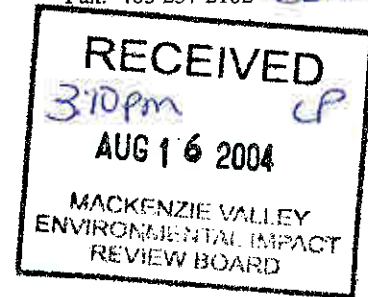


**Imperial Oil Resources Ventures Limited**  
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P.D. (Peter) Grout  
Regulatory Affairs Manager  
Mackenzie Gas Project

Tel. 403 237 3984  
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for  
courier



August 11, 2004

Mackenzie Valley Environmental Impact Review Board  
P.O. Box 938  
5102 - 50th Avenue  
Yellowknife, NT X1A 2N7

(via email & hard copy)

Attention: Mr. Alan Ehrlich  
Senior Environmental Assessment Officer

Dear Mr. Ehrlich:

**Re: Responses to Deficiency Statement regarding the Developer's Assessment Report supporting the MVEIRB Environmental Assessment of the 2004 Winter Field Geotechnical Investigation Program - Deh Cho Region (MVEIRB Reference EA-009)**

Imperial Oil Resources Ventures Limited received the Deficiency Statement regarding the Developer's Assessment Report supporting the MVEIRB Environmental Assessment of the 2004 Winter Field Geotechnical Investigation Program issued by the MVEIRB on 14 July 2004. The attachment to this letter contains the Developer's responses to the MVEIRB Deficiency Statement.

Thirteen responses are provided to the eleven MVEIRB requests. The first MVEIRB request contained three parts so a separate response was prepared for each of the three parts.

With the submission of this information, we look forward to confirmation from the MVEIRB, that the Developer's Assessment Report is now in conformance with the Terms of Reference. If you have any questions regarding these matters please contact Jim Hawkins at (403) 237-2806.

Sincerely,



P.D. Grout  
Regulatory Affairs Manager

Attachment

## **Imperial Response - DAR DR 1.1 (MVEIRB)**

**Application Name:** 2004 Winter Field Geotechnical Investigation Program in the DCR

**Document Reference:** Developer's Assessment Report

**Request From:** Mackenzie Valley Environmental Impact Review Board

**Regulatory Agency Reference:** Mackenzie Valley Environmental Impact Review Board

**Imperial Reference:** DAR DR 1.1

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### **DEFICIENCY STATEMENT:**

**H-1 Economic Impacts:** *Provide a summary of overall benefits to the Deh Cho region...Describe why Imperial is not planning to purchase potable water from communities in order to maximize local benefits...Summarize what specifically will be addressed in Access and Benefits agreements.*

- The response on overall benefits to the Deh Cho region was insufficient; Imperial provided only four lines of very general material on the overall benefits to the Deh Cho region. More detail is required in order for the Review Board to evaluate the benefits
- 

### **RESPONSE:**

The potential economic benefits for the Deh Cho Region are based on estimates of the scope of work that might be performed in the region. The following types of contractors each have a part to play in the execution of the proposed work:

- geotechnical consultant;
- drilling;
- land surveyor;
- geophysical surveyor;
- general services;
- camp;
- catering;
- emergency medical; and
- telecommunications.

The value of a program in the Deh Cho Region encompassing the above-noted subcontracts would be about \$6 million.

Imperial has taken significant steps to ensure that local companies are selected to perform the proposed work in the Deh Cho Region. The pre-qualification process ensures that bid lists have local companies as a key part of the contracting process. This process provides local companies with the opportunity of being awarded the various contracts that comprise the work program as long as they are technically qualified and commercially competitive. Companies that are awarded the work will hire locally for positions within their contract scope, to the extent possible. It is expected that between forty and sixty individuals will be hired locally.

Imperial has directed its prime contractor (ColtKBR) to purchase or source materials locally through the use of field purchase orders. Based on previous experience in other regions of the Mackenzie Valley, field purchase orders could amount to between \$10,000 and \$30,000. Local businesses would be the principal benefactors of this contracting strategy.

Similarly, the contractors working under the direction of ColtKBR have been directed to acquire or source material needed through local suppliers, providing pricing is competitive. Using the general services contractor as an example, based on experience in other regions, the value of obtaining and sourcing materials locally could be in excess of \$300,000.

Based on this contracting strategy and the budgetary estimates for the work, it is anticipated that the Program will result in:

- increased employment and work capacity for members of local communities;
- increased disposable income for community residents;
- economic benefits for local merchants; and
- potential increase in joint-venture opportunities for local businesses and aboriginal groups.

Matters relating to access and benefits are currently under discussion between Imperial and the Deh Cho Pipeline Working Group, on behalf of the Deh Cho First Nation. Any contracting strategy, and the Program generally, for the Deh Cho Region will be subject to any agreement that is the product of such discussions.

## **Imperial Response - DAR DR 1.2 (MVEIRB)**

**Application Name:** 2004 Winter Field Geotechnical Investigation Program in the DCR

**Document Reference:** Developer's Assessment Report

**Request From:** Mackenzie Valley Environmental Impact Review Board

**Regulatory Agency Reference:** Mackenzie Valley Environmental Impact Review Board

**Imperial Reference:** DAR DR 1.2

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### **DEFICIENCY STATEMENT:**

***H-1 Economic Impacts: Provide a summary of overall benefits to the Deh Cho region...Describe why Imperial is not planning to purchase potable water from communities in order to maximize local benefits...Summarize what specifically will be addressed in Access and Benefits agreements.***

- Imperial stated that it "intends to source potable water from the community nearest the operations, where feasible" but did not describe why it was not planning to purchase potable water in some cases.
- 

### **RESPONSE:**

Imperial intends to purchase potable water from local sources in the communities nearest the operations. In the event that potable water is not available in a particular community, Imperial will purchase or obtain water from the closest alternative source. Potable water has been purchased during previous winter geotechnical investigation programs in other regions in order to supply temporary camps.

