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CONFIDENTIAL DRAFT
FOR DISCUSSION

April 4th, 2005

Ms. Stephanie Briscoe
Executive Director
Nunavut Impact Review Board
P.O. Box 2379
Cambridge Bay, Nunavut
X0B 0C0

BY FAX and e-Mail

Dear Ms. Briscoe:

RE: Cumberland Conformity Submission in Response to NIRB March 21 Letter

Cumberland Resources Limited is pleased to provide NIRB with the information requested on March 21st to satisfy the Meadowbank Gold Project Draft Environmental Impact Statement (DEIS) conformity requirements. We are also pleased that our draft submission received 564 yes decisions and only 74 no decisions. This response addresses the 74 NIRB conformity review decisions where a "no" was indicated (the red cells) in the table attached to the March 21st NIRB letter.. As instructed, Cumberland has taken steps concurrent with this submission to distribute the documents to the other parties to the Meadowbank proceeding.

It was not possible for Cumberland to update the DEIS, develop and print an "integrated, cohesive revised DEIS" between March 21st and April 4th. The time available was taken up just addressing the items of non-conformity identified in the table and initiating work on the updates which were also requested on March 21st. Given that Cumberland cannot submit a revised DEIS, we have organized the attached submission on the same basis as the Guidelines and the DEIS, that is, based around the numbering system used in the Guidelines. In this way we trust this submission will easily be cross referenced to the DEIS and Guidelines.

Upon consideration of the NIRB conformity table and review of the DEIS, Cumberland notes that much of the required conformity information was already present in the DEIS and supporting

documents. The difficulties contributing to the NIRB conformity ruling may have arisen from the organization of the DEIS, the level of detail provided and the fact that not every element of the Guidelines was reflected in a discrete and identifiable section in the DEIS. We have now addressed each non-conforming element of the DEIS identified by NIRB and Cumberland respectfully requests that NIRB rule that the DEIS conforms to the Guidelines based on the test set out in your letter of March 21st.

For those sections of the DEIS identified in your March 21st letter as conforming but which require clarification or an update (the yellow cells in the table), Cumberland intends to respond as quickly as possible, and in any event by the end of April. Clarification of the information in the DEIS, updates and discussion of the quality of the analysis provided is in Cumberland's view, part of the technical analysis stage and we will be working with NIRB and the parties in advance of and in the proposed technical sessions to address and resolve these concerns.

Cumberland wishes to assure NIRB and other interested parties that the information contained in this response and the results of our ongoing efforts to clarify and update selected aspects of the DEIS will be included in Cumberland's Final EIS submission.

Yours truly,

CUMBERLAND RESOURCES LTD.

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Craig Goodings
Manager, Environmental and Regulatory Affairs

3.0 EIS OVERVIEW

3.1.1 Public Involvement, Human Resources and Monitoring and Follow up Plans and Index to Volume 2

NIRB's comment:
Provide the following missing plans: Human Resource Plan (4.24.3.1), Public Involvement Plan (4.24.3.4) and Monitoring and Follow Up Plan (4.26.1).
Provide an index for DEIS Part 2 Appendix.B.

Cumberland's Response:

Cumberland has included a Public Involvement Plan with this submission. The Human Resources Plan has been released on the ftp site and was mailed out earlier last week. The Monitoring and Follow up Plans were submitted as supporting documents with the DEIS. These can be found in the Terrestrial Management Plan, The AEMP plan (including the MMER and the NNL plan) and the Socioeconomic Impact Management Plan. The table of contents for Volume 2 A- E can be found in Volume 1at the end Table of Contents entitled List of Appendices after the List of Figures. We will include a TOC in Volume 2 in the final EIS as well.

4.0 SUBSTANTIVE DIRECTIVES

4.1 Corrective Action

NIRB's comment:
Corrective actions undertaken in the past, distinguishing between those taken voluntarily and those taken at the insistence of a third party.

Cumberland's Response:

Cumberland Resources Ltd. has voluntarily undertaken corrective action at both the old Parker Lake Property and at the Meadowbank south camp in Nunavut. In both cases, buildings and other equipment were removed allowing the area to revegetate naturally. Cumberland has not been required to take any corrective actions based on the insistence of a third party.

4.1 Provision of Security

NIRB's comment:
The provision of security to ensure payment of compensation in the event of accidents.

Cumberland's Response:

Cumberland has provided a security deposit to the KIA as part of the recently negotiated commercial surface lease. When appropriate, Cumberland will also provide security for the development of the proposed gold mine.

4.1 Bond or Financial Security

NIRB's comment:
The Proponent shall identify and describe any obligations or requirements that it must meet to post a bond or other form of financial security to ensure payment of compensation in the event of accidents that directly or indirectly result in major damage by the Project to the environment, as well as to cover the cost of planned or premature closure, whether temporary or permanent.

Cumberland's Response:

When the time comes, Cumberland will supply a bond or other form of financial security to the KIA as land owner and the water board as part of the water licence.

4.3 Baseline Data

NIRB'S comment:
Further, the Proponent shall present the likely future conditions of baseline data in the absence of the Project.

Cumberland's Response:

Water and sediment quality and aquatic and terrestrial communities in the project lakes have evolved to a stable condition and have existed in equilibrium for many hundred years. In the absence of the project, no changes to water quality, fish populations or habitat are anticipated. The magnitude of global climate change at this latitude is not sufficient to significantly affect the basic nature of aquatic communities.

4.5 Public Consultation

NIRB's comment:
Determining criteria for evaluating the significance of potential impacts.

Cumberland's Response:

Cumberland has gathered public input to determine significance of the impacts since 1996 through numerous public meetings, targeted interviews, and a three day impact workshop in 2003 as detailed on table 4.3 pg 31- 35 volume 1 DEIS. Questions asked during interviews of the elders included: Are you worried about the mine development on the land and water? Are you worried about the effect mine development will have on the fish? Can you suggest ways to ensure the protection of wildlife at the project? What kinds of input and participation would you like to have in planning and monitoring the project? Are there any aspects of the project that you need further explanation about or have concerns about? The three day impact workshop held in Baker Lake in 2003 included representatives' from the Hamlet council, elders, CLARC, HTO, youth and members of the general public. At that meeting, a translated impact matrix was used and each VEC and VSEC was discussed with expected impacts from the various mine components as well as the proposed mitigation and monitoring plans.

4.5 Regional Context

NIRB's comment:
The status of ongoing land claims discussions in the southern part of the Central Kivalliq Region

Cumberland's Response:

We are aware that land claims are ongoing in the southern Kivalliq but have no details of these negotiations, as we are not a party to them. However we believe DIAND and the NTI are parties to these negotiations. They may be able to provide information to us for the final EIS.

NIRB's comment:

The location of other precious metal finds and other existing and potential developments.

Cumberland's Response:

Additional precious mineral finds in the area can be found on figure 4.17 Regional Geology map. Pg 52 of the DEIS Part 1 Report. Information on other existing developments is included in the CEA report. More detail is included below:

Numerous junior and senior exploration companies are active in the Kivalliq region of Nunavut, conducting exploration for a variety of commodities including: gold, base metals (PGE's), and diamonds. A short description of these projects is provided below along with a table comparing the gold resources than have been delineated in the region. Meadowbank is the only project in Kivalliq advanced to the feasibility stage of evaluation.

Several advanced stage gold exploration programs are currently active in the Rankin Inlet area, including: the Meliadine Property (East and West) located approximately 15 kilometres north of Rankin Inlet, and the Maze Lake Property located 100km southwest of Rankin Inlet.

Gold Resources in the Kivalliq Region:

Project	Gold Resources (oz.)			Gold Reserves (oz.)
	Measured	Indicated	Inferred	Proven and Probable
Meadowbank	225,000	3,101,000	547,000	2,768,000*
Meliadine West	n/a	853,000	482,000	n/a
Meliadine East	n/a	n/a	399,000	n/a
Committee Bay	n/a	n/a	488,000	n/a

* Reserves are a subset of measured and indicated resources

The Meliadine East Project is a 50% / 50% joint venture between Cumberland Resources and Comaplex Minerals Corp., with Cumberland as the operator. The Meliadine East Project has been active since the early 1990's and hosts numerous gold showings, and an inferred resource of 399,000 ounces of gold in the "Discovery" Deposit. The Meliadine West Project is a 78% / 22% joint venture between Comaplex Minerals and Cumberland Resources, with Comaplex as the operator. Work on the Meliadine West Project has also been ongoing since the early 1990's with more than $65 million spent on exploration since that time. An updated resource for the project, completed in March 2005, estimated that the Meliadine West project is currently host to an indicated resource of 853,000 ounces Au, combined with an inferred category resource of 482,000 ounces Au. Placer Dome operates the Maze Lake Project where exploration has been ongoing since 2003. This is an early stage grassroots project that has not yet reached the resource definition stage.

The Ferguson Lake Project of Starfield Resources, located 160 kilometres south of Baker Lake, targets base metal mineralization enriched in platinum group elements (pt,pd,etc). Over 61,000 metres of drilling has been completed on the project to date, defining an inferred resource of 60.1 million tonnes grading 0.95% Cu, 0.60% Ni and 1.32 g/t Pd.

