IR Number 1.2.71 **(Source: KTFN)**

Preamble

The National Energy Board and Indian and Northern Affairs Canada undertake inspections of Paramount's Cameron Hills operations.

Request

Please provide the MVEIRB with the following information:

a) Dates of all inspections completed in 2000, 2001, 2002 and 2003.

b) Copies of all inspection reports with any problems, concerns or infractions highlighted.

c) Copies of any orders or instructions that were issued to Paramount.

d) Identification of any outstanding concerns and plans for resolving those concerns.

e) An explanation as to why the inspection reports and any orders or instructions were not automatically provided to the Ka'a'Gee Tu First Nation as soon as they were prepared.

f) If the position taken is that the NEB and INAC are not the organizations responsible for informing the KTFN of environmental problems, then please identify the organization that is responsible for doing so.

Response

This I.R. was addressed to INAC.

IR Number 1.2.72 **(Source: KTFN)**

Preamble

Paramount provides very little information on the extent of the erosion problems that have been encountered or of its efforts to repair and prevent these problems.

Another IR has asked for a copy of the November 2002 Golder report titled "Erosion Survey and Mitigation Plan for the Cameron Hills Gathering System and Pipeline". It is expected that this report will describe what was planned but it likely does not describe what was actually done.

Request

Please provide the MVEIRB with the following information:

a) Explain what Paramount did to repair existing erosion problems and to prevent future problems.

b) Provide copies of all reports prepared as a result of these erosion issues.

Response

a) Paramount has an on-going program that focuses on the monitoring and remediation of erosion issues associated with Cameron Hills Gathering System and Pipeline. Erosion issues were identified by: Parkvalley Consulting Ltd in their August 2002 report "Environmental Assessment and Remediation Plan for Erosion Issues at the Paramount Resources Ltd. Cameron Hills Gathering System and Transborder Pipeline"; Golder in the November 2002 report "Erosion Survey and Mitigation Plan for the Cameron Hills Gathering System and Pipeline"; and continue to be identified by Paramount staff and regulators whenever environmental inspections are conducted. Where appropriate in terms of access and ground conditions, mitigation measures were implemented during the summer months. However, where access was limited and heavier equipment was needed, the remediation work was conducted during the winter period.

Operators were given a training course that focused on the identification of erosion, mitigation methods and required actions. The methods promoted and used by Paramount are similar to those noted in Chapter 4 Drainage and Erosion Control of the Reclamation Guidelines for Northern Canada by Hardy BBT Limited 1987 (ISBN 0-662-15735-4).

The monitoring of erosion issues is reported in the annual " Cameron Hills Gathering System and Transborder Pipeline Right-of-Way 2003 Revegetation, Permafrost and Access Monitoring".

b) Copies of the Parkvalley August 2002 report, "Environmental Assessment and Remediation Plan for Erosion Issues at the Paramount Resources Ltd. Cameron Hills Gathering System and Transborder Pipeline" were provided to INAC and the NEB and a copy of the above mentioned report is being submitted to the MVEIRB for their public registry in support of this EA.

The distribution of the Golder study "Erosion Survey and Mitigation Plan for the Cameron Hills Gathering System and Pipeline" was referred to earlier in IR Number 1.2.47.

The Reclamation Guidelines for Northern Canada by Hardy BBT Limited 1987 is a public document and copies can be obtained through INAC (ISBN 0-662-15735-4).

IR Number 1.2.73 **(Source: KTFN)**

Preamble

In Section 7.3.3.1.2, Paramount states that the probability of impact occurrence is high for the Application case. However, in Section 7.3.4, Paramount states that the probability of impact occurrence is moderate for the Application case.

Table 7.3-5 shows a total disturbed area for the planned case as 2093 ha. However, in Section 7.3.4, Paramount states that the total disturbed area is 2135 ha and in the response to IR 1.1.20 Paramount has a total disturbed area of 2074 ha.

Request

Please provide the MVEIRB with the following information:

a) Resolve inconsistencies.

Response

a) The probability of occurrence of impacts to soil and terrain for the Application Case is considered to be high. Section 7.3.4 should be amended to reflect this. This amendment does not change Paramount's assessment of the Environmental Consequence of the project to soil and terrain.

The inconsistencies in total area of disturbance is related to the methods of measurement i.e., CAD vs. GIS. Inconsistencies can result from overlap of disturbance areas such as areas of crossover of seismic lines, roads leading into wellsites, wellsites/facilities placed over existing seismic lines, etc.

The table presented in response to the IR.1.20 did not include the note about 19.2 ha of emergency access, just the breakdown of actual disturbance areas.

	Baseline		**Application**		**Planned Development**	
	Incr.	**Cumul.**	**Incr.**	**Cumul.**	**Incr.**	**Cumul.**
GIS	1918	1918	28	1946	147*	2093
CAD	1885	1885	31	1916	170*	2086

* note that the incremental disturbance for the planned development case includes 19.2 ha of emergency access that is theoretical and does not exist on the physical footprint, due to uncertainty of its location.

As such, the 2,074 ha presented in IR 1.2.20, plus the 19 ha, would result in the proper value of 2093 used during the DAR assessment.

The 2,135 ha value presented in Section 7.3.4 was a typographical error, and should have been 2093, as indicated in Table 7.3-5.

IR Number 1.2.74 **(Source: KTFN)**

Preamble

In Table 7.3-6 Paramount has not provided the rationale for its magnitude ratings.

Also, Paramount has assigned a frequency rating of low to all of the soil and terrain impacts. These impacts will be continuous and should have a rating of high.