## **Imperial Response - DAR DR 1.3 (MVEIRB)**

**Application Name:** 2004 Winter Field Geotechnical Investigation Program in the DCR

**Document Reference:** Developer's Assessment Report

**Request From:** Mackenzie Valley Environmental Impact Review Board

**Regulatory Agency Reference:** Mackenzie Valley Environmental Impact Review Board

**Imperial Reference:** DAR DR 1.3

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### **DEFICIENCY STATEMENT:**

**H-1 Economic Impacts:** ... *Provide a summary of overall benefits to the Deh Cho region... Describe why Imperial is not planning to purchase potable water from communities in order to maximize local benefits ... Summarize what specifically will be addressed in Access and Benefits agreements.*

- Imperial did not summarize what specifically would be addressed in Access and Benefits agreements, but stated that the benefit agreement with the DCFN is still under negotiation. Imperial is a participant in these negotiations, and is aware of the subjects under negotiation, even if it is not aware of the exact outcomes under each subject. A summary of what the agreement will address is still required.
- 

### **RESPONSE:**

Imperial and the Deh Cho Pipeline Working Group, on behalf of the Deh Cho First Nation have entered into negotiations regarding a benefits agreement for the geotechnical investigation work that has been proposed by Imperial. The specific details of these discussions are confidential.

Subjects such as the following might form part of that agreement:

- obligations of contractors and subcontractors, list of trained and available workers, equipment and services
- employment and business opportunities and requirements
- training opportunities and requirements
- wildlife and renewable resource harvester compensation for actual losses
- advisory committee and dispute resolution arrangements

## **Imperial Response - DAR DR 2.0 (MVEIRB)**

**Application Name:** 2004 Winter Field Geotechnical Investigation Program in the DCR

**Document Reference:** Developer's Assessment Report

**Request From:** Mackenzie Valley Environmental Impact Review Board

**Regulatory Agency Reference:** Mackenzie Valley Environmental Impact Review Board

**Imperial Reference:** DAR DR 2.0

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### **DEFICIENCY STATEMENT:**

***H-2 Social Impacts: Provide a detailed description of potential social impacts that your development may have on the residents of communities along the development route, including education, training and skills enhancement. Describe the social impacts related to health and well-being in communities nearest to camps, including potential changes in pregnancy rates, STDs, and alcohol and drug use. This assessment should include a description of potential direct and indirect impacts on social infrastructure such as medical services and policing. Describe detailed mitigations to minimize or avoid those impacts.***

- Imperial provided no detailed predictions of impacts in communities related to pregnancy rates, STDs/STIs, alcohol and drug use, and impacts on social infrastructure. These impacts should be described as required in ToRs 4.1 (in terms of magnitude, geographical extent, spatial boundaries, duration, frequency, probability reversibility and significance). More detail on mitigations should also be included as appropriate for the impacts predicted in the revised section.
- 

### **RESPONSE:**

The Program is expected to increase employment and work capacity in local communities. As part of the economic benefits that will flow through the communities, disposable income for community residents is expected to increase. Depending on individual choices, the increased income can be used to benefit individuals and their families or, if unwisely spent, could result in socially disruptive behaviors and actions.

Health and well-being of individuals can increase as a result of spending on better diets, better climate-appropriate clothing and improved housing arrangements, facilities and goods. However, increased incomes from Program employment, if used unwisely, might also add marginally to substance abuse related problems and to the burdens of the social infrastructure that must deal with these problems.

Table 1 below summarizes impact predictions in communities related to the outlined social issues. As indicated, impacts will relate to changes in alcohol and drug use depending on the decisions and actions of individuals. As the social delivery center in the Deh Cho Region, Fort Simpson might experience some impact related to potentially adverse effects of substance abuse. No communities are expected to experience significant impacts on pregnancy rates or changes in occurrence of STDs/STIs.

**Table 1 [DAR DR 2.0 (MVEIRB)]: Predicted Social Impacts from Proposed Winter Field Geotechnical Investigation – Deh Cho Region**

	<i><b>Alcohol and Drug Use</b></i>	<i><b>Pregnancy Rate</b></i>	<i><b>STDs/STIs</b></i>	<i><b>Impacts on Social Infrastructure</b></i>
<b>Wrigley</b>				
	Potential adverse changes in alcohol and drug use	No predicted impact	No predicted impact	No predicted impact
Boundary	local			
Duration	short term			
Frequency	low			
Probability	low			
Reversibility	medium-high			
Significance	not significant			
<b>Fort Simpson</b>				
	Potential adverse changes in alcohol and drug use	No predicted impact	No predicted impact	Potential increase in demand for services.
Boundary	local			local
Duration	short term			short term
Frequency	low			low
Probability	low			low
Reversibility	low			high
Significance	not significant			not significant
<b>Trout Lake</b>				
	Potential adverse changes in alcohol and drug use	No predicted impact	No predicted impact	No predicted impact
Boundary	local			
Duration	short term			
Frequency	low			
Probability	low			
Reversibility	low			
Significance	not significant			
<b>Jean Marie River</b>				
	Potential adverse changes in alcohol and drug use	No predicted impact	No predicted impact	No predicted impact
Boundary	local			
Duration	short term			
Frequency	low			
Probability	low			
Reversibility	low			
Significance	not significant			

To mitigate or avoid these potential impacts Imperial will:

- Orient camp workers at the beginning of the Program safety procedures, cross-cultural awareness training, camp rules and enforcement procedures.
- Enforce camp policy restricting workers from visiting aboriginal communities.
- Enforce an alcohol and drug-free workplace
- Make resources, such as the Camp Manager, available to speak to workers about money management programs upon request.
- At the start of the Program, establish a regular meeting schedule between community leaders and senior camp staff so that regular and consistent communication occurs between the Program and communities to build and maintain a positive relationship and facilitate communications among all parties.