The Committee Bay Gold Project is located approximately 300 kilometres northeast of Baker Lake. Exploration since 1992 has identified numerous gold showings on the property. One of the showings, Three Bluffs, has been advanced to the resource definition stage, with an inferred resource estimate of 488,000 ounces gold completed in the fall of 2004.

Numerous companies are also actively searching for diamonds in the Kivalliq region. Thousands of hectares of ground in the region have been acquired by exploration companies through prospecting permits issued by INAC. Permits have been acquired by both junior and senior companies, including: De Beers, BHP Billiton, Shear Minerals, Stornoway Diamond Corp., Dunsmuir Ventures, etc. Probably the most advanced of these projects is Stornoway's Aviat diamond project on the Melville Peninsula where a 7.4 tonne mini – bulk sample of kimberlite was collected in 2003 which returned a sample grade of 0.88 carats per tonne.

4.9.2 Project Need

NIRB's comment:
It shall submit any feasibility studies and supporting documentation. The Proponent shall also demonstrate that financing has been secured for all Project phases, including reclamation and security.

Cumberland's Response:

Cumberland has released the latest results of the feasibility study in the press release on February 24. Further technical information can be found on Cumberland's web site www.cumberlandresources.com in a report entiltled Meadowbank Gold Project Technical Report, Nunavut March, 2005. Although Cumberland is well financed for exploration, financing has not been secured to construct the mine nor for reclamation or security. Cumberland's plan is to finance the development of the Meadowbank project via a combination of debt and equity financing, the mix of which has not yet been decided.

In the case of future reclamation obligations, Cumberland intends to secure all agreed reclamation obligations over time via a combination of reclamation bonds and third party letters of credit and to finance such reclamation obligations out of future operating cash flow. Cumberland's ability to raise the requisite amount of development financing and reclamation security is dependent on market conditions if and when all requisite permits have been received. Many investors, including lending institutions in project debt financings will require that their investment commitment be conditioned upon Cumberland's receipt of all requisite permits.

In addition to the above, a number of external economic factors could adversely influence Cumberland's ability to raise the necessary financing on a cost effective basis. Such external factors include, a decrease in the US$ spot price of gold, higher interest rates, an increase in the value of the Canadian $ vs. the US$ and an increase in the cost of other commodities (i.e. oil, steel) consumed at the project.

Since the market's capacity to absorb both debt and equity capital is limited, Cumberland must compete with other companies for such capital capacity. Accordingly, potential debt and equity investors will compare both the risk and expected investment return associated with investing in Cumberland to other available investments and allocate their investment capital accordingly.

Notwithstanding the existence of a positive feasibility study on the Meadowbank project, until all requisite permits have been received on the Meadowbank project, investors in Cumberland's debt and equity will be required to assume permit risk. Therefore, unless investors feel they are adequately compensated for assuming such risk (higher interest rates, discounted equity/debt principal, etc.), they will opt to allocate their available investment dollars elsewhere.

In summary, subject to market conditions, Cumberland anticipates that it will be able to obtain or arrange conditional commitments to secure all requisite development financing and reclamation security with respect to the Meadowbank project prior to or in conjunction with the receipt of all requisite project permits.

4.10.1 Work Force Requirements

NIRB's comment:
Work force requirements, including training required to maximize employment of Nunavummiut

Cumberland's Response:
The mine will create approximately 350 jobs for construction and 250 jobs during operations. The number of Nunavummiut employed and related training will be detailed in the IIBA and the Human Resources Plan.

4.10.1 Stockpiling of Ore

NIRB's comment:
Figure 2-4 does not show the location of the ore stockpile as referenced on page 54 of Part 1 DEIS. Address ARD potential of ore stockpile.

Cumberland's Response:
Page 54 should reference Figure 2-5 not figure 2.4. In any event, the location of the ore stockpile is shown as a green shaded area northwest of the plant site label, unfortunately it was not labeled as such. We will correctly label the site in the final EIS. Although the ore has the potential to produce ARD, no ARD is expected to be generated from the ore stockpile as the material will not be resident long enough at that location to generate any leachate. In addition any run off from the pile from snow or rain (contact water) will report to the pond to the north of the pile and be pumped to the tailings facility.

4.10.1.3 Tailings Facility Contingency Plan

NIRB's comment:
The Proponent shall include a contingency plan in the event that discharges from the containment area do not meet licensing criteria.

Cumberland's Response:

No discharge of tailings water is planned during operations. In any event, if discharge was required but did not meet licensing criteria, it would be contained within the tailings containment facility until it was suitable for discharge or discharged to open pit.

4.10.1.3 Chemical Stability Analysis

NIRB's comment:
Present a chemical stability analysis of processed ore.

Cumberland's Response:

The bulk of the tailings are expected to be acid generating. All concentrate and combined tailings from each deposit along with Portage and Goose Island tailings are (PAG) [potentially acid generating], whereas the Vault tailings are non-PAG.

4.10.1.3 Discuss Geotechnical Factors

NIRB's comment:
Discuss how geotechnical factors, including permafrost, clay slippage and pooling, the seasonal seepage conditions of sand, and water and ice in pores, were considered in the design and selection of the structures to contain the processed ore. It shall also discuss the stability of the structures, including, if applicable, the question of talik zones.

Cumberland's Response:

The tailing dyke has been designed to contain the tailings and to limit seepage through the foundation with the construction of a low-permeability cut-off; to have stable slopes under static and pseudo static conditions for both short- and long-term scenarios; and to be stable under frozen, partially frozen, and thawed conditions. The stability assessment included the consideration of a maximum earthquake of 1 in 975 years. A stability analysis was performed that included modeling of the anticipated seepage conditions, and the resulting pore water pressures.

A site selection decision matrix was developed, initially considering 7 potential tailings storage options, and reducing these to 4 potential options to be considered at the feasibility level. Each option was assessed based on a set of key indicators, which included consideration of environmental factors, operational factors, and economic factors. Sub-indicators of the environmental factors included consideration of various issues, such as ARD and ML, groundwater seepage potential, geotechnical hazards, and other potential environmental impacts. A ranking system was then applied to the storage options, with the contribution by environmental factors accounting for 50% of the overall weighting of the various options, with operational and cost considerations contributed 30% and 20%, respectively. The selected option of disposal in the northwest arm of Second Portage Lake presented advantages in terms of reduced potential for the generation of ARD and ML due to freezing of the facility, reduced potential for instability of the facility due to the shape of the natural depression into which the material would be placed, and due to the facility being at the lowest point of land, and reduced requirements for development and construction activities. This option considered the impact of the proposed facility on the talik that is known to exist beneath Second Portage Lake. With the fullness of time, the tailings facility, and the underlying talik, are predicted to freeze completely, encapsulating ARD and ML products.

4.10.1.3 Discuss Control of Groundwater Seepage

NIRB's comment:
Describe methods of controlling and monitoring groundwater seepage from the processed ore and other containment area, and the capacity to cope with storms, floods, and other intermittent natural events, using a return period that is adequately conservative (e.g., 1/100 years), including a review of similar operations elsewhere, applicable modeling information, and the results of research on the long-term thermal stability of the underlying permafrost and frozen materials.

Cumberland's Response:
The containment areas, sumps, and ditches were designed using standard practices for mines operating in the north. The height of the tailings dyke has been designed to accommodate a reclaim pond plus a 1 in 100-year, 24-hour rainfall event, leaving a minimum of 2.0 m of freeboard during operations, and 1.0 m after closure. Mill site grading is such that seepage and runoff will be directed toward the tailings storage facility or to interceptor ditches and sumps designed to handle the 1:100 year return period event. The water collected in sumps will be pumped to the tailings impoundment. Similarly, the rock storage facility runoff and seepage is directed toward the attenuation pond or to interceptor

ditches and sumps designed to handle the 1:100 year return period event. The water collected in sumps is then pumped to the attenuation pond.

Thermal modeling indicates that the tailings will freeze in the long term, and that the talik that currently exists below Second Portage Arm will freeze before seepage from the tailings impoundment reaches the groundwater below the permafrost. Therefore, the potential for groundwater contamination to occur as a result of seepage from the tailings impoundment is considered to be low. During operations, monitoring wells will be installed at appropriate locations around the perimeter of the tailings facility, and within the dyke, to allow monitoring of talik water quality and the level of the phreatic surface within the dyke. These monitoring wells are expected to eventually freeze over time. Thermistors will be installed within the tailings dyke, and at intervals around the facility to continually monitor changes to the thermal regime within the dyke, and within the existing talik. If necessary, thermosyphons could be installed within the dyke to encourage freezing of the dyke, further limiting seepage to the pit during operations.

Monitoring of the permafrost thermal regime at the project site began in 1996. Twenty-two thermistor cables have been installed at the site, ranging in vertical depth from 11 m to 191 m. The Meadowbank Project site is underlain by continuous permafrost to depths on the order of 550 m depending on proximity to lakes. Based on the current site thermistor instrumentation, the depth of the active layer in the project area ranges from about 1.3 m in areas of shallow overburden and away from the influence of lakes, up to 4.0 m adjacent to lakes, and up to 6.5 m beneath the stream connecting Third Portage and Second Portage Lakes. Taliks extending through the permafrost will exist beneath circular lakes having a minimum diameter of 570 m, and elongate lakes having a minimum width of 320 m. Based on this, Second Portage Lake and Third Portage Lake will have taliks extending through the permafrost. Much of Vault Lake freezes to the lake bottom; consequently the talik beneath Vault Lake is considered to be isolated.

