reviewing the materials identified above, we've concluded that many of our original comments and concerns remain unchanged. The one additional issue is the potential impact of thiosalts formed during milling on the pH of the tailings discharges and seepages from the Co-Disposal Facility.

Key concerns include the following:

(a) Potential impacts of thiosalts
(b) 0.3% cutoff value for defining PAG rock
(c) Control of dust especially during winter conditions
(d) Impacts of frozen lenses on stability, volume and closure in the CDF
(e) Source terms used for modelling. Direct use of the humidity cell data is simply inappropriate.
(f) Slow filling of the pit is simply a method to reduce capital and financial assurance costs. No other reasons have been provided.
(g) Likelihood for long term treatment is high. Even passive treatment will require long term care and maintenance.
(h) The group/agency who will administer the long term care of the post closure treatment facilities (wetlands or treatment plant) needs to be defined.
(i) Lack of sound rationale for not providing impermeable liner over the tailings at closure.

IR Number: TG 13
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: Effluent Treatment and Closure Concepts for the NICO Project: Reverse Osmosis

Terms of Reference Section: EA 0809-004

Preamble:

It is our opinion that the RO plant likely represents the best technology for producing high quality water for most of the contaminants at the site. The management of the brine solutions and projected water quality following chemical and biological treatment are less certain. Fortune have committed to additional testing that will allow for better characterization and design of the facilities. The one problem with any "green field" site is that there is no wastewater from the site available to conduct test work. This means that synthetic solutions must be prepared which may or may not be fully representative of future conditions.

Should wetland treatment not be viable for management of site drainage then RO may well be required as a long term treatment strategy. Long term operation of a sophisticated water treatment plant at a remote site will be a technical and costly challenge.

Request:

13.1 Please provide a description of how long term operation of a water treatment plant would be accomplished and the costs associated with such an endeavour. (This information is required to assess adequate financial assurance and to define care and monitoring requirements during the post closure period (e.g., management of brine, sludge disposal, agency/group responsible for care and maintenance)

IR Number: TG 14
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: Effluent Treatment and Closure Concepts for the NICO Project: Closure Cover for Co-Disposal Facility (CDF)

Terms of Reference Section: EA 0809-004

Preamble:

The cover proposed for the CDF is a simple till cover. While this cover does provide a barrier and will reduce the potential for metals uptake from the CDF by vegetation, it will likely result in minimal to no reduction in seepage from the CDF as compared with a vegetated bare tailings surface. In addition, there is a great deal of uncertainty as to how the CDF will function.

Golder believes that co-disposal using waste rock cells and layers of rock and tailings will reduce acid generation. We are not convinced. The basin will have many porous channels with porous waste rock dykes and layers and as such substantial oxygen entry into the deposit is almost certain. The horizontal permeability of the layers and dykes will be very high. This flux of oxygen will most certainly be reduced as compared with an exposed waste rock pile, but it is doubtful it will be sufficiently reduced to inhibit oxidation. Sulphur contents in waste rock are low and the expected oxygen demand for sulphur oxidation will be modest. As such acid production is not likely to be prevented by marginal reductions in oxygen entry.

This to us means that acid production in the pile is possible and most certainly contaminated drainage will occur (selenium, arsenic, etc.). Given the high cost to build a co-disposal facility to control acidity and contaminated drainage, it makes minimal sense to use a cover which will provide minimal benefit in controlling infiltration and seepage. It makes more sense to apply a low permeability cover to virtually eliminate infiltration and long term seepage.

Request:

14.1 The rationale for not providing an impermeable liner over the CDF at closure remains weak. Can Fortune either provide sufficient and appropriate evidence that seepage in the post closure period will not negatively impact the receiving environment or provide evidence on how to establish a low permeability cover on the CDF.

IR Number: TG 15
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: Effluent Treatment and Closure Concepts for the NICO Project: Co-Disposal Concept

Terms of Reference Section: EA 0809-004

Preamble:

Golder presented a series of facilities where co-disposal is practiced. Many of these sites are not co-disposal and many of the facilities are proposed or at a pilot scale. Based upon my interpretation of the Golder report, only Greens Creek is an operational co-disposal facility and this facility uses co-mingling rather than layer tailings. Co-mingling has many advantages but is more costly.

It is our opinion that if co-disposal can be applied as described without major problems, then this is a valid and sound concept for producing a stable pile with excellent characteristics for long term care. The reality is that it won't operate without problems and these issues need to be addressed.

Golder presented a series of facilities where co-disposal is practiced. Many of these sites are not co-disposal and many of the facilities are proposed or at a pilot scale. Based upon my interpretation of the Golder report, only Greens Creek is an operational co-disposal facility and this facility uses co-mingling rather than layer tailings. Co-mingling has many advantages but is more costly.

It is our opinion that if co-disposal can be applied as described without major problems, then this is a valid and sound concept for producing a stable pile with excellent characteristics for long term care. The reality is that it won't operate without problems and these issues need to be addressed.