Request

Please provide the MVEIRB with the following information:

a) *Provide the rationale for the magnitude ratings and resubmit the analysis with "high" ratings for frequency.*

Response

a) Magnitude Ratings

The magnitude ratings are based on the percent of the Terrestrial CESA disturbed in each of the Assessment Cases (Baseline, Application and Planned Development). The rationale for the magnitude rating is presented in Section 7.1.1.5.1 - Impact Description Criteria, page 127, second paragraph, as follows:

"*...The categorization of the impact magnitude (i.e. high, moderate, low or negligible) is based on a set of criteria, ecological concepts and professional judgment pertinent to each of the discipline areas analyzed. Negligible means no measurable effect. Low, is <10% change in the measurement endpoint. Moderate, is 10 – 20% change in the measurement endpoint. High, is >20% change in the measurement endpoint.*"

The assessment criteria are based on the criteria developed by Suter et al. (1995) who reviewed several types of ecological and health information. These different types of ecological information were consistent in that an effect on 20% or less of an ecological parameter is not detectable at the population level. Hence a greater than 20% change is considered to potentially affect a population. The criteria used for the DAR are based on this concept. However, additional conservatism is built into the criteria. Suter et al. (1995) predict that effects will begin to be manifested at 20% change. However, in the EIA, impacts are classified as measurable at a low magnitude when a 10% change occurs. Approaching this conservative threshold is considered unlikely to result in serious consequences because of the built-in conservatism of the approach.

In addition, the residual impact criteria classification is the result of numerous reviews as described in Paramount's response to IR 1.2.60. Paramount believes the impact classification system for magnitude is defensible and conservative.

Frequency Rating

The frequency rating is based on how often a given impact occurs over the duration of the project. Paramount maintains that the majority of impacts to soil and terrain units occurs only once. In other words, a soil unit is stripped only once, a terrain unit would be graded only once, etc. Paramount recognizes that the length of time over which the residual impact occurs is long term. This is reflected in a duration rating for all categories in all assessment cases in Table 7.3-6 of long term. Therefore, Paramount's assessment of the impacts as presented in the DAR is valid and, as such, a reassessment is not appropriate.

The MVEIRB and other reviewers are reminded that Paramount has provided details of the current project and their estimations of future activities in the Cameron Hills which allow reviewers to implement their own systems of impact analysis for discussion.

References:

Suter, G.W. II, B.W. Cornaby, C.T. Hadden, R.N. Hull, M. Stack and F.A. Zafran. 1995. An Approach for Balancing Health and Ecological Risks at Hazardous Waste Sites. Risk Analysis. Vol. 15, No. 2. Society for Risk Analysis.

IR Number 1.2.75 **(Source: KTFN)**

Preamble

In Section 7.4.4.2, Paramount lists the potential impacts on surface water. This list does not include altered flows despite the fact that altered flows were one of the results of the erosion problems that occurred.

Request

Please provide the MVEIRB with the following information:

a) *An analysis of the potential for altered surface, and sub-surface, water flows due to this project.*

Response

a) Paramount has addressed the potential for erosion, the mitigation of this impact and the assessment of the potential effects on surface water quantity, including altered flows in several places in Section 7.4 of the DAR as follows:

7.4.4.1.1 – Valued Ecosystem Components: *Hydrology (Water Quantity)*

7.4.4.1.2 – Indicators to Assess VECs: *change in flows in the receiving streams; change in lake water balance*

7.4.4.1.3 – Parameters for Characterizing Effects: *mean annual discharge for flows; mean lake water balance*

7.4.4.2.1 – Seismic Exploration: *No source water is required for seismic exploration operations. The only effect seismic exploration has on surface water hydrology is related to the increased runoff potential in cleared areas as compared to forested areas. This effect will be minimized by leaving the ground vegetation intact.*

7.4.4.2.2 – Site Construction and Drilling: *Direct effects from drilling activities are not expected to impact surface water resources, as the footprint is small and leases are located at least 100 m from drainages and water bodies.*

7.4.4.2.3 – Pipeline Construction: *Winter construction will mitigate erosion during wellsite and access road construction. In addition, topsoil and ground cover vegetation will be reasonably undisturbed mitigating runoff effects in the snowfree months. Pipeline ROWs will follow existing or recently constructed access roads, where possible, to minimize the total cleared area and the number of waterbody crossing points.*

7.4.4.2.4 – Production Operations: *...Access roads will be frozen down each winter season by the application of water to prevent damage to vegetation and soil... Maintenance of wells and facilities requiring the access of heavy equipment will be scheduled during frozen ground conditions. However, emergency maintenance may be required during open water conditions. In such a case, suitable methods of access will be determined on an as-needed basis....*

7.4.5.3.1 – Residual Effects on Hydrology, Disturbed Areas: *Development activities including seismic exploration, drilling activities, pipeline construction and production operations will increase the extent and size of cleared areas in the Aquatics Study Area. The cleared areas have the potential to yield higher runoffs and sediment yield to the receiving streams than forested areas...*

For the Planned Development Case, the percentage of disturbed area relative to the Cameron River watershed area is less than 0.2%, assuming all disturbed areas are in the Cameron River watershed (only a very small fraction of the disturbed area is in the Unnamed Creek watershed). The percentage reduction in undisturbed areas is very small and will result in negligible changes to the mean flows in the Cameron River and the Unnamed Creek. With effective mitigation and reclamation measures in place, changes in flows in the receiving streams are expected to be negligible.
The drainage area of Lake 1, which is 23 km^2 at the outlet, includes a lake area of 8.7 km^2 and a contributing drainage area of 14.3 km^2. There are no disturbed areas in Lake 1 watershed since there are no planned developmental activities in the lake watershed.

Considering the small footprint and the mitigative measures described above, Paramount does not consider the reviewer's claimed linkage between project effects and alteration of subsurface water flows to be valid.

As an analysis of the potential for altered flows has been completed, Paramount feels that no further work is required to address this IR.

Further, the conditions (i.e., deep snow pack, quick melt, spring rain) of the spring of 2002, lead to conditions where surface water was prevalent throughout the Cameron Hills. This lead to areas of erosion that were immediately addressed (i.e., diversion ditches and silt fences installed) by Paramount, and a subsequent evaluation of the ROW was completed to determine appropriate remediation. The suggested work, which included construction of water diversion berms and additional silt fencing, was completed in the winter of 2002/2003. Further, Paramount operators continue to monitor the ROW on a regular basis, and have received instruction related to identification of erosion, and the appropriate mitigation actions. As such, Paramount continues to use their adaptive management approach to dealing with issues that arise at Cameron Hills.

IR Number 1.2.76 **(Source: KTFN)**

Preamble

Using guidelines established by DFO, Paramount will be withdrawing water from surface water bodies for use in its operations.