## **Imperial Response - DAR DR 3.0 (MVEIRB)**

**Application Name:** 2004 Winter Field Geotechnical Investigation Program in the DCR

**Document Reference:** Developer's Assessment Report

**Request From:** Mackenzie Valley Environmental Impact Review Board

**Regulatory Agency Reference:** Mackenzie Valley Environmental Impact Review Board

**Imperial Reference:** DAR DR 3.0

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### **DEFICIENCY STATEMENT:**

***H-3 Local Cultural and Heritage Resources: Describe potential impacts on cultural and heritage resources, including a detailed description of how field workers will recognize archaeological sites.***

- No description was provided for how field workers will recognize archaeological sites.
- 

### **RESPONSE:**

The sites applied for in the Deh Cho Region have all been the subject of a preliminary heritage resource investigation. Part of that reconnaissance was to classify the sites as to the potential for finding heritage resources at that location. Sites were classified as high potential, moderate potential and low potential. A manual will be prepared for the field workers that deals with the methods by which archaeological remains can be recognized and instructions regarding how to and when to report to the archaeologist for verification of a suspected archaeological site. The content of the manual will be reviewed with the field workers at the tailgate meetings or the employment orientation session. These manuals will aid personnel on site in recognizing archaeological sites and in determining when an archaeologist needs to be notified.

## **Imperial Response - DAR DR 4.0 (MVEIRB)**

**Application Name:** 2004 Winter Field Geotechnical Investigation Program in the DCR

**Document Reference:** Developer's Assessment Report

**Request From:** Mackenzie Valley Environmental Impact Review Board

**Regulatory Agency Reference:** Mackenzie Valley Environmental Impact Review Board

**Imperial Reference:** DAR DR 4.0

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### **DEFICIENCY STATEMENT:**

**H-4 K'eotsee/Trainor Lake:** *Describe in detail the proposed development and potential impacts in the K'eotsee Lake watershed, along with details regarding any concerns voiced, and the commitments of Imperial in response to those concerns in terms of development design. Describe detailed mitigations to minimize or avoid those impacts.*

- No details were submitted regarding concerns voiced regarding potential impacts in the K'eotsee Lake watershed, Imperial's commitments in response to those concerns, or mitigations to minimize or avoid those impacts.
- 

### **RESPONSE:**

#### **A. Site Activities:**

The following proposed sites and activities are located within the K'eotsee (Trainor Lake) watershed:

##### **1) Frost heave (FH 21):**

###### *Description of Activities:*

- Access to this frost heave site is via the Enbridge right-of-way for 11 km and then east on an existing cutline for approximately 5 km. New clearing for about 400 m will be required for access.
- A single drill hole will be drilled to a depth of approximately 10 metres
- For the borehole locations, an area 10 m X 10 m (0.01 ha) will be stripped of vegetation to allow for safe operation of equipment
- On a 6 m X 10 m portion of the site, topsoil will be pushed to one side for the drilling rig operation
- Stripped vegetation and topsoil will be stockpiled at the edge of the site for use in reclamation
- A layer of compacted snow or ice might be required to protect ground cover on the access roads or site
- Drilling will be conducted through the ice and snow protective layer, through the ground cover, topsoil and subsoil.
- Site reclamation and restoration will include filling the boreholes with drill cuttings and recontouring of the ground surface to as near the original contour as possible.
- It is estimated that site access, preparation and drilling operations will require a total of ten days.
- No discharges to the area are planned.

###### *Assessment of Impact*

- This activity will result in minimal impacts to the land, wildlife, nearby residents, and traditional harvesters.

## 2) Borrow Site 20.004PA

### *Description of Activities:*

- Access to borrow site 20.004PA will be via the Enbridge right-of-way for 11 km and then west on an existing cutline for approximately 2 km. New clearing for about 200 m will be required for access.
- A maximum of four boreholes will be drilled and one test-pit will be excavated
- Each borehole will be drilled to a depth of approximately 10 metres
- For the test pit location, an area, not exceeding 25 m x 25 m will be cleared of vegetation and trees, if necessary
- On 6 m X 15 m portion of the site, topsoil will be pushed to one side exposing the subsoil and gravel below
- A test pit with maximum dimensions of 5 m x 5 m and 5 m deep will be excavated with the spoil being stored on the rest of the stripped area. Total disturbed area (cleared and stripped) will amount to 625 m<sup>2</sup>.
- The top organic layer from the test pits will be kept separate during excavation and then replaced on top of the back-filled pit during clean-up.
- Site reclamation and restoration will include filling the boreholes with drill cuttings, back-filling the pits and re-contouring the ground surface to as near the original contour as possible.
- It is estimated that site access, preparation, drilling and test pit operations will require nine days at the site.
- No discharges to the area are planned.

### *Assessment of Impact*

- Drilling activities will result in minimal impacts to the land, wildlife, nearby residents and traditional harvesters.
- Test pit excavation may result in moderate impacts to the land. There will be minimal impacts to wildlife, nearby residents and traditional harvesters.

## 3) Water Source - (Trainor Lake ID - DCS12)

### *Description of Activities:*

- Access to K'eotsee Trainor Lake will be via existing cutlines.
- Water will be withdrawn from the lake and might be used to provide ice cover on access roads along to other nearby sites in the Program. Ice cover protection on access roads will only be employed as a contingency where it is determined that snow packing on access roads is not sufficient to support the off-road vehicular activity without adversely impacting the ground surface.
- The water would be released from the ice cover on the access roads during the spring thaw to reenter the natural drainage systems.

### *Assessment of Impact*

- This activity will result in minor impacts to the land, wildlife, nearby residents, and traditional harvesters.