Request:

15.1 Can Fortune please explain the mitigations that will be used to address the following concerns related to the operation of the CDF:

a) Formation of ice lenses that will impact long term settlement, occupy valuable storage space and delay or make final cover application problematic.

b) Management of lower density tailings at a time when thickener performance is not as modelled. This results in much more water in the impoundment, more ice formation, poorer densities, etc.

c) Seepage from horizontal layers and rock dyke drains (permeability not controlled by low permeability tailings, water flows horizontally not vertically through the deposit in short and long term).

d) Tracking of contamination by equipment entering and leaving the CDF.

e) Freeze drying and dusting is a significant concern at Northern mines and is exacerbated by having tailings piled and exposed to the wind as compared with disposed in a basin. At sites such as Nanisivik, the only method found effective for controlling dusting in the winter was

either to have the tailings flooded over or covered with a heavy layer of ice.

f) Many mines find additional ore and process longer than originally proposed. How much more ore can be excavated and processed before the CDF is visible above the ridge?

g) Oxygen flux into the co-disposal pile may well not be the limiting factor for acid rock drainage production. As such, there is no certainty that sulphide oxidation rates will be reduced." Can Fortune provide data on rates of sulphide oxidation projected along with evidence that will be limited by oxygen limitations in the co-disposal facility?

IR Number: TG 16
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: Effluent Treatment and Closure Concepts for the NICO Project: Thiosalts

Terms of Reference Section: EA 0809-004

Preamble:

Thiosalts are sulphur oxides formed during partial oxidation of sulphide ore during milling, grinding, and floatation. Thiosalts can pass through traditional effluent treatment systems relatively unaffected and oxidize to sulphuric acid in water bodies. Studies indicate that thiosalts themselves are not toxic but, rather, the problem is the resulting pH depression. It is unclear what potential impacts thiosalts may have on the pH of the tailings discharges or seepage from the CDF.

Request:

16.1 Can Fortune please provide a discussion on the potential impacts thiosalts may have on the pH of the tailings discharges or seepage from the CDF, and the significance of those impacts?

IR Number: TG 17
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: Effluent Treatment and Closure Concepts for the NICO Project: Humidity Cell Data and Seepage Quality

Terms of Reference Section: EA 0809-004

Preamble:

Fortune has indicated that parameter concentrations used in the modelling for predicting seepage quality cannot be higher at the concentrations are controlled by equilibrium chemistry. In other words, seepage quality will be the same regardless of the volume of mine waste materials in the CDF. Although this could be true for some parameters, it is invalid for many others.

Request:

17.1 Can Fortune please provide the necessary modelling to support the assertions regarding seepage quality?

IR Number: TG 18
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: Effluent Treatment and Closure Concepts for the NICO Project: Sulphide-Sulphur Cutoff

Terms of Reference Section: EA 0809-004

Preamble:

The 0.3% sulphide-sulphur cutoff used in mine rock classification cannot be defended and is a potentially significant issue. The acid rock drainage concerns were addressed inadequately at the Technical Sessions and in the Undertakings. Our questions regarding waste classification remain.

Request:

18.1 Where are data presented that demonstrates the basis for selections of the mine rock classes?

18.2 Can Fortune provide additional information on monitoring of waste rock to assure the proper waste class is defined to all rock removed from the pit?

18.3 What quantities of Type 1 waste are expected to be available?

18.4 Where does the 20 m buffer for Type 3 waste rock use come from in the classification?

IR Number: TG 19
Source: Tłı̨chǫ Government
To: Fortune Minerals
Subject: Effluent Treatment and Closure Concepts for the NICO Project: Wetland Treatment

Terms of Reference Section: EA 0809-004

Preamble:

In many projects where contaminated drainage is projected to occur in the long term, the standard approach is to assert that treatment will occur using wetlands. Wetlands are very effective systems for polishing seepage discharges and in some cases can be used as primary treatment systems. The water quality from a wetland is dependent upon many factors of which temperature is perhaps the most significant factor and a major drawback to efficient wetland treatment at this site. In addition, peak flows are going to occur when wetland productivity is low. This leads us to conclude that the wetlands need to be much larger and will require provisions for future cleanout to remove accumulated metals.

Fortune have stated that they will undertake the necessary work to verify performance and allow for the design of future wetlands and in the event these will not perform, then long term treatment will be adopted. We have significant concern simply assuming the wetlands will meet the required discharge quality. Certainly there is no data provided regarding the design and performance of these wetlands to have reasonable confidence they will perform. We would be far more comfortable stating that RO will be the long term treatment system until such time as it can be demonstrated that wetlands will meet performance objectives.

Request:

19.1 Will Fortune change its position and state that RO will be the long term treatment system until such time as it can be demonstrated that wetlands will meet performance objectives?

19.2 Fortune should discuss whether downstream polishing will be required to precipitate residual iron and TSS released from the anaerobic treatment system.

19.3 Wetlands, although they are considered to be a passive treatment system, will require long term care and maintenance (e.g., disposal of sludges). Fortune should describe the mechanism that will be used to ensure the long term care and maintenance of the site beyond simply stating that sufficient money will be set aside.

19.4 Fortune currently plans to research wetlands during operations; however, seepage quality could deteriorate over tens of years (i.e. seepage quality during operations may be "cleaner" than during the post closure period). How will Fortune factor in the potential worst case seepage quality scenario during the wetlands studies that will take place during operations?