Request

Please provide the MVEIRB with the following information:

a) *Explain how DFO will monitor the impacts on a year-to-year basis to ensure that too much water is not withdrawn from the surface water bodies.*

b) *Explain what DFO will do, and under what authority, in the event that too much water is being withdrawn.*

Response

This I.R. was addressed to the DFO.

IR Number 1.2.77 **(Source: KTFN)**

Preamble

Wolves and wolverine were not among the species included in the analysis as Valued Ecosystem Components. Wolves are the primary predator species for caribou and moose in the area. Wolverines are known to be sensitive to development.

Request

Please provide the MVEIRB with the following information:

a) Add wolves and wolverines to the list of Valued Ecosystem Components and submit an impact analysis for these species. In that analysis, please ensure that impacts resulting from human-wildlife interaction, such as wolverines scavenging at project areas, are included. These interactions have proven to have significant adverse impacts on wolverines for other projects in the NWT.

Response

a) Paramount recognizes that wolves and wolverines are ecologically and culturally significant wildlife species that may occasionally be found within the Cameron Hills Project area. However, as stated in section 7.1.1.3 of the DAR it "is not practical to study all ecosystem components within an area, those representative of public and scientific values are typically chosen for management purposes." The wildlife VECs that were assessed included: moose, woodland caribou, marten and forest songbird communities. As moose and caribou would form a large portion of the prey base for wolves and wolverines, effects assessed for these VEC species could be similarly interpreted for wolves and wolverines. The rationale for VEC selection was outlined in Table 7.6-6 of the DAR.

IR Number 1.2.78 **(Source: KTFN)**

Preamble

As proposed mitigation, Paramount states that pre-project surveys were completed to identify sensitive locations for disturbance.

Request

Please provide the MVEIRB with the following information:

a) Provide the results of these surveys.

Response

a) The DAR assesses the cumulative effects related to Baseline Case, Application Case, and Planned Development Case, as per the Terms of Reference. Table 7.6-7 outlines proposed mitigation Paramount will apply to the various potential project components as they arise. As such, the surveys would be completed during the planning phases, prior to the development.

Results of surveys, which may include desktop and field assessments, previously completed by Paramount, relevant to Cameron Hills projects, are available in the public registry (i.e., Mackenzie Valley Land and Water Board), in documents such as the Environmental Impact Assessment for the Cameron Hills Gathering System and Facilities Project (Golder and Alpine 2001).

With respect to wildlife and wildlife habitat referred to in Table 7.6-7, the sensitive locations typically surveyed for within the Cameron Hills are related to raptor stick nests, bear and/or wolf dens and the larger drainage basins (e.g., Cameron River valley). To date, no raptor nests, nor bear or wolf dens have been identified during any of the surveys (Golder and Alpine 2001) or construction monitoring (e.g., heritage resource monitoring completed by Fred Simba). The mitigation options have been designed to minimize the disturbance to the other areas (e.g., limiting the number of crossings of the Cameron River; using existing disturbance corridors to the maximum extent practical), and optimize reclamation efforts.

References:

Golder Associates Ltd. and Alpine Environmental Consulting Ltd. 2001. Environmental Impact Assessment for the Cameron Hills Gathering System and Facilities Project. Prepared for Paramount Resources Ltd. 152 pp + Appendices.

IR Number 1.2.79 **(Source: KTFN)**

Preamble

As proposed mitigation, Paramount states that nest trees encountered during construction will not be cut down if possible.

Request

Please provide the MVEIRB with the following information:

Describe the process that will occur, including:

i. the identification of individuals who are responsible for identifying these nests
ii. the training that will be provided to these individuals
iii. the process that will be used to look for nests and
iv. the decision process for deciding whether or not to cut down such trees.

Response

i) Surveyors and the operators of clearing machinery are responsible for noting the existence of nest trees. Surveyors will mark their location and provide for right-of-way deflection to avoid them. Nest trees missed by the surveyors, but detected by clearing machinery operators will be avoided by deflecting the right-of-way.

ii) Surveyors and clearing machinery operators will receive awareness training from the on-site environmental inspector.

iii) Locating nest trees will be a visual inspection.

iv) Nest trees will not be cut down and wherever possible they will be avoided and left standing.

IR Number 1.2.80 **(Source: KTFN)**

Preamble

Paramount notes that construction noise and light may cause temporary displacement of wildlife.

Request

Please provide the MVEIRB with the following information:

a) Describe what Paramount has done to minimize the impacts of noise and light during all phases of the project. For example, has Paramount used low impact lighting systems?

b) Describe what Paramount will do to minimize the impacts of noise and light during all phases of the project. For example, will Paramount use low impact lighting systems?

Response

a) Paramount insists that mufflers are fitted to all vehicle and compressor engines to reduce noise.

It should be noted in the most recent noise survey, of June 2003, that the current noise levels from the H03 Central Battery Facility are well within the nighttime target of 40dBA.

Paramount does not install "low impact" lighting systems, but it does avoid the use of tall light poles for yard lighting. Paramount prefers to mount lighting fixtures on building walls. Wellsite facilities are not equipped with permanent light fixtures. Paramount will investigate the use of low impact lighting systems.

b) Paramount will continue its current practise as outlined in (a) above.

IR Number 1.2.81 **(Source: KTFN)**

Preamble

As proposed mitigation, Paramount states that bends in the rights-of-way will limit the lines-of-sight.

In reviewing the project maps, there appear to be many long, straight stretches that would have long lines-of-sight.

Request

Please provide the MVEIRB with the following information:

a) Explain if Paramount will adhere to a maximum acceptable distance for lines-of-sight

b) Describe the rationale for the selected distance.

Response

a) One of the primary objectives of Paramount's mitigation strategy, is to utilize existing disturbance corridors to the extent feasible. As such, the drilling access, and subsequently pipeline rights-of-way, typically follow seismic lines that have been previously cut. Usually, the seismic lines are widened to accommodate the required construction equipment. Putting additional bends, or dog-legs, into the pipelines would be expected to result in additional, unnecessary disturbance to habitat, increased costs, and not result in decreases in line-of-sight distances. As such, Paramount cannot suggest, and therefore cannot adhere to, a maximum acceptable distance for lines-of-sight. Paramount considers that natural topographical relief, and eventually, revegetation, are expected to also provide mitigation for line-of-sight.

b) see response to a).