## B. Community Concerns and Mitigation Actions Taken

The table below provides details regarding community concerns raised with respect to the activities planned in K'eotsee (Trainor Lake) watershed during the Program. The table also provides the mitigation effort taken by Imperial to address those concerns.

**Table 2 [DAR DR 4.0 (MVEIRB)]: Community Concerns and Mitigation Plans for 2004 Winter Field Geotechnical Investigation Activities in K'eotsee (Trainor Lake) Area**

Site Location	Activity	Community Concerns	Response
FH21	Single Bore Hole	None Noted	None Required
Borrow Site 20.004PB	Bore Holes and Test Pit	Concern about the proximity to the K'eotsee (Trainor Lake) watershed area and potential contamination (fuel or waste)	Site was withdrawn from the Program
Borrow Site 20.004PA	Bore Holes and Test Pit	Concern about the proximity to the K'eotsee (Trainor Lake) watershed area and potential contamination (fuel or waste)	See above description of activities for environmental impact mitigation. The Emergency Response Plan submitted as Attachment 3 to the Land Use Permit Application addresses mitigation of potential events of contamination.
Water Source DCS12	Withdraw water for winter ice road construction	The area is of significant cultural and ecological value to the Sambaa K'e Dene and every effort should be made to minimize any potential impacts to this area.	See above description of activities for environmental impact mitigation.

Specific actions taken in response to concerns raised regarding activities planned in the K'eotsee (Trainor Lake) watershed area during the Program included:

- meetings with the community to discuss concerns raised (mainly through the Traditional Knowledge Study contract) and clarify the development plans in the K'eotsee (Trainor Lake) watershed area
- discussions with communities regarding the timing of the work (mostly in winter conditions) and the fuel and waste management practices applicable to the program
- helicopter overflight of all proposed development sites in the K'eotsee (Trainor Lake) watershed with community representatives
- during the 2004 Summer Reconnaissance Program, Imperial will attempt to locate alternatives to Borrow Site 20.004PA

## **Imperial Response - DAR DR 5.0 (MVEIRB)**

**Application Name:** 2004 Winter Field Geotechnical Investigation Program in the DCR

**Document Reference:** Developer's Assessment Report

**Request From:** Mackenzie Valley Environmental Impact Review Board

**Regulatory Agency Reference:** Mackenzie Valley Environmental Impact Review Board

**Imperial Reference:** DAR DR 5.0

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### **DEFICIENCY STATEMENT:**

***H-5 Traditional Land Use: Discuss the potential impacts of the proposed development on traditional land use and occupation. Describe in detail the concerns raised by land users and the commitments of Imperial regarding compensation for trappers and all other traditional harvesters. Describe detailed mitigations to minimize or avoid those impacts.***

- Imperial indicated that compensation for trap lines is still under negotiation with DCFN, but did not respond regarding compensation for all other harvesters.
- 

### **RESPONSE:**

Traditional harvesters include hunters, trappers, fishermen and gatherers. As indicated in the Developer's Assessment Report, and further clarified in the response filed as DAR DR 1.3 (MVEIRB), the negotiations pertaining to compensation for traditional harvesters as a result of disruption to trap lines or other harvesting areas is still underway. Imperial expects that the access and benefits agreement between Imperial and the Deh Cho First Nations will address compensation for trappers and other traditional harvesters.

## **Imperial Response - DAR DR 6.0 (MVEIRB)**

**Application Name:** 2004 Winter Field Geotechnical Investigation Program in the DCR  
**Document Reference:** Developer's Assessment Report  
**Request From:** Mackenzie Valley Environmental Impact Review Board  
**Regulatory Agency Reference:** Mackenzie Valley Environmental Impact Review Board  
**Imperial Reference:** DAR DR 6.0

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### **DEFICIENCY STATEMENT:**

***H-6 Protected and Withdrawn Areas - describe potential impacts on candidate protected areas, including Edehzhie land withdrawal and Pehdzeh Ki Deh areas, and areas which have been withdrawn from development under the Deh Cho process. Describe in detail potential impacts across the boundaries of Edehzhie and Pehdzeh Ki Deh, as well as of the withdrawn areas, by proposed development activities outside of the areas. Describe detailed mitigations to minimize or avoid those impacts.***

- Regarding Pehdzeh Ki Deh, Imperial stated that the program could increase access, "resulting in a potential change or increase to other land use in the area", but did not actually describe any resulting impacts as required. Imperial also did not describe any impacts across the boundaries of Edehzhie.
- 

### **RESPONSE:**

#### **Impacts to Pehdzeh Ki Deh**

- Direct impacts on Pehdzeh Ki Deh from the Program will be minimal. As noted in the Developer's Assessment Report, existing roads, cutlines and clearings will be used whenever possible, minimizing the need for additional clearing.
- Total access requirements for these sites are estimated to be 80 km of which 67 km or 83% follows existing disturbed lines. Total land use for access is estimated to be 52 ha plus an additional 11 ha for the investigation sites.

There will be a small amount of change to the landscape due to the clearing for new temporary winter roads and the drill sites. The total disturbance area of 63 ha however is a small fraction of the 1.8 million ha size of the Pehdzeh Ki Deh Area of Interest.

#### **Transboundary Effects on Edehzhie**

As noted in the Developer's Assessment Report, two investigation sites are located in the Edehzhie Candidate Protected Area and both fall within the 4 km development corridor specified in the land withdrawal. Total access requirements for both of these sites total 2,050 m of which all but approximately 200 m follows existing access roads and cutlines. The total land area required for access and the investigation sites is about 1.4 ha within the protected area which is about 2.5 million ha in size. The next closest investigation site to the Edehzhie area is more than 90 km to the north.