The data collected from the thermistors installed at the site in 1996 (TP96-154 and TP96-155), and in 1997 (TP97-196), indicate there are no significant variations in the permafrost thermal regime recorded by these installations over the period of seven years for which data have been collected. Based on this information the permafrost thermal regime at the site exists in a steady state. However,

on-going monitoring of the existing thermistors would be continued and compared with the current baseline data.

4.10.1.4 Overburden and Waste Rock Disposal

NIRB's comment:
Describe the physical and chemical stability of the types of materials to be stored and those to be used for containment construction with regard to the long-term acid-generation potential of the waste rock, bearing in mind the latest monitoring results from mines near by or at least in the same general region, and present a water management plan. It shall also explain the relationship between the timing of acid generation and permafrost encapsulation and cold temperatures, where possible in reference to the region in which the Project will take place; Refer to monitoring results from mines nearby or in the same general region to validate long term acid generating potential predictions. Explain the relationship between the timing of acid generation and permafrost encapsulation and cold temperatures.

Cumberland's Response:
All waste types have been characterized with respect to long-term acid generation potential: overburden, tailings, mine site infrastructure rock and pit waste rock from each lithology, including specific chemical characterization of pit rock that will be used for construction of dykes, and other infrastructure use. Results are described in static and kinetic testing reports for mine site rock.

Overburden: all five overburden samples from the airstrip and Third Portage trenches have no potential to generate acidic drainage (non-PAG), having marginal to non-detectable sulphur contents and excess carbonate neutralization capacity.

Mine site infrastructure rock: Rock samples from the plant site and airstrip infrastructures are also non-PAG, with 14 samples containing no detectable sulphur and one plant site rock sample having low sulphur content. All samples have excess carbonate neutralization capacity.

Vault pit waste rock: 25% of Vault pit waste [is] designated as PAG [the remaining 75% is non-PAG]." "The Vault **PAG IV** rock kinetically tested never generated ARD within the (20 cycle) test period and sustained alkalinity levels throughout testing [the Vault PAG rock] could generate [localized ARD conditions] in time, given favourable conditions, but only after a relatively long lag period, potentially longer than the projected ten-year mine life. The bulk of the [Vault waste rock] pile is not expected to constitute a source of ARD.

Portage area pit waste rock: The Portage rock storage area has a potential to generate ARD: "The majority of [iron formation] and [quartzite] pit rock is potentially acid generating, [ultramafic] waste is non-PAG, and the acid generating potential of [intermediate volcanic] pit rock is variable, with 35% of Goose and Portage pit rock designated as PAG.

Tailings: the bulk of the tailing material is expected to be PAG.

Water quality predictions have been developed for each mine component (e.g. each open pit, rock storage facilities, etc.) for the duration of mine life and post-closure. The water quality predictions are based on laboratory test data (leaching rates and ARD generation) obtained from site materials which have been factored to account for site characteristics (layout of infrastructures, site hydrology, dry arctic climate, etc). The factors were derived from documented effects in similar conditions (e.g. the effect of particle size difference between laboratory test and rock pile or pit wall; measured water infiltration rates in northern waste rock piles, effect of cold climate on rock leaching rates). Referenced sites include Diavik, Snap Lake, Cullaton Lake, North Rankin Inlet mine, Nanisivik and Cluff Lake.

Humidity cell tests, which are used as the basis for determination of constituent loading rates, represent accelerated weathering conditions in a controlled laboratory setting. Leaching and mineral depletion rates are typically much lower under ambient site conditions. In particular, the weekly flushing rate of HCTs at a 2:1 solid to liquid ratio is considerably higher than the flushing rate expected from rainwater infiltration through waste rock, pit wall material and tailings given the arid climate of the Meadowbank project site. Other site-specific factors that will affect the leaching rates include the larger grain size of the rock, resulting in a smaller reactive surface, lower ambient temperature than those applied in the laboratory, and hydrological conditions within the pile such as preferential flow. To account for these differences between the laboratory setting and on-site conditions, factors are applied to the laboratory leaching rates for each mine component.

Waste rock storage pile: Thermal modeling of the waste rock pile was conducted and it was determined that "The internal temperature [of the waste rock storage facilities] is expected to become superchilled and freeze, which will limit internal drainage as infiltrating runoff becomes frozen. During the delay to onset of frozen conditions in the pile, drainage will be collected in the storm water attenuation pond on site and, if required, will be treated before discharge. At the end of mine life, a

cover of acid-buffering material will be placed on top of the pile to host the active thaw layer: "The Portage waste rock storage facility will be capped with non-potentially acid generating ultramafic rock from the Portage or Goose open pits. The thickness will be sufficient to confine the active layer within the capping layer, and hence maintain the underlying potentially acid generating waste rock in a frozen state. This material will be placed progressively as portions of the waste rock storage area reach the desired final configuration.

Tailings containment area: The tailings are expected to freeze from the surface during winter months. The design concept for the tailings storage facility involves the control of the acid generating potential and metal leaching potential of the tailings through the promotion of partial freezing of the tailings as they are deposited during operations, and complete freezing of the tailings during post-closure. At the end of the mine life, the northwest arm of Second Portage Lake will be filled to above the existing lake surface with tailings. The tailings will freeze over time, as shown from thermal modeling. Complete freezing of the tailings and bedrock beneath the lake will occur with time. For tailings not frozen during deposition, the time to begin freezing the talik beneath the lake could be 200 years if climate change is not considered and 270 years if climate change is considered. If the tailings are frozen during deposition, the time to freeze 5 m into the talik is between one and 45 years, depending on location within the lake. When climate change is considered, this time is increased to 50 years. At closure, the tailings will be progressively covered with buffering rock that will host the active thaw layer. After closure the tailings are predicted to freeze completely.

4.10.1.4 Describe Groundwater Chemistry

NIRB's comment:
Describe in qualitative and quantitative terms the chemistry of frozen groundwater from joints and fractures in the waste rock disposal area.

Cumberland's Response:
Waste rock storage pore water quality has been modeled based on data collected from site materials and conservative assumptions. The predicted quality of the infiltrated water which could drain out of the rock storage facility in the summer months is expected to be representative of the fully frozen pore water (rock pile *groundwater*). During operation, the quality of the infiltrated drainage from the Vault and Portage rock storage areas is expected to meet MMER criteria, with the possible exception of Portage drainage pH in the unlikely event that ARD develops in this pile very shortly after deposition.

Note however that the volume of infiltrated drainage is expected to be very small considering super chilled internal temperature conditions.

4.10.1.5 Bulk Truck Washing Facilities

NIRB's comment:
Describe the facilities for washing bulk trucks and other equipment, as well as any treatment of water used for washing vehicles/equipment

Cumberland's Response:

We have a wash bay in the shop with dirty water sedimentation tanks. Contact water will be pumped to the tailings facility.

4.10.5 Melt Water Management

NIRB's comment:
Describe how melt water, particularly with high metal content, and hydrocarbons will be managed.

Cumberland's Response:

Site drainage of all contact water will be controlled by contouring and ditching to a site attenuation pond where it is assessed for need for treatment or for discharge. (see figure 4.21 Water Management Plan)

4.10.1.7 All Weather Roads

NIRB's comment:
4.10.1.7 All Weather Roads and Winter Roads
The Proponent shall describe, where useful with the assistance of maps and drawings:
•How the selected route(s) correspond to the needs of other developers and of the Nunavummiut;
•Proposed construction of all-weather road, including laydown areas, on-site and off-site roads, alternative routes, with particular reference to stream crossings;
•The quantities and types of materials required for construction and maintenance;
•Construction and maintenance methods for all site roads, frequency of use, road width, and dust-suppression methods;
•The types and numbers of vehicles to be used to transport materials and ore along the all weather access routes, including the total number of trips expected daily and seasonally;
•Accident/incident reporting;
•Wildlife impact mitigation procedures and/or structures;
•Site reclamation.

Cumberland's Response:

All roads whether at the mine site, in Baker Lake or the access haul road were dealt with as a project component against which the effects on the various VECs were considered. However in order to make the analysis of the effects of the access road more easily understood, we will have included a separate access road impact matrix and a description of the access road with this submission.

Baker Lake to Site Access:

Previous studies on the Meadowbank Project showed that transportation of goods from Baker Lake to site was a significant cost. During the exploration phase commencing in 1995 and continuing to this date, freight is received in Baker Lake during the summer shipping season. The freight and fuel is then stored until the lake ice has developed sufficiently to allow transport by a Foremost Delta 3, beginning approximately mid-January and ending approximately mid-May. The ice trail to Meadowbank is unmarked, to minimize the environmental impact, and is not traveled during whiteout conditions. This results in a haul period of approximately 90 days.

A Foremost Delta 3 is an articulated all terrain vehicle capable of carrying a deck and trailer load of 19 tonnes. Foremost also manufactures a larger ATV, the Commander, with a combined deck and trailer load capacity of 36 tonnes.