IR Number 1.2.82 **(Source: KTFN)**

Preamble

Paramount refers to a 2003 report on the wildlife monitoring program.

Request

Please provide the MVEIRB with the following information:

A copy of this report.

Response

Copies of the Golder report "Paramount Resources Ltd. / Paramount Transmission Ltd. Cameron Hills Gathering System and Transborder Pipeline Post-Construction Wildlife Monitoring: 2003 Winter Track Counts" were distributed on November 19, 2003 to several government agencies and First Nations communities including Chief Lloyd Chichot of the Ka'a'gee Tu First Nation and their solicitor (Gillian Calder of Mindell Pinder). An additional copy of the report is being submitted to the MVEIRB for their public registry in support of this EA.

IR Number 1.2.83 (Source: KTFN)

Preamble

Paramount provides data on direct habitat losses and habitat losses due to sensory disturbance. However, the analysis provided is of little value for several reasons:

- *Paramount need to sum the direct and sensory habitat losses together to obtain a total area of the habitat that is lost;*
- *Paramount has not presented any thresholds for the target species. For example, at 100% habitat loss it is assumed that a target species will be gone from the area. However, the species is unlikely to wait until there is 100% habitat loss before leaving. When is the species expected to leave? At 40% habitat loss? 50%? At what percent of habitat loss will a target species begin to experience stresses that might affect individual animal health or result in local population declines?*
- *The habitat losses are presented on the basis of the entire study area. This does not recognize that some areas will have higher habitat losses than others due to the intensity of activity. Paramount needs to present maps for each target species and for each development case that identifies habitat losses within portions of the study area. This information could be presented as shaded regions that show areas with 0-10% losses, 10-20% losses, etc. depending upon what the thresholds are for that particular species. The areas of each range of habitat losses should be summed and presented in a table format as well.*

Request

Please provide the MVEIRB with the following information:

An analysis that includes the information requested above.

Response

a) The assessment for effects to wildlife as a result of direct habitat loss and indirect habitat loss, through potential sensory disturbance, are conducted separately as they are believed to have different effects on wildlife and due to confidence levels associated with predictions for each effect. Direct habitat loss is a straight forward assessment and there is a high degree of confidence associated with this prediction. Indirect habitat loss as a result of potential sensory disturbance is considered to be a conservative approach as, with the exception of caribou, there is very little information available that quantifies the effects of sensory disturbance on wildlife. Furthermore, the assessment process that was used in the DAR is a transparent process where numbers are presented in Tables 7.6-9 to 7.6-15, thus, if residual impacts are required to be determined by assuming different interpretations, the reader can do so. Therefore, it is not necessary to sum the total areas of direct and indirect habitat loss for reasons stated above.

b) The availability of literature on species-specific habitat loss thresholds is not available. Therefore, we assumed a 20% loss as having a high magnitude based on Suter et al. (1995), however, magnitude rankings were assigned for losses less than 20% (see Section). As species in the boreal forest have evolved in a natural disturbance regime that was likely higher in the past than currently, due to fire suppression, our assumption of 20% is believed to be conservative. The reader is referred to the response to IR 1.2.115 or additional discussion on this approach.

c) The reader is referred to the map for the response to IR 1.2.123 which displays the linear disturbance density within the CESA.

References:

Suter, G.W. II, B.W. Cornaby, C.T. Hadden, R.N. Hull, M. Stack and F.A. Zafran. 1995. An Approach for Balancing Health and Ecological Risks at Hazardous Waste Sites. Risk Analysis. Vol. 15, No. 2. Society for Risk Analysis.

IR Number 1.2.84 **(Source: KTFN)**

Preamble

Paramount provides data on barriers to movement due to linear disturbances. Again however, the analysis provided is of little value for a couple of reasons:

- *Paramount has not presented any thresholds for the target species. For example, at what linear disturbance density is a species likely to leave an area? At 3 km/km2? At 4 km/km2? At what linear disturbance density will a species begin to experience stresses that might affect individual animal health or result in local population declines?*
- *The linear disturbance density of 3 km/km2 is presented on the basis of the entire study area. This does not recognize that some areas will have higher densities than others due to the intensity of activity. Paramount needs to present maps for each target species and for each development case that identifies linear disturbance densities within portions of the study area. This information could be presented as shaded regions that show areas with a 0-1 km/km^2 density range, a 1-2 km/km^2 density range, etc. depending upon what the thresholds are for that particular species. The areas of each range of linear disturbance density should be summed and presented in a table format as well.*

Request

Please provide the MVEIRB with the following information:

An analysis that includes the information requested above.

Response

a) Thresholds for target species used in the DAR, have not yet been developed. However, the best information on habitat and disturbance thresholds comes from literature on woodland caribou in Alberta. Although not a direct reference to linear disturbance density thresholds for caribou, Dzus (2001) found the following relationships for woodland caribou population stability and linear disturbance density in Alberta:

Range	Population Status	% of Study Area within 250 m of Linear Corridor	Linear Corridor Density (km/km^2)
West Side of Athabasca River (WSAR)	Stable	-	-
East Side of Athabsca River (ESAR)	Decline	51.9%	2.04
Red Earth	Decline	55.5%	1.8
Caribou Mountains	Decline	27.9%	0.7
Cold Lake Air Weapons Range AB	Increase	38.6%	0.89
Cold Lake Air Weapons Range SK	Decline	38.6%	0.89

The results of this table show that there is a large amount of variability in the response of a given caribou range as a result of linear corridor density. This suggests, that there are other factors involved in woodland caribou population stability in Alberta and perhaps linear corridor density may not be a good threshold indicator, at least not for all caribou ranges. For specific findings on linear disturbance densities related to barriers to movement, see response to 1.2.13 part c.

b) The reader is referred to the map for the response to IR 1.2.123 which displays the linear disturbance density within the CESA.

References:

Dzus, E. 2001. Status of the Woodland Caribou (Rangifer tarandus caribou) in Alberta. Alberta Environment, Fisheries and Wildlife Management Division, and Alberta Conservation Association. Wildlife Status Report No. 30. Edmonton, AB. 47 pp.