Due to the limited levels of activity that will take place during the Program and the short duration of the activities at each site, no long-term transboundary effects on the Edehzhie Candidate Protected Area are expected. Some short term, localized noise disturbance during activities at the two sites within the 4 km development corridor may occur, but this is expected to be of limited duration, lasting only a few days.

## **Imperial Response - DAR DR 7.0 (MVEIRB)**

**Application Name:** 2004 Winter Field Geotechnical Investigation Program in the DCR

**Document Reference:** Developer's Assessment Report

**Request From:** Mackenzie Valley Environmental Impact Review Board

**Regulatory Agency Reference:** Mackenzie Valley Environmental Impact Review Board

**Imperial Reference:** DAR DR 7.0

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### **DEFICIENCY STATEMENT:**

***I-1 Vegetation and Plant Communities: Describe the successional condition and habitat value of the re-growth that is to be removed.***

- Imperial provided no substantial description of the successional condition or habitat value of the re-growth to be removed during access.
- 

### **RESPONSE:**

Approximately 406 km of secondary access will require the clearing/brushing of vegetation, of which approximately 361 kms (89%) are areas of re-growth (i.e., existing cutlines and rights-of-way) and approximately 45 kms are classified as undisturbed growth. The proposed clearing activities will involve both mechanical as well as hand clearing (i.e., slashing and cutting). The purpose of the clearing operation is to facilitate drill and support equipment access from the primary access routes along secondary access trails to the drill sites. The primary access for the Program includes the winter road, Mackenzie Highway and Enbridge right-of-way.

From discussions with local community representatives and regulatory agencies, existing cutlines, seismic lines and rights-of-way have been selected, where possible, instead of clearing new access trails off of the primary access routes. To mitigate the loss of vegetation, all root masses will be left intact and there will be no disturbance to the ground surface during clearing operations. Retaining root masses should accelerate the re-growth of vegetation on the access trails once the development has been completed.

Proposed secondary access routes occur outside of the current area of aerial photograph interpretation. Vegetation in this area has been mapped using satellite imagery, with a minimum resolution of 30 m x 30 m. However, this resolution is too coarse for identifying cutlines and rights-of-ways or for interpreting the structural or successional state of re-growth. As such, the current vegetation and plant community and structural, or successional, status of re-growth on existing cutlines and rights-of-ways is unknown. The structural status of re-growth is expected to vary with site conditions, age of existing cutlines and rights-of-ways and with the current level of use.

Early successional stage re-growth can be beneficial to many species of wildlife, as forage for species such as moose and bears.

## **Imperial Response - DAR DR 8.0 (MVEIRB)**

**Application Name:** 2004 Winter Field Geotechnical Investigation Program in the DCR

**Document Reference:** Developer's Assessment Report

**Request From:** Mackenzie Valley Environmental Impact Review Board

**Regulatory Agency Reference:** Mackenzie Valley Environmental Impact Review Board

**Imperial Reference:** DAR DR 8.0

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### **DEFICIENCY STATEMENT:**

***I-3 Wildlife and Wildlife Habitat: Discuss the potential impacts of the proposed project.... Include discussion of the effects of direct disturbance of the activity (including overflights) ... Incorporate traditional land use and Traditional Knowledge in your analysis.***

- Imperial did not predict the effects of direct disturbance of wildlife from overflights, and failed to incorporate traditional land use and Traditional Knowledge in the wildlife analysis.
- 

### **RESPONSE:**

#### **Overflight disturbance**

Mitigations such as minimum altitude restrictions and avoidance of large concentrations of wildlife will be in place during the Program.

Aircraft and helicopter overflights during the Program might have short-term impacts to wildlife habitat effectiveness and movement through sensory disturbance. The Program will occur during the winter, minimizing impacts to migrating bird species, amphibians and denning bears. However, these impacts will be localized and short-term in duration for ungulates, furbearers, and resident birds.

#### **Traditional Knowledge**

The Liidlii Ku'e and Fort Simpson Traditional Knowledge study (Nogha Geomatics and Deh Cho Environmental *unpub.*) indicates that their lands have good habitat for moose, woodland caribou, deer, black bear, wolverine, marten, mink, weasel, ermine, porcupine, lynx, wolf, fox, rabbit, beaver, muskrat, otter, grouse, and other small mammals. Rabbit populations were in low numbers in 2002.

The Liidlii Ku'e and Fort Simpson Traditional Knowledge Report indicates that the residents are concerned that air traffic may affect the frequency of moose visiting certain areas of the land, that road construction will impact wildlife populations, and that the animals will experience population level changes that may affect the Dene's reliance on them as food species. However, the general feeling of the Liidlii Ku'e and Fort Simpson residents is that most effects can be mitigated by working in the winter.

The Sambaa K'e Traditional Knowledge study indicates that much of the land in the Sambaa K'e Region is considered good habitat for woodland caribou, moose, beaver, porcupine, a wide variety of game and fur bearing animals, and grouse species (Sambaa K'e Development Corporation 2004).

The Sambaa K'e Traditional Knowledge study indicates that residents are primarily concerned about the effects of air traffic on humans and animals (particularly moose), vehicle (car, truck,



ATV and snow machine) traffic on the winter road, as well as fuel, propane, and other chemical spills.

Overall, the inclusion of Traditional Knowledge broadens our knowledge of the distribution of the wildlife species in the Deh Cho Region, but does not ultimately change our assessment of the impacts of the Program as being not significant. Most of the mitigation suggestions of the Sambaa K'e, Liidlii Ku'e and Fort Simpson Traditional Knowledge studies are incorporated the Program and are described in the Developer's Assessment Report. As such, there is high confidence that these impacts will be adverse in direction, low in magnitude, local in geographic extent, far future in duration, and reversible.