During the exploration phase the ATV's make one round trip per day, although two trips per day are theoretically possible. It has been estimated that for construction and operations, a fleet of up to 26 Foremost Delta 3's or 14 Foremost Commander's would be required, at a capital cost of around $15 million for only the equipment.

The construction of a conventional access road to the property would extend the access season while reducing the freight cost of fuel and materials substantially. It also reduces the site infrastructure required with reduced fuel storage and a smaller airstrip. In addition, conventional road access would benefit the local community by providing opportunities for transportation, lodging, freighting and marshalling services with the community. Baker Lake would also provide primary airport services for the mine.

Route selection

Cumberland has conducted a preliminary assessment of road routes. Two potential routes were examined using aerial photographs and topographical maps. An assessment of the water crossings on each route was made in 2004 and measurements of stream flow have been recorded at the spring high flow period and the fall low flow period. The routes selected attempted to locate the roadway on the windward side of hills or crest of hills to minimize snow accumulation and also minimize the number of water crossings. The chosen route is 102 km long and has a total of 23 water crossings, none of them with a water depth greater than 2 meters.

The selected preliminary route is illustrated in Figure Access Road at end of this document.

Additional Studies for 2005

Additional work is planned on the road in 2005. Cumberland proposes to conduct a detailed snow pack investigation (in-progress) and a comprehensive soils investigation in order to avoid areas of heavy snow accumulation by drifting and determine the soil classifications of the ground to be traversed. The soils investigation would also identify granular and till borrow areas and quantify the borrow sources. Following completion of these investigations, final route selection would be made and design of the road profile and section would be completed. Additional studies will be completed this summer on archaeology, vegetation and wildlife habitat and aquatic resources once the final route selection has been made.

Design Parameters

The road would have a travel surface of 10 meters and an average height above the existing ground of 0.8 meters, with gentle side slopes so not to impede the movement of wildlife. The road surface would be 3" minus material, either pit run granular or crushed product. The road will be constructed with suitable material to ensure there is no impact to surface waters. The roadway would accommodate mine production size equipment as well as conventional tractor trailer haul units on a single lane basis. (see figure Road Typical section at end of this document.)

Construction of the road would be performed in four stages or zones. Zone 1A would be from Baker Lake to the north Hamlet boundary a distance of approximately 18 km. Zone 1B would be from the north Hamlet boundary to the north Inuit Owned Lands (I.O.L.) boundary a distance of approximately

19 km. Zone 2A would be from the north I.O.L. boundary to the south I.O.L. boundary at Tehek Lake a distance of 43 km. The final Zone 2B would be from the south I.O.L. boundary at Tehek Lake to Meadowbank a distance of 22 km. The distances quoted above are approximate and will vary depending on the final route determination.

The road would be fill construction to elevate the roadway above the existing terrain to promote natural snow removal by wind action. Water crossings would be over culverts and logging road style bridges where required. The prefabricated bridge structures would be supported by rock fill cribs at the abutments. Construction of the road would require the development of till, gravel and rock borrow areas along the access corridor. Noise and dust will be controlled and monitored as described in the management plans and impact matrix.

For the purpose of this study, it was assumed that mine production equipment would be used for construction of the access road. On arrival in Baker Lake on the summer barge, the equipment would be assembled and immediately commence road construction. The road would be advanced from both Baker Lake and Meadowbank simultaneously by using the current complement of construction equipment already staged at Meadowbank.

Construction of the access road will require the construction of up to 5 bridges. The waterways crossed by the bridges are shallow, being less than 1 meter in depth and do not exceed 13 meters in width.

It is proposed that prefabricated steel “logging type” bridges be used for the crossings.

The “logging type” bridges are typically built in two sections and are connected together after placement on the bridge supports or abutments. The bridge sections are manufactured in lengths of 6, 9, 12, and 15 meters and are 2.3 meters in width.

The bridge deck is checkered plate steel with an anti-slip surface. Pockets are provided along the edge for the installation of guard rails. Lifting points are provided for lifting the bridge sections into position on the abutments and no in stream access is required.

The bridge is supported on abutments constructed on each side of the waterway and do not encroach on the watercourse.

A number of different abutment constructions can be utilized depending on the soil conditions encountered at each bridge site. The abutments can be rock filled timber cribs, rock filled Gabion or wire mesh baskets, or rock filled corrugated steel bins. No concrete constructions or pile foundations are expected. The bridge bearing seats will be either wood timber or structural steel.

Approach ramps will be conventional road section construction comprised of a base layer of coarse rock, a transitional zone of finer rock, and a travel surface of crushed rock.

Logging type bridges are considered to be temporary in nature and on decommissioning of the access, the structures are removed and the abutments disassembled leaving no evidence of their construction. No in stream work or access is required for either the installation or the removal of the structures.

The access road will also require the installation of numerous drainage culverts to provide for the unrestricted flow of surface water. Due to the low relief of the terrain and seasonal nature of the flows, most of the installations will be performed in the dry, or when frozen, that is without water flowing in the drainage course. Culverts will be of corrugated galvanized steel or HDPE (high density polyethylene) and will be sized to accommodate the maximum expected flow.

A typical culvert installation begins with the determination of the low points in the roadway profile and preparing the base to accept the pipe. Base preparation requires grading the bed to remove cobbles and create a depression for the application of a bedding sand cushion. Following compaction of the bed the culvert is placed to the design alignment and grade and the pipe is then backfilled by hand to the spring line of the pipe with fine grained granular material. Compaction of the backfill material is achieved with vibratory plate tampers and the material is placed in shallow lifts between compaction activities.

Once backfill to the spring line has been completed, the remaining backfill will be placed by machine and compacted with large mechanized compactors. Well graded granular material is used for the backfill adjacent to the pipe. General fill will be the specified road construction materials.

The culvert will have sufficient bury to withstand the loads to be applied. The roadway surface may be superellevated at the culvert location to achieve the required bury.

At mine closure all culverts and bridges would be removed and the road bed scarified to promote natural vegetation

Transportation Equipment

The road is assumed to operate year-round with allowances for shut-down due to weather conditions and repairs. For the purpose of the study it was assumed 15 days would be lost due to weather (white-outs) and 30 days due to road repairs so the road would be available 320 days/year.

For the purposes of the study, it was assumed that Cumberland would own and operate the freight hauling operation to site. The equipment and staffing required were estimated using data provided by experienced northern transportation companies.

The haul fleet would operate 7 days/week all year long. Using conservative assumptions for a freight scenario, it is estimated that 3 trucks, with tandem trailers, making two hauls per day between Baker Lake and site, could adequately maintain the flow of material. The Owner's transport fleet would consist of:

- 5 tractor / tandem trailer units
- 1 Mechanics truck for on-road servicing
- Light maintenance shop / office facility / storage for lube and spare parts
- Staff of 12 persons.

Transport equipment would be radio controlled and passing would be at the established pullout locations. Traffic will be left hand drive to safely accommodate the large rock trucks. Left hand drive is most commonly used with large haul trucks as it locates the driver nearest the edge of the haul road for best visibility of the road edge. Site roads will not serve anyone other than mine operations personnel. The mine site would be restricted to authorized mine personnel only for safety reasons, similar to all such industrial sites elsewhere in the world.

As outlined in the matrices, speed limits will be set and wildlife given right of way. Any wildlife sightings and/or collisions will be recorded in a wildlife log.

Impacts of Road

As shown in the impact matrices, with proper mitigation and monitoring there are not expected to be any significant residual impacts from the road during construction, operation and closure phases of the Meadowbank Project. Twenty-three stream crossings are proposed between Baker Lake and Meadowbank Camp. None of the streams crossed are more than 2 m deep and most are ephemeral, boulder field streams that flow primarily during spring freshet. Impacts on water quality and physical features and fish movement within streams crossed by an all-weather road will be minimized through a combination of avoidance, prudent selection of crossing locations, properly installed bridges and culverts, armoring of shorelines to prevent erosion and adherence to DFO guidelines for culvert sizing and swimming velocity to allow fish passage at all times.

Five of the stream crossings will require bridges because of stream width and discharge volume. Bridges do not impede fish passage and are preferred by DFO. Small, ephemeral, low flow stream channels will be crossed by properly-sized culverts that will allow fish passage at all times. All streams crossed by culverts are relatively very small and not likely to be used by fish to move between water bodies. Because the proposed route of the all-weather road is situated just east of the watershed boundary separating streams that drain towards the Arctic and streams that drain towards Hudson Bay, there are no significant water bodies upstream or west of the road that must be crossed. Thus most culverted streams are not associated with headwater lakes and are not likely to be used by fish, except perhaps opportunistically. A monitoring program to monitor fish passage in all streams crossed by bridges and the largest culverted streams will be implemented in 2005 to determine the magnitude of fish passage, if any.

Hunting and fishing will not be allowed by mine employees along the access road.

Access to lakes north of the community of Baker Lake by its residents is currently possible by snow machine and all-terrain vehicle. Whitehills Lake is a traditional hunting and fishing area that is regularly visited by Baker Lake people. The all-weather road will not substantially improve access to areas that are not routinely used and no significant adverse impacts on the aquatic and terrestrial environment along the access road are predicted.

4.10.1.10 Borrow Pits

NIRB's comment:
Update required for borrow pits for access road.