IR Number 1.2.85 (Source: KTFN)

Preamble

Paramount needs to present the rationale for each magnitude rating.

Paramount has assigned a short-term duration to sensory disturbance potential. This needs to be changed to long-term as the disturbance will exist for at least 20 years and probably longer.

Paramount has applied a medium-term duration to direct habitat loss, increased predation/hunting/trapping and barriers to movement. All of these impacts are due to land being cleared for the project. Paramount's explanation for why it assigned medium-term durations in its response to IR 1.1.11 is not adequate. Although revegetation of the cleared areas will likely begin in the medium-term (<20 years), it is unlikely to be completed. This analysis needs to be redone using a long-term duration for these impacts.

Paramount has assigned a frequency of low to the three impacts discussed in the previous paragraph. As an explanation for why it has done so, Paramount states in its response to IR 1.1.11 that the vegetation will only be cleared once. This is a ridiculous argument for Paramount to be making. Although the clearing of vegetation only occurs once, the vegetation will likely remain cleared for the duration of the project and at least partially cleared for a substantial period of time after the project ends. Therefore, the impacts associated with the clearing will occur on a continuous basis until the land is revegetated. The analysis needs to be redone with a high rating for frequency.

For the sensory disturbance impact, Paramount has also assigned a rating of low for frequency. This analysis needs to be redone with a frequency rating of high. Sensory disturbance due to project noise, light, the presence of clearings and cutlines, etc. will be continuous for the lifespan of the project and in some instances beyond.

Request

Please provide the MVEIRB with the following information:

Redo and resubmit the wildlife analysis with the changes described above.

Response

a) There seems to be confusion in the interpretation of Impact Description Criteria (Section 7.1.1.5.1) ***duration*** and ***frequency,*** perhaps due to a lack of detailed description of these criteria and the difference between project **activity** and project

effect. ***Duration*** refers to the length of time that the **effect**, from the project **activity**, influences the receptor or VEC. Conversely, ***frequency*** refers to the number of times the specific project **activity** occurs. For example, the clearing of existing vegetation is a project **activity** that is required for project features such as rights-of-ways and well sites. The **effect** of this activity is a loss of vegetation cover, potential increase for soil erosion, potential decrease in biodiversity and alteration of wildlife habitat. The **effect** is medium-term in ***duration***, until revegetation commences and the resultant plant community becomes self sufficient and some ecological value is restored. The project **activity** of site clearing only happens once (i.e., ***frequency*** is low). Therefore ratings assigned for duration and frequency will remain as stated in the DAR. However, it should be noted that the impact assessment methodology is a transparent process such that the reader can assign their own ratings and develop their own residual impact classification based on their interpretations.

Duration for direct habitat loss, increased predation/hunting/trapping and barriers to movement is considered to be medium-term, as revegetation will have commenced and be self sustaining within 20 years, restoring some ecological value back to the cleared areas. Albeit, revegetation is not expected to restore these disturbed areas back to the same seral stages they were in prior to disturbance within this time frame, however, some ecological value will be restored.

Sensory disturbance was assigned a low frequency, due to seasonal differences in levels of sensory disturbance (i.e., higher in winter with more activity and traffic) and relatively small amounts of actual operations occurring at any one time, which occur within limited, defined disturbance corridors. The majority of seismic cutlines will not be subjected to human and/or vehicle activity, and allowed to revegetate naturally.

IR Number 1.2.86 **(Source: KTFN)**

Preamble

Paramount refers to its efforts to prevent "weed" species from entering the project area. It is not clear if Paramount is equating "weed" species with "non-indigenous" species.

Paramount refers to a revegetation monitoring program.

Request

Please provide the MVEIRB with the following information:

a) Is Paramount considering "weed" species and "non-indigenous" species as the same thing?

b) If no, please explain what measures Paramount is taking to prevent non-indigenous species from invading and taking over project areas.

c) Please provide the report from the revegetation monitoring program

Response

a) No, Paramount does not equate weed with non-indigenous.

b) Paramount has incorporated several mitigation strategies to prevent non-indigenous plant species from invading and taking over project areas. These include:

- cleaning earth-moving equipment prior to entrance onto the ROW. This is intended to limit the potential for dirt, which could contain seeds, from other areas from being brought onto the ROW;
- limiting the areas where earth is moved or disturbed (e.g., grading, cut and fill, trenching) to the extent required to safely complete the project;
- promoting natural regeneration of the ROW; and,
- only seeding erosion prone slopes with the following seed mixture:

Seed Species	**%**
Regreen wheat x wheatgrass	15
Awned wheatgrass	25
Fall Rye	50
Slender Wheatgrass	10
Total	**100**

These species were selected due to their non-invasive nature, and their potential for erosion control:

Seed Species

1) Regreen wheat x wheatgrass (Agassiz Seed and Supply 2004)

- Non-native species;
- Moist to dry soils;
- Not invasive (annual cultivar);
- Adapted to variable soil conditions.

2) Awned wheatgrass (Hardy BBT Limited 1989)

- Native species;
- Well-drained, moist to dry soils; Chernozens, well-drained Luvisols and Brunisols; mineral soils;
- Not Invasive;
- Low suitability for acidic soil; medium suitability for alkaline soil.

3) Fall Rye (AFRD 2004)

- Non-native (agronomic species);
- Grows well on light, sandy, erosion-prone land and loam soils, high drought tolerance; not tolerant of wet or poorly drained soils;
- Not invasive (annual crop);
- Not tolerant of saline soils, tolerates acid soils well.

4) Slender Wheatgrass (Hardy BBT Limited 1989)

- Native species;
- Moist to dry, well-drained, medium-textured, Chernozems, Solonetzic, Luvisols, and Brunisols;
- Not Invasive;
- High suitability for alkaline soils.

All seed mixtures will be inspected, Certified Canada #1 Seed.

c) Refer to IR 1.2.68 response.