#### **Literature Cited**

Sambaa K'e Development Corporation. 2004. *Sambaa K'e Traditional Knowledge report for the proposed Mackenzie Gas Project*. Prepared by the Sambaa K'e Development Corporation under contract to Imperial Oil Resources Ventures Limited. Sambaa K'e Dene Band, NWT, cited with the permission of the Sambaa K'e Dene Band.

Nogha Geomatics and Deh Cho Environmental. 2004 *unpub. Liidlii Ku'e First Nation and Fort Simpson Traditional Knowledge Project Literature Review and Traditional Knowledge Study*. Nogha Geomatics Ltd. and Deh Cho Environmental for Mackenzie Gas Project Imperial Oil Resources, cited with the permission of the Liidlii Ku'e First Nation.

## **Imperial Response - DAR DR 9.0 (MVEIRB)**

**Application Name:** 2004 Winter Field Geotechnical Investigation Program in the DCR  
**Document Reference:** Developer's Assessment Report  
**Request From:** Mackenzie Valley Environmental Impact Review Board  
**Regulatory Agency Reference:** Mackenzie Valley Environmental Impact Review Board  
**Imperial Reference:** DAR DR 9.0

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### **DEFICIENCY STATEMENT:**

**1-4 SARA: Conduct an assessment of the potential effects of the project on species at risk. This assessment should include: identification of species at risk that may be affected by the project, identification of measures to avoid, minimize and mitigate potential effects on these species or their habitat, and a proposed approach to monitoring these effects.**

- In its response, Imperial identified only species listed under the Species at Risk Act. Footnote three of the Terms of Reference specify that, for the purposes of this section, "species at risk" should include wildlife at risk as defined in Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada, Canadian Wildlife Service, 2004. This includes all rare or imperilled species designated, or identified as candidates for designation, on a variety of wildlife-related lists. The section should be revised accordingly, bearing in mind also the assessment criteria described in Terms of Reference s.4.1.

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### **RESPONSE:**

The *Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada* (Canadian Wildlife Service (CWS), 2004) sets out guidelines for assessing species at risk across Canada. The guide uses the term "wildlife at risk" to *include all rare or imperilled species designated, or identified as candidates for designation*, on lists established by:

- Federal, provincial and territorial legislation or local or regional governments;
- Wildlife management boards established under land claims agreements that are authorized by those agreements to perform functions in respect of wildlife species;
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC);
- Provincial, territorial and regional Conservation Data Centres and Natural Heritage Information Centres;
- Canadian Endangered Species Conservation Council's *Wild Species 2000: General Status of Species in Canada*;
- World Conservation Union Species Survival Commission (IUCN Red List); and
- Convention on International Trade in Endangered Species of Wild Fauna and Flora" (CITES).

CWS (2004)

Federally, wildlife species at risk are listed legally through the Species at Risk Act (SARA), and is in the process of being implemented. In the Deh Cho Region, the Government of the Northwest Territories Department of Resources, Wildlife and Economic Development (RWED) is the provincial listing agency. Land claims have yet to be established in the Deh Cho Region, wildlife species are still managed and listed at the territorial level. Conservation Data Centres and Natural Heritage Information Centres have not been set up yet for the Northwest Territories. As a result, species at risk occurring in the Deh Cho Region study area, and their status according to RWED, COSEWIC, SARA, Wild Species 2000, and the IUCN Red List are listed in Table 2.

Impacts to wildlife species at risk were determined only for species resident in the study area during the Program. This excludes species which are not present in the winter, migrants, occasional residents, and species in winter stasis and hibernation. Therefore, the impacts to wildlife species at risk resulting from the Program will be adverse in direction, low in magnitude, local in extent, short-term in duration, and are considered not significant.

### **Birds**

Program activities such as road development, site clearing and test drilling will be limited to the winter months when most bird species are absent from the project area. However, two listed species, the boreal chickadee (*Sensitive*; RWED 2000) and rock ptarmigan (*Sensitive*; RWED 2000) occur in the Program area during winter. Boreal chickadees are considered winter residents, while rock ptarmigan are considered casual winter visitors to the Mackenzie Valley.

Program activities will result in minimal habitat loss. Because considerable foraging habitat is available for both species in the study region, impacts of direct habitat loss on winter forage availability are considered low in magnitude. Habitat loss might also occur through sensory disturbance and subsequent habitat avoidance. Boreal chickadees are not considered sensitive to human activities and might only avoid areas that experience high levels of disturbance (e.g., active drill sites). In contrast, rock ptarmigan are a harvested game species and might be less tolerant of human presence. This species might thus avoid work areas, including camps. However, because foraging habitat is not considered limiting for this species, as well as boreal chickadees, the impacts of sensory disturbance are considered low in magnitude.

Loss of habitat during winter could affect availability of spring and summer nesting habitat for listed bird species (e.g., blackpoll warbler, northern flicker, rusty blackbird; see Table 2). However, as discussed above, the amount of habitat loss will be small relative to regional habitat availability, resulting in little or no impact to nesting species.

Listed bird species might experience increased mortality as a result of Program activities. Increased access during winter might result in increased hunting of rock ptarmigan. However, restriction of firearms at work sites and camps will reduce potential mortality of this species. In addition to hunting mortality, rock ptarmigan might be killed by vehicle collisions; however, low traffic speeds will reduce this possibility. Access routes might also be used by predators (e.g., foxes, coyotes) as travel corridors, resulting in increased nest predation for species nesting on or adjacent to right-of-ways. However, the Program will involve little clearing of new access roads, resulting in little or no increase in potential mortality from nest predation.

The potential impacts of habitat loss, sensory disturbance and mortality on listed bird species are considered low in magnitude. As a result, impacts of the Program are considered not significant.