Cumberland's Response:

Borrow sites are along Baker Lake to Site access road. Borrows are expected to be located every 3 or 4 kilometers along the route, but have yet to be identified. They will be identified in summer 2005 geotech studies. Mitigation for the borrow pits is outlined in the impact matrices.

4.10.1.11 Sewage Treatment and Disposal

NIRB's comment:
Provide volumes and chemical composition of the effluent. Provide the location of the treatment system.

Cumberland's Response:

The sewage treatment plant will be a rotating biological contactor (RBC) or a sequencing batch reactor (SBR) unit sized for the maximum camp capacity of 350 persons during construction although 200 persons will be the operational load. The RBC will be part of the camp complex although separate from it. It will be connected to the camp and mill by arctic corridors. Two grease interceptors will be supplied, one at the kitchen and one at the mill. The design criteria for the effluent is 25 mg/l BOD and 25 mg/l TSS. It is expected the camp would generate 37.8 m3 per day.

4.10.1.11 Solid Wastes and Sewage Sludge

NIRB's comment:
Provide information on landfill and solid wastes including sewage sludge

Cumberland's Response:

Solid wastes and sewage sludge are burned in oil fired incinerator with subsequent residue buried in the tailings facility.

4.10.1.12 Location of Power House

NIRB's comment:
Show on map

Cumberland's Response:

Although not labeled it is shown on figure 2.5 in the DEIS, it is located in a separate building to isolate it for noise and fire risk adjacent to the tank farm above the label PLANT SITE.

4.10.1.12 Energy Balance

NIRB's comment:
Update based on potential increase of energy requirements

Cumberland's Response:

As preciously discussed there is no increase in energy requirement from that discussed in the DEIS. The estimated average annual fuel consumption for Meadowbank per current feasibility study is 41 M litres diesel per year, made up of 27 M litres for power generation and 14 M litres for mining and mobile equipment.

4.10.3 Ore processed per day

NIRB's comment:
Update required.

Cumberland's Response:

There is no change in the ore processed per day from that discussed in the DEIS. Approximately 7,500 to 5,500 tons of ore will be processed daily.

4.10.3 Factors considered in decision on future ore bodies

NIRB's comment:
The Proponent shall specify which factors would be considered in deciding whether to develop other ore bodies (e.g., respect of regulations, approval by affected communities of management and reclamation plans, compliance with conditions of Impact and Benefits Agreements ("IBAs"))

Cumberland's Response:

The economic viability of any new deposit will be the main factor in deciding whether to develop the deposit or not. Viability would be enhanced by higher grade, lower strip ratio, and larger size, but reduced by increased haul distances, diking requirements, potential metallurgical difficulties and

permit issues. Another 4 gm/tonne deposit containing a million ounces of gold within the current feasibility study parameters could be economic up to 30 km from the proposed plant site.

4.10.5 Technology

NIRB's comment:
Discuss how developments in technology will be monitored.

Cumberland's Response:
Cumberland will use the most up to date technology for building the mine provided it has a proven track record in arctic mining. In designing the mine infrastructure, Cumberland has relied on experienced companies Golder and AMEC to ensure that the most recent technologies are employed in the mine. Once the mine is constructed and operating, we will continue to keep abreast of the latest information in reclamation, permafrost management, community development and environmental monitoring.

4.11 Preferences in respect of Alternatives

NIRB's comment:
The Proponent shall present the preferences of those consulted respecting alternatives to the Project including the "no-go" alternative.

Cumberland's Response:
Cumberland has gathered public input respecting alternatives to the Project including the "no-go" alternative through public meetings since 1996, targeted interviews and through a three day impact workshop in 2003. The community of Baker Lake and Kivalliq communities are supportive of the project, assuming successful negotiation of an IIBA. Baker Lake has indicated initial support for an all weather road. The "no- go" alternative is not the preferred option.

4.13.1 Vegetation Contaminant Loading

NIRB's comment:
The health of these species/communities and their contaminant loadings;

Cumberland's Response:

A program to monitor contaminants, specifically heavy metals within near-field, far-field and reference areas, stratified by vegetation community (e.g., lichen, heath-sedge) has been designed and will be implemented in 2005. Food chain models will be used to predict uptake of metals and tissue concentrations in aquatic and terrestrial receptors.

4.13.2 Wildlife Contaminant Loading

NIRB's comment:
The health of these species populations and their contaminant loadings;

Cumberland's Response:
"A program to monitor contaminants, specifically heavy metals within near-field, far-field and reference areas, stratified by vegetation community (e.g., lichen, heath-sedge) has been designed and will be implemented in 2005. Food chain models will be used to predict uptake of metals and tissue concentrations in terrestrial receptors such as small mammals and ungulates."

Destructive sampling wildlife is not warranted at this time.

4.13.3 Birds contaminant loading

NIRB's comment:
The health of these species populations and their contaminant loadings;

Cumberland's Response:

"A program to monitor contaminants, specifically heavy metals within near-field, far-field and reference areas, stratified by vegetation community (e.g., lichen, heath-sedge) has been designed and will be implemented in 2005.

"Food chain modeling based on baseline metals concentrations in water and aquatic vegetation will be used to predict exposure, uptake and metals concentrations in waterfowl tissue. Destructive sampling of waterfowl to determine baseline metals is not warranted at this time."

4.14 Rationale for selecting communities for baseline data collection

NIRB's comment:

The Proponent shall provide a rationale for the selection of communities for which baseline data are provided.

Cumberland's Response:

Baseline data are provided for Baker Lake, Kivalliq Region and Nunavut. With Cumberland's intent to preferentially hire and procure in Baker Lake, the expectation is that community level effects as a result of the project will be experienced only in Baker Lake. This is not to suggest that individuals from Kivalliq Region and Nunavut as a whole will not benefit, but simply that given project needs and unemployment, education and population statistics, it is unlikely that any other community would see enough of their people employed by, or businesses involved in, the project to represent potential for community level effects.

This rationale is explained, referred to and/or discussed in the Baseline Socioeconomic Report (section 1) and in the Socioeconomic and Archaeology Impact Assessment (sections 2.3 and 3.2). The Socioeconomic Impact Management Plan provides the context for this rationale, in terms of Cumberland's employment and procurement policies.

4.14 Description of the Socio-economic Environment -Social assistance cases

NIRB's comment:
Social Assistance cases;

Cumberland's Response:

The number of social assistance cases at this time is unknown but will be included in the final EIS if possible. Neither the Government of Nunavut nor the Government of Canada is publicly reporting on social assistance cases. The National Council of Welfare (NCW), a citizens' advisory body to the Minister of Social Development Canada on matters of concern to low-income Canadians, reports 7,300, 7,300, 8,100 and 7,100 welfare recipients in Nunavut for the years to March 2000, 2001, 2002 and 2003 respectively.

4.15 Boundaries for socio-economic assessment

NIRB's comment:
The boundaries for socio-economic assessment shall be based on an analysis of the socio-economic effects directly and indirectly associated with the Project.

Cumberland's Response:

See response regarding communities for which baseline data was provided, above. The socioeconomic assessment considered, depending on the expected effect, Baker Lake, the region of Kivalliq, Nunavut, and for macroeconomic effects, Canada.

4.16 Temporal Boundaries

NIRB's comment:
The temporal boundaries of the post-closure period may encompass many years, depending on the site and on the methods of closure. The Proponent shall give a rationale and justification for the boundaries chosen, including a description of any consultation with members of the public or technical experts.

Cumberland's Response:

As indicated in section 4.16 of the DEIS, temporal boundaries for the post-closure period can extend for 25 years depending on monitoring results. This boundary is based on expert advice and current Nunavut regulations. The actual length of post closure monitoring will be included in the various licenses and permits.

4.17 QA/QC on sampling results

NIRB's comment:
The reliability and scope of the results, the possibility of reproducing the analyses (repeatability), and quality control of laboratory analyses shall be analyzed critically. Provide QA/ QC analyses for results. All data based on environmental sampling necessarily involve some variability, which must be determined to assess the reliability and scope of the data. The Proponent shall, for all data obtained from environmental sampling, provide a dispersion or variability coefficient (variance, standard deviation, or preferably 95 % confidence interval, etc.) and indicate the size of the sample used. Provide as part of QA/QC analyses

Cumberland's Response:

All surface drainage water and groundwater samples as well as rock, tailings and overburden samples that were collected for analysis were subjected to Quality Control/Quality Assurance measures to minimize errors, optimize sample representation and analytical repeatability in order to maximize the reliability of the results.

Groundwater samples: Water sampling of the wells was conducted to obtain representative samples of the actual groundwater within the screen interval. Guideline procedures presented in USEPA (2002) were followed, including the following:

- measuring of field parameters at selected intervals until 3 stable readings (within 10% of each other) were acquired.;
- minimizing the exposure of the sampled water to the atmosphere;
- using compressed, inert (nitrogen) gas to evacuate samples (from MW03-03[1]);
- conducting in-situ measurements of sensitive chemical parameters (pH, dissolved oxygen, alkalinity, redox, where applicable);
- refrigerating samples at 4°C immediately after collection until shipment to the laboratory; and
- shipping the samples to the laboratory in temperature-regulated coolers within the specified sample holding times.