References:

Agriculture, Food and Rural Development (AFRD)2004. Website URL accessed January 12, 2004. www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex4455

Agassiz Seed and Supply 2004. Products. Website URL Accessed January 12, 2004. www.agassizseed.com/products/seed/regreen.html. West Fargo, North Dakota

Golder Associates Ltd. 2003. Cameron Hills Gathering System and TransBorder Pipeline Right-of-Way 2003 Revegetation, Permafrost and Access Monitoring. Prepared for Paramount Resources Ltd. 23 pp plus appendices.

Hardy BBT Limited 1989. Manual of plant species suitability for reclamation in Alberta – 2nd Edition. Alberta Land Conservation and Reclamation Council Report No. RRTAC 89-4. 436 pp.

IR Number 1.2.87 **(Source: KTFN)**

Preamble

Paramount has not provided the rationale for its magnitude ratings.

Paramount states that the residual impacts to vegetation communities will be long-term but Table 7.8-6 shows medium-term for duration. In its response to IR 1.1.11(a), Paramount said that the text on page 270 was incorrect and that medium-term was correct. Paramount's explanation for why the impacts are medium term does not provide adequate rationale. Revegetation will not be complete within 20 years and so the impacts will be long-term.

Paramount has assigned frequency ratings of "low" to the vegetation impacts with the rationale that the clearing will only occur once so the frequency is low. As said earlier, this is a ridiculous argument. It is the frequency of the impacts, not the frequency of the clearing activity that is being rated. Although the land will only be cleared once, it will remain cleared for the lifespan of the project and likely well beyond. These impacts will be continuous and should have a frequency rating of "high".

Request

Please provide the MVEIRB with the following information:

a) Resubmit the analysis with the rationale for the magnitude ratings, using a duration rated as long-term and a frequency rated as high.

Response

a) Paramount maintains that their assessment referenced in this IR is transparent and appropriate without amendments. The rationale for this assertion and the magnitude ratings is provided below. Other reviewers may chose to assess the environmental impacts using a different system of classification.

Magnitude Ratings

The magnitude ratings listed in Table 7.8-6 for Vegetation Loss/Alteration are based on the cumulative loss or alteration of vegetation VECs in the Terrestrial CESA in the Planned Development Case (see Table 7.8-4). For a detailed explanation of magnitude, the reader is referred to the response to IR 1.2.74.

The magnitude rating for Invasion of Foreign Species is based on professional judgment and experience in the NWT, related to the potential for invasion to occur. For a detailed explanation of magnitude, the reader is referred to the response to IR 1.2.74.

Duration

The basic question to answer to determine the duration rating for project related impact to vegetation is – How long will the effect influence a community's ability to be a self-sustaining population/community of similar composition to pre-disturbance conditions?

The majority of disturbances (seismic lines, pipelines and the majority of the well lease) are allowed to revegetate naturally immediately after the initial disturbance. It is reasonable to expect the vegetation will achieve a self-sustaining population of similar composition to the surrounding area in approximately 5-10 years from the removal of the disturbance. Therefore the answer to the question regarding duration of impact is likely in the 10-20 year range, i.e., medium term duration.

The reviewer is reminded that, although a fully mature stand is likely to require 70+ years of growth, the measurement endpoint for the vegetation VECs is the time at which the community is self sustaining.

Frequency

The definition of the "Frequency" criteria for the purpose of the DAR (Section 7.1.1.5.1) is: *...how often the effect occurs within a given period of time.* This should not be confused with the "Duration" criteria which is: *the length of time over which an environmental impact occurs.*

Contrary to the reviewer's assessment, the majority of the physical disturbance (seismic lines, pipelines and the majority of the wellsite area) occurs only once and will begin to revegetate soon after the seismic acquisition or pipeline construction is complete, often within the growing season following winter construction. The vast majority of the cleared areas will not remain cleared for the life of the project.

The majority of the clearing and construction activities will occur in the winter months, clearing only the tree and shrub layer and leaving the understorey relatively intact. This clearing method reduces the potential for erosion and greatly reduces time required for revegetation. A very small portion of the facilities will be cleared to down to mineral soil including roads, satellites/batteries, airstrips, camps and facility sites.

The reader is referred to Paramount's response to IR 1.2.85 for further clarification of the criteria used in the DAR.

The DAR has accounted for the Frequency and Duration of the project-related effects adequately in the DAR without double counting the effects, as is suggested in the preamble to this IR. Therefore a reanalysis of the impacts is not required.

IR Number 1.2.88 (Source: KTFN)

Preamble

The rationale for its magnitude ratings is not provided by Paramount. Changes in duration from medium-term to long-term and changes in frequency from low to high should be made.

Request

Please provide the MVEIRB with the following information:

a) Resubmit the analysis with the rationale for the magnitude ratings, with duration rated as long-term and with frequency rated as high.

Response

Magnitude

Paramount's assessment of the magnitude rating for Class Area, Mean Patch Size (MPS) and Total Edge (TE) in Table 7.8-9 is based on the data presented in Table 7.8-7. It should be noted that professional judgment has been applied in the assessment of MPS and TE as the criteria for magnitude outlined in Section 7.1.1.5.1 does not apply for these metrics. The standard classification scheme assumes that the magnitude criteria is bounded on the upper end by 100%. For example, a disturbance cannot result in a loss of habitat in excess of 100%. In the case of MPS and TE, the potential percent change is not bounded on the upper end, i.e., the percentage value can be, more or less, infinite.

Therefore, as mentioned earlier, professional judgment has been applied in the magnitude rating for the MPS and TE metrics as described in Section 7.8.3.2.2, second paragraph – "*...these areas continue to contain large amounts of core area and a variety of patch sizes, thus maintaining core areas habitat and landscape heterogeneity that are important for wildlife and vegetation species (e.g., the habitat remains functional).*" Moreover, the assessment considers that an increase in TE and decrease in MPS has different effects on different ecological receptors, in that some species prefer edge habitat and some species prefer core habitat. Therefore the magnitude of the impact on the landscape due to effects on MPS and TE is conservatively rated as moderate.

Considering the assessment approach described above, Paramount maintains that their assessment referenced in this IR is conservative, transparent and appropriate without amendments.