### **Amphibians and Reptiles**

All listed amphibian and reptile species in the Deh Cho study area will be in winter stasis during the Program. Drilling and construction in wetlands could induce mortality to some amphibians, but these impacts are not expected to occur on a magnitude detectable over normal overwintering amphibian mortality. Reptiles occur at extremely low densities in the Deh Cho Region, and as such, population-level impacts are not expected to occur as a result of the Program. The potential impacts of habitat loss, sensory disturbance and mortality on listed amphibian species are considered low in magnitude. As a result, impacts of construction and drilling for the Program are considered not significant.

### **Mammals**

Little habitat will be cleared by construction of roads, camp sites and drill sites, resulting in a minimum reduction in habitat availability for listed species. Sensory disturbance will be limited to the winter period, and will be localized around camps, roads and drilling sites. Some mammals

might be displaced by these activities (e.g., woodland caribou, wood bison and wolverine), but the impact will be temporary. Construction of only 22.5 km of new access routes will result in little increased access to important wildlife areas, thereby limiting additional hunting, trapping or poaching opportunities.

Because the Program activities will occur during the winter, impacts to hibernating bears will be minimal. Disturbance of denning bears is considered unlikely because of the very low densities of bears that occur in the region. Attraction of mammal species to work sites and camps, and subsequent potential mortality, can be mitigated by the stringent enforcement of camp rules and regulations that control odours and food wastes.

The potential impacts of habitat loss, sensory disturbance and mortality on listed mammal species are considered low in magnitude. As a result, impacts of the Program are considered not significant.

**Table 2 [DAR DR 9.0 (MVEIRB)]: Species at Risk: listings of birds that occur in the Deh Cho Geotechnical Investigation study area (including both residential and migratory bird species).**

Common Name	Scientific Name	Occurrence	Status				
			RWED (RWED 2000)	COSEWIC (COSEWIC 2004)	SARA (Environment Canada 2004a)	Wild Species 2000 (CWS 2004)	IUCN Red List (IUCN 2004)
Northern goshawk	<i>Accipiter gentilis</i>	present	Secure	Not at Risk	-	Secure	-
Sharp-shinned hawk	<i>Accipiter striatus</i>	present	Secure	Not at Risk	-	Secure	-
Spotted sandpiper	<i>Actitis macularia</i>	present	Undetermined	-	-	Undetermined	-
Boreal owl	<i>Aegolius funereus</i>	present	Secure	Not at Risk	-	Secure	-
Red-winged blackbird	<i>Agelaius phoeniceus</i>	present	Secure	-	-	Secure	-
Nelson's sharp-tailed sparrow	<i>Ammodramus caudacutus</i>	present	Undetermined	-	-	Undetermined	-
Le Conte's Sparrow	<i>Ammodramus leconteii</i>	present	Undetermined	-	-	Undetermined	-
Northern pintail	<i>Anas acuta</i>	present	Sensitive	-	-	Sensitive	-
American wigeon	<i>Anas americana</i>	present	Secure	-	-	Secure	-
Northern shoveler	<i>Anas clypeata</i>	present	Secure	-	-	Secure	-
Green-winged teal	<i>Anas crecca</i>	present	Secure	-	-	Secure	-
Blue-winged teal	<i>Anas discors</i>	present	Secure	-	-	Secure	-
Mallard	<i>Anas platyrhynchos</i>	present	Secure	-	-	Secure	-
Greater white-fronted goose	<i>Anser albifrons</i>	migrant	Secure	-	-	Secure	-
American pipit (water pipit)	<i>Anthus rubescens</i>	migrant	Sensitive	-	-	Sensitive	-
Golden eagle	<i>Aquila chrysaetos</i>	present	Sensitive	Not at Risk	-	Sensitive	-
Short-eared owl	<i>Asio flammeus</i>	present	Sensitive	Special Concern	Schedule 3 - Special Concern	Sensitive	-
Lesser scaup	<i>Aythya affinis</i>	present	Sensitive	-	-	Sensitive	-
Redhead	<i>Aythya americana</i>	present	Secure	-	-	Secure	-
Ring-necked duck	<i>Aythya collaris</i>	present	Secure	-	-	Secure	-
Greater scaup	<i>Aythya marila</i>	present	Secure	-	-	Secure	-
Canvasback	<i>Aythya valisineria</i>	present	Secure	-	-	Secure	-
Upland sandpiper	<i>Bartramia longicauda</i>	present	Undetermined	-	-	Undetermined	-

**Table 2 [DAR DR 9.0 (MVEIRB)]: Species at Risk: listings of birds that occur in the Deh Cho Geotechnical Investigation study area (including both residential and migratory bird species).**