Upon collection of each sample, standard chain of custody procedures were adhered to. Field blanks and duplicates were also collected during sampling.

Rock and tailing sample representativeness: The objective of a quality assurance/quality control (QA/QC) program is to ensure that the samples collected are representative of the material present on site, and that reported results are defensible and within an acceptable level of accuracy and precision. The tailings were generated from the metallurgical processing circuit, from samples of ore considered representative of each deposit, with Third Portage ore considered representative of North Portage ore. All available decant waters were analyzed such that QA could be evaluated on the leachate solutions of the recombined tailings against those of mixed concentrate and tailings in a 20:80 mixing ratio.

Rock sampling and rock/tailing analytical quality control: A consistent sample collection procedure was applied for all rock samples obtained within this program. Each sample was bagged individually to avoid cross contamination, and was labelled with the sampling date, project number and a unique sample identification number. All rock samples were then shipped to the analytical laboratory along with copies of sample documentation. Similar analytical methodologies were used

[1] Compressed nitrogen was unavailable on site while the other three wells were being sampled, and therefore this method could not be used at these wells.

on all solid samples (rock, overburden and tailing) to allow comparison of results. Analytical methods used are described in Appendices IV (SGS Lakefield Laboratory) and V (CEMI and ALS Laboratories). To assess laboratory analytical precision, replicate ABA analyses were performed on one overburden sample, two mine site infrastructure rock samples, fifteen pit rock samples and one tailing sample. Laboratory replicates of SFE leachate solutions and trench water samples were also completed by the laboratory. The relative percent differences (RPDs) for replicated analyses were calculated and their precision evaluated.

All sample preparation, preservation, quality assurance (QA), quality control (QC), sample submission and test protocols were conducted in accordance with ASTM and USEPA standards for environmental sampling and analysis. Samples were collected and prepared by Lakefield technicians. The liquid decant was preserved using ultra trace reagents. Analytical methods to determine the concentrations of parameters included standard accredited QA/QC procedures. The Laboratory Information System (LIMS No.) sample identification will correlate to the certificates of analysis.

Kinetic testing quality: Timing of leaching cycles was consistent throughout the testing, and all leachates were collected in a similar manner. All solutions were submitted to the same laboratory (ALS of Vancouver), with periodic samples collected in duplicate and sent to a different laboratory (Cantest of Vancouver). A total of 17 inter-laboratory duplicates were analyzed, representing 9% of the total amount of solution analyses completed. The relative percent differences (RPDs) for duplicate analyses were calculated and their precision evaluated. The RPD objective for duplicate aqueous samples is 20%, below which analytical results are considered to have acceptable precision (USEPA, 1994).

Data analysis, analytical repeatability: Analytical results from the duplicate pairs (a duplicate pair consists of the concentration of a given parameter in the original sample and that of the same parameter in the duplicate sample) were compared and the relative percent difference (RPD) was calculated for each set of results greater than or equal to 5 times the method detection limit (MDL). For these results, a water quality objective of less than 20% RPD was established as per USEPA recommended methods (USEPA, 1994). Where one or two results of the duplicate pair were less than 5 times MDL, a margin of +/- MDL was considered acceptable.

Quality Control: Every batch of samples will contain at least 10% duplication and two certified third party standards. Corrective Actions: 1) Check all record keeping to ensure that no errors have been made in the analysis procedure; 2) Examine ICP for any physical reason for the failure. If an obvious problem is detected, re-analyze the existing digested sample solutions for the entire batch; 3) If the above fails to produce passable data or if an obvious problem is not detected, re-digest and re-analyze the entire batch from the beginning; 4) Be sure to double check all sample labelling and record keeping.

4.18 Statements about relevance etc. of data

NIRB's comment:
The Proponent shall provide clear statements regarding the availability, relevance, and quality of the data.

Cumberland's Response:

All of Cumberland's data is available to anyone who requests it. To ensure the relevance and quality of the baseline data collected, qualified specialists were hired to collect and interpret the data and qualified labs used to analyze the data. In addition, all reports were sent out to external experts for review before being included in the DEIS.

4.19 Consultation during significance determination

NIRB's comment:
Hence, the concerned communities, as well as other individuals and organizations, shall be fully consulted in defining impact significance.
Clarify how this was done.

Cumberland's Response:

Cumberland has gathered public input to determine significance of the impacts since 1996 through numerous public meetings, targeted interviews, and a three day impact workshop in 2003 as detailed on table 4.3 pg 31- 35, Volume 1 DEIS. Questions asked during interviews of the elders included: Are you worried about the mine development on the land and water? Are you worried about the effect mine development will have on the fish? Can you suggest ways to ensure the protection of wildlife at the project? What kinds of input and participation would you like to have in planning and monitoring the project? Are there any aspects of the project that you need further explanation about or have

concerns about? The three day impact workshop held in Baker Lake in 2003 included representatives' from the Hamlet council, elders, CLARC, HTO, youth and members of the general public. At that meeting, a translated impact matrix was used and each VEC and VSEC was discussed with expected impacts from the various mine components as well as the proposed mitigation and monitoring plans. Cumberland was presented with an award at the 2005 Nunavut Mining Symposium in recognition of its decade of community consultation and community involvement.

4.19 Ascertaining significance interveners assign to impacts

NIRB's comment:
The Proponent shall describe how it will ascertain the significance that different interveners assign to each impact and how it will proceed if different interveners ascribe varying significance to VECs, VSECs, or the associated impacts.

Cumberland's Response:

Until the technical review is completed, we will not know if the interveners have different opinions significant from that included in the DESI and supporting documents.

4.19 Consensus on significance of impacts

NIRB's comment:
If it is impossible to attain a consensus on the significance of certain impacts, the Proponent shall present the range of viewpoints expressed and shall present and justify its preference, if any.

Cumberland's Response:

Cumberland has gathered public input to determine significance of the impacts since 1996 through numerous public meetings, targeted interviews, and a three day impact workshop in 2003 as detailed on table 4.3 pg 31- 35 volume 1 DEIS. Questions asked during interviews of the elders included: Are you worried about the mine development on the land and water? Are you worried about the effect mine development will have on the fish? Can you suggest ways to ensure the protection of wildlife at the project? What kinds of input and participation would you like to have in planning and monitoring the project? Are there any aspects of the project that you need further explanation about or have concerns about? The three day impact workshop held in Baker Lake in 2003 included representatives' from the Hamlet council, elders, CLARC, HTO, youth and members of the general public. At that meeting, a translated impact matrix was used and each VEC and VSEC was discussed with expected

impacts from the various mine components as well as the proposed mitigation and monitoring plans. To date no differences have been identified. Until the technical review is completed, we will not know if the interveners have different opinions significant from that included in the DESI and supporting documents.

4.20 Role of consultation in Indicators and Criteria selection

NIRB's comment:
In doing so, the Proponent shall describe the role played by consultation with members of the public and technical experts.

Cumberland's Response:
Cumberland has gathered public input to determine significance of the impacts since 1996 through numerous public meetings, targeted interviews, and a three day impact workshop in 2003 as detailed on table 4.3 pg 31- 35 volume 1 DEIS. Questions asked during interviews of the elders included: Are you worried about the mine development on the land and water? Are you worried about the effect mine development will have on the fish? Can you suggest ways to ensure the protection of wildlife at the project? What kinds of input and participation would you like to have in planning and monitoring the project? Are there any aspects of the project that you need further explanation about or have concerns about? The three day impact workshop held in Baker Lake in 2003 included representatives' from the Hamlet council, elders, CLARC, HTO, youth and members of the general public. At that meeting, a translated impact matrix was used and each VEC and VSEC was discussed with expected impacts from the various mine components as well as the proposed mitigation and monitoring plans. In addition to the public input qualified specialists were hired to collect and interpret the data and qualified labs used to analysis the data. In addition, all reports were sent out to external experts for review.

4.21.1.2 Characteristics of processed ore

NIRB's comment:
The characteristics and toxicity of the processed ore, including fines, and windblown dust.

Cumberland's Response:

The chemical, mineralogical and physical characteristics of tailings as well as process water quality have been described in the DEIS and supporting documents. The tailings are expected to have a grain size of up to 50-60 microns. The tailings are detoxified of cyanide and made up of mostly pyrite and pyrotite. They are expected to be acid generating. Under the mine and waste management plan, process water will be recycled to the mill and will not be discharged to the receiving environment until the tailing reclaim pond is drained at closure, at which time the tailing water will be treated before discharge: The tailing impoundment will be operated to minimize dust generation and upon closure will also be designed to minimize dusting. The potential for dust generation from the tailings facility will be reduced after the placement of the cover, or capping, material. The particle size and minimum durability of the cover materials will be assessed in the detailed design phase to limit the potential for dust generation or erosion. These aspects, together with the eventual freezing of the tailings in the containment area are such that the potential impacts of processed ore containment area on the receiving environment are expected to be minimal.

4.21.1.3 Metal content of groundwater

NIRB's comment:
The metal content of frozen groundwater in the waste rock.

Cumberland's Response:

Considering the expected chemical characteristics of frozen waster rock pile pore water (rock pile *groundwater*) (Section 4.10.1.4 response), the small amount of drainage water that is expected to be generated in the summer will be collected in the attenuation pond and treated, if necessary, before discharge. Fluctuations in water quality will be monitored and managed before discharge such the overall effect of frozen waste rock groundwater quality on the receiving environment is expected to be minimal.