Table 7.8-10 shows residual impact classification according to disturbance class (i.e., roads, facilities and utilities). The magnitude rating is low because all the disturbance

features combined account for a loss of 2.2% of the TSA (i.e., 0.2, 0.3 and 1.7%, respectively) for the Planned Development Case.

Duration and Frequency

The duration and frequency criteria analysis is appropriate following the same rationale as explained in Paramount's response to IR 1.2.85 and IR 1.2.87.

It should be noted that headings for Frequency and Reversibility in Tables 7.8-9 and 7.8-10 are incorrectly reversed.

IR Number 1.2.89 (Source: KTFN)

Preamble

Paramount states that: "These patches are expected to maintain connectivity with the remainder of the landscape and the remaining patches are expected to have sufficient core area (56%) to support interior wildlife and vegetation forest species."

There is no evidence or analysis in the DAR to support this concluding statement.

Request

Please provide the MVEIRB with the following information:

a) Supply the evidence and analysis that enables Paramount to make the above statement.

Response

a) Typical interior species observed under current disturbance regimes (i.e. Total Core Area Index of 56.4 for the Baseline Case) within the Cameron Hills Study Area include marten, Cape May warbler and bay-breasted warbler. The small width (i.e., 6 m) of the majority of the disturbance corridors (i.e., 3-D seismic lines) are not expected to affect the connectivity of the habitat patches. Dyer et al. (2002) found that there was no barrier effect for caribou, resulting from seismic lines, suggesting the maintenance of connectivity. For birds, buffer strips that were 200 m wide were shown to maintain forest songbird communities (Hannon et al. 2002). Thus, forest interior species are observed within the study area under current conditions, and the change in core area index from current conditions (i.e., Baseline) to the Planned Development Case is negligible (Table 7.8-7). In addition, the estimation of core area index for the Environmental Setting Case is likely over-estimated, as disturbances in the existing vegetation classification were reverted to the surrounding vegetation types and there was minimal consideration of natural disturbances.

There is little information available on core area thresholds for forest interior species, and one must consider scale of resolution depending on the species of interest (i.e., mammal [ha] vs. songbird [m]). Therefore, as forest interior species are currently observed in the Cameron Hills and there is little measurable change between Total Core Area Index (TCAI) from the Existing/Approved Case to the Planned Development Case (Table 7.8-7), it is assumed that there will be little effect on the availability of core area habitat.

References

Dyer, S.J., J.P. O'Neill, S.M. Wasel and S. Boutin. 2002. Quantifying barrier effects of roads and seismic lines on movements of female woodland caribou in northeastern Alberta. Can. J. Zool. 80: 839-845.

Hannon, S.J., C.A. Paszkowski, S. Boutin, J. DeGroot, S.E. Macdonald, M. Wheatley and B. Eaton. 2002. Abundance and species composition of amphibians, small mammals, and songbirds in riparian forest buffer strips of varying widths in the boreal mixedwood of Alberta. Canadian Journal of Forest Research 32: 1784-1800.

IR Number 1.2.90 **(Source: KTFN)**

Preamble

In Section 7.9.2.6, Paramount describes how it developed its heritage resource potential map, including the use of a list of criteria for selecting higher probability locations for resource discoveries.

Request

Please provide the MVEIRB with the following information:

a) Review and comment on Paramount's methodology.

b) Are the criteria that were used appropriate?

c) Are there other criteria that should have been applied?

d) Any other comments about Paramount's heritage resource investigation methodology or conclusions?

Response

This I.R. was addressed to the GNWT.

IR Number 1.2.91 **(Source: KTFN)**

Preamble

Paramount refers to studies that indicated that although some areas of potential would be affected, no heritage resources appear to be present in areas examined.

Request

Please provide the MVEIRB with the following information:

Please provide copies of these studies.

Response

a) Heritage Resource Impact Assessments are not in the public domain and can't be distributed by Paramount. Please contact Mr. Tom Andrews, of the Prince of Wales Northern Heritage Centre in Yellowknife for details.

IR Number 1.2.92 **(Source: KTFN)**

Preamble

Paramount refers to a Heritage Resources Impact Assessment.

Request

Please provide the MVEIRB with the following information:

Please provide a copy of this report.

Response

a) Heritage Resource Impact Assessments are not in the public domain and can't be distributed by Paramount. Please contact Mr. Tom Andrews, of the Prince of Wales Northern Heritage Centre in Yellowknife for details.

IR Number 1.2.93 **(Source: KTFN)**

Preamble

Paramount states that heritage resource studies were conducted in 2001 and that a monitoring manual was developed for use in the field.

Request

Please provide the MVEIRB with the following information:

a) Provide copies of the 2001 heritage resource studies and the monitoring manual.

Response

a) Heritage Resource Impact Assessments are not in the public domain and can't be distributed by Paramount. Please contact Mr. Tom Andrews, of the Prince of Wales Northern Heritage Centre in Yellowknife for details.

Mr. Fred Simba of Kakisa was provided with a monitoring manual for his use during the heritage monitoring associated with the pipeline construction during the 2001/2002 and 2002/2003 winter season.

IR Number 1.2.94 **(Source: KTFN)**

Preamble

Paramount states that trappers will be compensated for any demonstrable loss.

Request

Please provide the MVEIRB with the following information:

a) Explain what would qualify as a demonstrable loss

b) Explain the compensation process.

Response

a) & b)

The response for this IR is taken directly from EA01-005 Paramount Cameron Hills Gathering System and Transborder Pipeline IR 1.11 page 24-27

(a) A "demonstrable loss" to a trapper is a damage or claim or loss of trapping property that can be justified or demonstrated as a result of Paramount's activities in the area.

The determination of a loss or damage will be made in the field with the affected trapper and a Paramount representative.

As trapping in the area only occurs in the winter and usually with snow present, it should be relatively easy to see evidence (i.e. tracks from the disturbance) of the damage.

Under the conditions described below, trappers will be compensated by Paramount for direct damage to or destruction of trapper assets caused by Paramount's activities. Assets include equipment used for trapping (traps, snares, snowmobiles, cabins, etc.) and items constructed by the trapper (marten poles, cubbies, bait sets, trails, etc.). Assets do not include equipment not used for trapping (hunting rifles, fishing equipment, etc.) and natural features (squirrel middens, beaver dams, etc.).