4.21.1.3 Suitability of overburden for reclamation

NIRB's comment:
The suitability of the overburden as a substrate for reclamation activities

Cumberland's Response:

The overburden materials are expected to be till. Some of the till will be used in the construction of water and tailings retaining dykes (cutoff and core of dykes). The balance may be placed in the waste rock storage areas, either mixed with the waste rock. There are no plans to use this material for reclamation activities. Similarly, soft sediments are expected to be present on the lake floors. These sediments will need to be removed to beyond the footprint of the tailings dyke and the open pits after the lakes have been drawn down. It is expected that the sediments will be either disposed of in the tailings impoundment or the Portage rock storage facility.

During the development of certain areas of the mine site, some organic materials may need to be excavated. This may be particularly true in poorly drained, low-lying areas where thick organic mats may form. Where possible, this material will be stockpiled for potential use during reclamation activities.

4.21.1.3 Potential for Re-vegetation

NIRB's comment:
The potential for re-vegetation.

Cumberland's Response:

The final surface of the processed ore (tailing) impoundment and of the Portage and Vault waste rock pile is expected to consist of relatively large diameter run-of-mine waste rock (ultramafic waste rock cover over the Portage rock storage facility and the tailings containment area). This coarse material is not expected to sustain vegetation, hence these structures will not be re-vegetated.

4.21.1.14 Impacts of exploration activities

NIRB's comment:
The Proponent shall assess the potential impacts of exploration activities, whether by the Proponent or others that utilize Project infrastructure.

Cumberland's Response:

As discussed in the Cumulative Effects Assessment, exploration activities by Cumberland are not expected to have an adverse impact on the environment. Drill rigs will be moved by a helicopter in the summer months and pulled over the snow and ice in the winter therefore the tundra will not be

impacted. The rigs are located at one location for a short amount of time and the area cleaned up before moving to the next setup. All exploration personal will reside at the mine site so no additional living facilities will be required. No other personal other than Cumberland's employees will use the project infrastructure.

4.21.2.3 Runoff control and treatment

NIRB's comment:
Moreover, the Proponent shall indicate where day-to-day operational problems might occur, particularly regarding runoff control and treatment, and predict the effects of a worst-case scenario in which there is an uncontrolled release of contaminants, including, for example, hydrocarbons, nitrate-contaminated water, or cyanide into the aquatic environment.

Cumberland's Response:
Operational considerations relating to runoff control and treatment may arise from:

- spills in the process plant area or around mill site (machinery);
- spills during water transferring processes (pipe connections);
- overflows from interceptor channels, sumps or ponds; and
- fluctuations in the water treatment process.

While these potential problems can typically be avoided through the use of "best management practices", the development of routine monitoring and maintenance programs and operating procedures to ensure that prompt measures are taken to minimize potential impacts will be required. The monitoring and maintenance programs during operations would include but not be limited to the following items for consideration:

Aquatic effect monitoring: Cumberland will design and implement an Aquatic Effect Monitoring Program (AEMP) for both biological and water chemistry sampling;

Water quality monitoring: Cumberland will continue with the water quality monitoring program at current sampling stations and frequencies;

Environmental monitoring during operational period: Cumberland will continue to develop the AEMP through consultation with regulators and communities on the elements and design specifications.

Hazardous Materials

The Meadowbank project will require the transportation to site, temporary storage and use of hazardous materials on site as part of the normal every-day activities required during the pre-development, operation and closure stages of the project. All hazardous materials used on site will require safe use practices and environmentally acceptable disposal according to the Mine Act regulations.

Hazardous materials consist of industrial chemicals for process and water treatment and hydrocarbon products, including but not limited to diesel fuel, gasoline, aviation fuel and lubricants. Hydrocarbon products will be stored on site and used to generate electrical power and operate the site equipment. Over the life of the mine operations, it is expected that releases of petroleum hydrocarbon products will probably occur at the fuel storage areas at the mine site and at the Baker Lake site and around the process plant facilities, maintenance shops and camp areas.

All potentially hazardous materials at the site, including materials in storage, spilled materials and materials generated from the demolition of buildings and equipment, would be collected and disposed of according to an approved plan and procedure. The selected procedures would be considered comparable to the current "best management practice" for disposal of the particular wastes. It is expected that the hazardous materials would be disposed off-site at approved disposal facilities.

Spilled Materials

In the event of a hydrocarbon spill, the released product will most-likely penetrate the ground surface and flow towards the water table. To limit the infiltration and loss of released products, design measures will be provided to contain the product at fuel handling locations, including a geomembrane liner, containment berms, fuel aprons and collection sump. Additional measures to limit the release of product into open water bodies include containment ditches, skirted oil booms and oil absorbent pads.

All hydrocarbon product spills associated to the mine operation and closure activities require written reporting to document the release and investigation to assess the nature and extent of the impacted area resulting from the spill. Remediation of the spilled material will be subject to the investigation results.

Spilled Tailings

Tailings will be produced as a waste stream from the process plant and discharged by pipeline to the tailings impoundment facility. The tailings impoundment is designed to safely contain the tailings and the seepage water discharge from the impoundment will be collected, monitored and treated if required prior to discharging to the environment.

Tailings spills may occur within the process area, along the pipeline route or from the tailings impoundment. The site area and tailings line route is graded such that all site runoff and any tailings spills drain towards the tailings impoundment and/or collection sumps which will be drained by pump and pipeline to the impoundment facility. Regular monitoring of the tailings pipeline, collection sumps and impoundment facility is required during mine operations.

All tailings spills associated to the mine operation and closure activities require written reporting to document the release and investigation to assess the nature and extent of the impacted area resulting from the spill. Remediation of the spilled material will be subject to the investigation results.

4.21.2.5 Wildlife bioaccumulation

NIRB's comment:
Bioaccumulation and biomagnification of toxins

Cumberland's Response:
The only contaminate possible from the mine includes metals. Metals, except mercury, do not accumulate, or biomagnify in wildlife and fish populations. Metal concentrations in vegetation communities will be monitored annually to determine if loading and exposure to wildlife is occurring. Adaptive management will be used to ensure that exposure of wildlife to metals is minimized".

4.21.2.6 Birds bioaccumulation

NIRB's comment:
Bioaccumulation and biomagnification of toxins

Cumberland's Response:

The only contaminate possible from the mine includes metals. Metals, except mercury, do not accumulate, or biomagnify in birds. Metal concentrations in water will be monitored routinely to determine if loading and exposure to birds is occurring. Adaptive management will be used to ensure that exposure of birds to metals is minimized"

4.21.2.7 Aquatic organisms bioaccumulation

NIRB's comment:
Bioaccumulation and biomagnification of toxins

Cumberland's Response:

The only contaminate possible from the mine includes metals. Metals, except mercury, do not accumulate, or biomagnify in fish. Fish tissue metals and mercury concentrations will be routinely monitored (see AEMP Document) to determine if changes from baseline concentration are occurring. Given the lack of effluent discharge and very low mercury concentration in water, no change in mercury concentration in aquatic biota is anticipated."

4.21.4 (f) Navigable waters

NIRB's comment:
The Proponent shall assess the potential impacts on socioeconomic and cultural components, taking into account navigable waters.

Cumberland's Response:

The project will have no socioeconomic effects related to navigation of waters in Kivalliq region.

4.21.4 Prices and cost of living

NIRB's comment:
Prices and the cost of living.

Cumberland's Response:

Potential cumulative inflationary effects are noted in the discussion on cumulative effects in the Socioeconomic and Archaeology Impact Assessment. Significantly inflationary effects in Baker Lake as a result of the Meadowbank project alone are not expected. High existing levels of unemployment,

anticipated low levels of migration, limits on the presence of project workforces in Baker Lake itself and the systems for provisioning and housing in Nunavut itself are factors that will limit any potential for significant effects on prices and costs of living. This will be clarified in the final EIS.

4.21.5 Justify assumptions, models etc. Cumulative Effects Assessment

NIRB's comment:
The Proponent shall describe and justify all assumptions, models, and information limitations and associated levels of uncertainty.

Cumberland's Response:

There were no assumption, information limitations or associated levels of uncertainty in the Cumulative Effects Assessment.

4.23 Summary of impacts to highlight important ones

NIRB's comment:
The summary shall clearly highlight those impacts judged to be of greater importance and those that may require extensive mitigation measures and monitoring.

Cumberland's Response:

Table 4-25 included in the DEIS on page 180 lists all significant impacts that require mitigation and monitoring.

4.24.1 Overview solid wastes

NIRB's comment:
Domestic and industrial solid wastes;

Cumberland response:

Domestic and Industrial Solid Wastes

During pre-mining and mining operations, domestic and industrial solid wastes will be generated by the project. Appropriate solid waste management plans will need to be developed and implemented. Typically these will include, but not be limited to, the following activities.

Inorganic Solid Waste (Non-Hazardous)

Domestic and industrial inorganic solid waste will be segregated into material categories, including but not limited to concrete, metal, rubber, and plastic. Those materials deemed suitable for landfill deposition will be placed in a designated landfill area within the Portage waste rock storage facility. All other material considered unsuitable for landfill deposition will be packaged for shipment and disposal off-site.

Sewage Treatment and Organic Waste

It is understood that sewage treatment will be carried out as part of the camp facilities and the effluent will be treated to a Level 3 standard for discharge to the environment. Organic materials, including but not limited to paper, wood, food waste and sewage treatment sludge, will be incinerated and the ash will be placed within the tailings impoundment.

4.24.1 Human resources

NIRB's comment:
Human resources

Cumberland's Response:

Management of Human Resources is discussed in the DEIS, Socioeconomic Management Plan and Human Resource Management plan and the IIBA when negotiations are completed.

4.24.1 Public involvement

NIRB's comment:
Public involvement, including a communications strategy N - Provide Public Involvement Plan as noted in Guideline 4.24.3.4

Cumberland's Response:

See Public Involvement Plan included with this letter.

4.24.1 Security

NIRB's comment:
Ability to post full security.

Cumberland's Response:

When the time comes, Cumberland will supply a bond or other form of financial security to the KIA as land owner and the water board as part of the water licence.

4.24.1 Negotiation of Agreements

NIRB's comment:
Moreover, the Proponent shall discuss the negotiation of an agreement or agreements with the concerned communities that would permit them to participate fully in the planning, execution, and evaluation of mitigation measures. N - Include in Public Involvement Plan

Cumberland's Response:

See Public Involvement Plan included with this letter.

4.24.2.1 Caribou

NIRB's comment:
The Proponent shall discuss how it intends to use and/or support such initiatives as the Bathurst Caribou Management Committee.

Cumberland's Response:

Cumberland has presented the project to The Beverly and Qamanirjuaq Caribou Management Board. Results of our surveys have been shared with the board. We will also keep them up todate with our activities. The Bathurst Caribou herd does not have any relation to this project.

4.24.3 Management of Impacts on Socio-Economic Environment

NIRB's comment:
human resources

Cumberland's Response:

Management of Human Resources is discussed in the DEIS, Socioeconomic Management Plan and Human Resource Management Plan and the IIBA when negotiations are completed.

4.24.3 Management of Impacts on Socio-Economic Environment

NIRB's comment:
public involvement

Cumberland's Response:

See Public Involvement Plan included with this letter

4.24.3.1 Human Resources Plan

NIRB's comment:
The Proponent shall prepare a Human Resources Plan, which might consider: human resources legislation; organization planning; succession and career plans; compensation plans and profit-sharing; benefit programmes (e.g., health care plan, work clothing and safety equipment, vacation leave); work rotation and pay schedules; health and safety programmes; hiring practices and procurement; skills and entry requirements; training and development; control of movements to and from the Project site; on-site public safety with respect to firearms, while respecting the rights and needs of harvesters from adjacent communities to travel freely through the country; alcohol and drugs; smoking; sexual and gender harassment; employment for women; human resource information systems; labour relations (e.g., procedure for submitting grievances or concerns, disciplinary procedures); employee communications; incorporation of relevant IBA terms and conditions; and the use of and payment for municipal facilities and services in local communities.

Cumberland's Response:

Management of Human Resources is discussed in the DEIS, Socioeconomic Management Plan and Human Resource Management plan and the IIBA when negotiations are completed.

4.24.3.4 Public Involvement

NIRB's comment:
Provide Public Involvement Plan

Cumberland's Response:

See Public Involvement Plan included with this letter

4.26 Monitoring and follow up

NIRB's comment:
The Proponent shall present a Monitoring and Follow-Up Plan that includes compliance monitoring, (Compliance monitoring refers to verifying the Proponent's conformity with regulatory standard), biophysical. Monitoring, (Biophysical monitoring involves the monitoring of such biophysical components as air, water, and land) and socioeconomic monitoring (Socioeconomic monitoring involves the monitoring of socioeconomic parameters, for example employment of Nunavummiut and other northerners and the purchase of goods and services in the Region.).

Cumberland's Response:

The Monitoring and Follow up Plans were submitted as supporting documents with the DEIS. These can be found in the Terrestrial Management Plan, The AEMP plan including the MMER and the NNL plan, the Socioeconomic Impact Management Plan, the Air Quality and Noise Management Plan, and the Reclamation and Closure Management Plan. These plans contain monitoring activities that will be continued as per the terms set out in existing regulations and as per those future terms that will be included in the future permits, licences, security bonds and leases that will be required before construction begins.

4.26.1 Distinguishing natural from project change

NIRB's comment:
How its monitoring programme would distinguish between natural environmental changes and those caused by the Project,

Cumberland's Response:

Methods to distinguish between natural changes and project related changes are can be found in the Terrestrial Management Plan, The AEMP plan including the MMER and the NNL plan, the Socioeconomic Impact Management Plan, and the Air Quality and Noise Management Plan. These include using reference lakes for aquatic changes(figure 4.42 pg 199), continuing monitoring of wildlife on a regional and local scale to identify any changes in populations or distribution patterns and comparison of region social conditions with Baker Lake.

4.26.1 Post closure monitoring

NIRB's comment:
In the case of post-closure monitoring, the Proponent shall describe how long term monitoring will continue and shall identify who will assume the costs and responsibility, especially in the event of changes of corporate ownership.

Cumberland's Response:

The Monitoring and Follow up Plans were submitted as supporting documents with the DEIS. These are summarized in the DEIS and can be found in the Terrestrial Management Plan, The AEMP plan including the MMER and the NNL plan and the Socioeconomic Impact Management Plan. These plans contain monitoring activities that will be continued as per the terms set out in existing regulations and as per those future terms that will be included in the other permits, licences, security bonds and leases that will be required before construction begins. Cumberland Resources will pay for the monitoring. This responsibility will be transferred to the new owners if there is a change of ownership.

4.26.1 Consultation on monitoring plans

NIRB's comment:
The Proponent shall consult with all concerned regulatory authorities and stakeholders to maximize the chances that it proposes a clear, comprehensive, and proactive Monitoring and Follow-Up Plan.

Cumberland's Response:

Cumberland has gathered stakeholder input to determine significance of the impacts including monitoring plan since 1996 through numerous public meetings, targeted interviews, and a three day impact workshop in 2003 as detailed on table 4.3 pg 31- 35 volume 1 DEIS. Questions asked during interviews of the elders included: Are you worried about the mine development on the land and water? Are you worried about the effect mine development will have on the fish? Can you suggest ways to ensure the protection of wildlife at the project? What kinds of input and participation would you like to have in planning and monitoring the project? Are there any aspects of the project that you need further explanation about or have concerns about?

The three day impact workshop held in Baker Lake in 2003 included representatives' from the Hamlet council, elders, CLARC, HTO, youth and members of the general public. At that meeting, a translated impact matrix was used and each VEC and VSEC was discussed with expected impacts from the

various mine components as well as the proposed mitigation and monitoring plans. Comments from regulators will come from the technical review.

4.27 Auditing and Continual Improvement System

NIRB's comment:
The Proponent shall prepare an Auditing and Continual Improvement System to review and continually improve environmental and health and safety management. Such a system shall address:
•monitoring and measurement
•non-conformance reporting
•corrective and preventive action plans
•record-keeping and documentation control
•audits of environmental and health and safety management.
The Proponent shall describe the implementation of the system by discussing such things as training, awareness, competence, documentation, operational control, and records.
N - Provide details of Auditing and Continual Improvement System.

Cumberland's Response:

The DEIS, pages 212 –213, the IIBA and the Monitoring and Follow up Plans submitted as supporting documents with the DEIS (the Terrestrial Management Plan, The AEMP plan including MMER and the NNL plan, the Socioeconomic Management Plan, Human Resource Plan, Public Involvement, Occupational Health and Safety, Emergency Response Plan,) addresses monitoring and measurement, non-conformance reporting, corrective and preventive action plans, record-keeping and documentation control, audits of environmental and health and safety management and the implementation of the such things as training, awareness, competence, documentation, operational control, and records.

4.28 Closure and Reclamation

NIRB's comment:
The Proponent shall specify when a temporary closure should be considered to be permanent.

Cumberland's Response:

As long as there is still gold remaining at Meadowbank any temporary closure will remain temporary. Permanent closure will occur when all the economic gold is mined. Lupin is a good example of a mine that has been temporarily closed on and off for many years and still isn't permanently closed.

4.28 Reclamation research program

NIRB's comment:
The Proponent shall discuss a research programme that is consistent and compatible with broader efforts under way within Nunavut to address challenges to reclamation, such as the cold environment, poor soil development, limited topsoil resources, slow growth rates, limited seed production, low soil moisture, and short growing seasons.

Cumberland's Response:

Restoration at the mine site will be ongoing over many years. Efforts that are achieving the desired results will be continued and those that aren't will be changed or altered. All specialists will keep abreast of the latest information available on reclamation efforts in the arctic.

4.28 Reclamation research

NIRB's comment:
The Proponent shall evaluate the cost and feasibility of going beyond mere reclamation by enhancing wildlife habitats and undertaking other forms of beneficial landscaping.

Cumberland response:

Restoration at the mine site will be based on regulatory approvals licenses, leases and permits. Any additional reclamation work would require permission of KIA, which is the landowner, and will be addressed in development surface leases negotiated with KIA.