The Direct Damage component applies when eligible assets are damaged or destroyed where:

1. *Paramount does not give the trapper adequate notice of Paramount's activity to allow a reasonable period for the trapper to move portable assets.*

2. *Portable or fixed assets identified by the trapper are accidentally damaged by Paramount activity after both trapper and Paramount have agreed the assets will not be damaged in regards to the discussed routing.*

The compensation award for eligible assets will be repair or replacement with an asset of comparable value. Replacement cost rates for traps and other equipment will be the current prices plus applicable freight charges. Other assets will be replaced based on their value with consideration for additional costs and labor if appropriate. Settlement of equivalent value is acceptable instead of replacing an asset.

Assets damaged by a third party (not Paramount or its agents) will not be covered by Paramount.

(b) *To make a claim, a trapper is to submit an itemized list of damaged or destroyed assets to Paramount's Calgary office including the date and location of the loss. The claim should be reported as soon as possible to make the claim easier to assess.*

The trapper and Paramount will negotiate an acceptable settlement by either replacing the assets or agreeing to a settlement of equivalent value. The trapper must demonstrate he actively attempted to trap.

(c) *If an acceptable settlement is not reached between the trapper and Paramount, an arbitrator may be chosen (one acceptable to Paramount and the trapper) to resolve the dispute.*

(d) *Compensation will be available during all phases of the Project if the loss is the result of Paramount's activities associated with the Project.*

IR Number 1.2.95 **(Source: KTFN)**

Preamble

Paramount attributes some statements to several GNWT employees. Al Hymers told Paramount that harvesting and trapping records for the Cameron Hills are not available. Al Helmer said that there is very little hunting activity in the Cameron Hills. Similarly, Deb Johnson said that most of the caribou hunting in the region is well outside of the SDL, occurring mainly west of Kakisa Lake.

Request

Please provide the MVEIRB with the following information:

a) Provide evidence that supports the statements made by Al Helmer and Deb Johnson, given that there are no harvesting and trapping records available upon which to base or dispute those statements.

Response

This I.R. was addressed to the GNWT.

IR Number 1.2.96 **(Source: KTFN)**

Preamble

Paramount has applied magnitude ratings of "low" to effects to hunting and effects to trapping for the baseline case.

However, for both the application and planned development cases, Paramount has applied magnitude ratings of "negligible" to these two impacts.

Request

Please provide the MVEIRB with the following information:

a) Given that the baseline case has the least amount of development, please explain why the magnitude ratings for effects to hunting and effects to trapping are lower for the application and planned development case, which have higher amounts of development.

Response

a) The rationale for this apparent discrepancy is described in the first paragraph of Section 7.10.5.1.3, Planned Development Case of the DAR.

The reduction in magnitude rating for hunting and trapping in the Application Case and Planned Development Case from the Baseline Case is related to the habitat loss effects* (including indirect and direct effects) for wildlife versus the net positive effect of increased access to hunters and trappers. The result of which is expected to be a net benefit to the hunters and trappers through easier access and possibly an expansion of their current hunting and trapping area.

*For caribou, as explained in Paramount's response to IR 1.2.124 b) and c), the assessment of sensory disturbances needs to take into consideration the fact that caribou continue to use cutlines / production areas, and the buffers around cutlines and developments to some extent and that the density of caribou, and therefore the encounter rate of caribou with the developments, is considered to be low in the Cameron Hills.

IR Number 1.2.97 **(Source: KTFN)**

Preamble

Paramount claims that the KTFN do not use the project area for traditional activities.

Request

Please provide the MVEIRB with the following information:

a) evidence that Paramount has to support this claim.

Response

a) Section 7.11.2 of the DAR states " Potentially affected communities are Enterprise, Hay River, the Hay River Dene Reserve, Kakisa and Fort Providence. These are settlements within a 150 km radius of the project, with populations whose members both potentially (but not presently) use the project area for traditional activity and may be in a position to benefit from economic impacts of the project." Traditional knowledge that KTFN has provided to Paramount indicates KTFN have not and do not conduct traditional activity on the Cameron Hills project site. Documented KTFN traditional knowledge was agreed to be held as confidential.

IR Number 1.2.98 (Source: KTFN)

Preamble

Paramount has a history of being slow to pay its contractors. This creates hardship for small northern companies that must have a steady cash-flow to operate.

Request

Please provide the MVEIRB with the following information:

a) *For each of the last four years, provide data on the average and longest periods between Paramount receiving an invoice from a contractor and that contractor receiving the money.*

b) *Provide a graph for each year that has "Invoice Value" on the x-axis and "Time to Pay" on the y-axis. Plot all invoices for each seasons' work on these graphs.*

c) *Explain what steps were required by the Government of the Northwest Territories to assist small businesses that were harmed by slow payment from Paramount.*

d) *What did these steps cost the GNWT?*

e) *Will Paramount commit to a maximum period between receiving an invoice and providing payment to a contractor?*

Response

a)b)e)

Paramount has paid northern companies, including alliance companies associated with the Cameron Hills project $7,504,450 and created 5476 person days of employment since July 2001, not including the three full time positions filled by northern production operators.

Historically the Company has been paying invoices in line with industry convention for similar intermediate oil and gas companies. It is our intention to continue this practice. In the past, there were delays in processing invoices, in part because of incomplete and incorrect information on the invoices. As part of our internal control procedures, we cannot process invoices for payment until all the information has been verified and the invoices have been properly authorized by the appropriate personnel.

In October, the Company renegotiated and closed a committed bank loan of $203 million. After the completion of a US$175 million 7 year fixed rate financing also in October, the Company has unused committed bank facilities of approximately $110 million. This amount is available to finance future capital and operating expenditures.

Paramount has not provided a graph for invoice value vs time to pay for a few reasons: (i) Paramount receives thousands of invoices monthly; (ii) There is no relationship to invoice value and time to pay as generally, invoices are paid once they are approved internally and meet the approximate payment timeline of 60 days; (iii) invoices from companies in other jurisdictions meet the same internal criteria as those from the north.

c)d)

Paramount has no information on what assistance programs, if any, the Government of the Northwest Territories participated in with small business.