Common Name	Scientific Name	Occurrence	Status				
			RWED (RWED 2000)	COSEWIC (COSEWIC 2004)	SARA (Environment Canada 2004a)	Wild Species 2000 (CWS 2004)	IUCN Red List (IUCN 2004)
Cedar waxwing	<i>Bombycilla cedorum</i>	present	Undetermined	-	-	Undetermined	-
Bohemian waxwing	<i>Bombycilla garrulus</i>	present	Secure		-	Secure	-
Ruffed grouse	<i>Bonasa umbellus</i>	present	Secure	-	-	Secure	-
American bittern	<i>Botaurus lentiginosus</i>	present	<i>Sensitive</i>	-	-	<i>Sensitive</i>	-
Brant	<i>Branta bernicla</i>	migrant	Secure	-	-	Secure	-
Canada goose	<i>Branta canadensis</i>	present	Secure	-	-	Secure	-
Great horned owl	<i>Bubo virginianus</i>	present	Secure	-	-	Secure	-
Bufflehead	<i>Bucephala albeola</i>	present	Secure	-	-	Secure	-
Common goldeneye	<i>Bucephala clangula</i>	present	Secure	-	-	Secure	-
Barrow's goldeneye	<i>Bucephala islandica</i>	migrant	Secure	-	-	Secure	-
Red-tailed hawk	<i>Buteo jamaicensis</i>	present	Secure	Not at Risk	-	Secure	-
Rough-legged hawk	<i>Buteo lagopus</i>	migrant	Secure	Not at Risk	-	Secure	-
Swainson's hawk	<i>Buteo swainsoni</i>	present	Undetermined	-	-	Undetermined	-
Lapland longspur	<i>Calcarius lapponicus</i>	migrant	Undetermined	-	-	Undetermined	-
Smith's longspur	<i>Calcarius pictus</i>	migrant	Undetermined	-	-	Secure	-
Sanderling	<i>Calidris alba</i>	migrant	<i>Sensitive</i>	-	-	<i>Sensitive</i>	-
Dunlin	<i>Calidris alpina</i>	migrant	Secure	-	-	Secure	-
Baird's sandpiper	<i>Calidris bairdii</i>	migrant	Secure	-	-	Secure	-
Red Knot	<i>Calidris canutus</i>	migrant	Secure	-	-	Secure	-
White-rumped sandpiper	<i>Calidris fuscicollis</i>	migrant	Secure	-	-	Secure	-
Stilt sandpiper	<i>Calidris himantopus</i>	migrant	Undetermined	-	-	Undetermined	-
Pectoral sandpiper	<i>Calidris melanotos</i>	migrant	Secure	-	-	Secure	-
Least sandpiper	<i>Calidris minutilla</i>	migrant	<i>Sensitive</i>	-	-	<i>Sensitive</i>	-
Semipalmated sandpiper	<i>Calidris pusilla</i>	migrant	<i>Sensitive</i>	-	-	<i>Sensitive</i>	-
Common redpoll	<i>Carduelis flammea</i>	present	Secure	-	-	Secure	-

**Table 2 [DAR DR 9.0 (MVEIRB)]: Species at Risk: listings of birds that occur in the Deh Cho Geotechnical Investigation study area (including both residential and migratory bird species).**

Common Name	Scientific Name	Occurrence	Status				
			RWED (RWED 2000)	COSEWIC (COSEWIC 2004)	SARA (Environment Canada 2004a)	Wild Species 2000 (CWS 2004)	IUCN Red List (IUCN 2004)
Hoary redpoll	<i>Carduelis hornemannii</i>	winter	Undetermined	-	-	Undetermined	-
Pine siskin	<i>Carduelis pinus</i>	present	Secure	-	-	Secure	-
Purple finch	<i>Carpodacus purpureus</i>	present	Undetermined	-	-	Undetermined	-
Hermit thrush	<i>Catharus guttatus</i>	present	Secure	-	-	Secure	-
Gray-cheeked thrush	<i>Catharus minimus</i>	present	Secure	-	-	Secure	-
Swainson's thrush	<i>Catharus ustulatus</i>	present	Secure	-	-	Secure	-
Belted kingfisher	<i>Ceryle alcyon</i>	present	Secure	-	-	Secure	-
Semipalmated plover	<i>Charadrius semipalmatus</i>	present	Undetermined	-	-	Undetermined	-
Killdeer	<i>Charadrius vociferus</i>	present	Undetermined	-	-	Undetermined	-
Snow goose	<i>Chen caerulescens</i>	migrant	Secure	-	-	Secure	-
Ross's Goose	<i>Chen rossii</i>	migrant	Secure	-	-	Secure	-
Black tern	<i>Chlidonias niger</i>	present	Sensitive	Not at Risk	-	Sensitive	-
Common nighthawk	<i>Chordeiles minor</i>	present	Secure	-	-	Undetermined	-
Northern harrier	<i>Circus cyaneus</i>	present	Secure	Not at Risk	-	Secure	-
Long-tailed duck (Oldsquaw)	<i>Clangula hyemalis</i>	present	Sensitive	-	-	Sensitive	-
Northern flicker	<i>Colaptes auratus</i>	present	Sensitive	-	-	Sensitive	-
Western wood-pewee	<i>Contopus sordidulus</i>	present	Undetermined	-	-	Undetermined	-
American crow	<i>Corvus brachyrhynchos</i>	present	Undetermined	-	-	Undetermined	-
Common raven	<i>Corvus corax</i>	present	Secure	-	-	Secure	-
Trumpeter swan	<i>Cygnus buccinator</i>	migrant	Sensitive	Not at Risk	-	Sensitive	-
Spruce grouse	<i>Dendragapus canadensis</i>	present	Secure	-	-	Secure	-
Bay-breasted warbler	<i>Dendroica castanea</i>	present	Undetermined	-	-	Undetermined	-
Common yellowthroat	<i>Dendroica coronata</i>	present	Undetermined	-	-	Undetermined	-
Yellow-rumped warbler	<i>Dendroica coronata</i>	present	Secure	-	-	Secure	-
Magnolia warbler	<i>Dendroica magnolia</i>	present	Secure	-	-	Secure	-
Palm warbler	<i>Dendroica palmarum</i>	present	Secure	-	-	Secure	-



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Common Name	Scientific Name	Occurrence	Status				
			RWED (RWED 2000)	COSEWIC (COSEWIC 2004)	SARA (Environment Canada 2004a)	Wild Species 2000 (CWS 2004)	IUCN Red List (IUCN 2004)
Yellow warbler	<i>Dendroica petechia</i>	present	Secure	-	-	Secure	-
Blackpoll warbler	<i>Dendroica striata</i>	present	<i>Sensitive</i>		-	Sensitive	-
Cape May warbler	<i>Dendroica tigrina</i>	present	Undetermined	-	-	Undetermined	-
Black-throated green warbler	<i>Dendroica virens</i>	present	-	-	-	-	-
Pileated woodpecker	<i>Dryocopus pileatus</i>	present	Secure	-	-	Secure	-
Alder flycatcher	<i>Empidonax alnorum</i>	present	Secure	-	-	Secure	-
Yellow-bellied flycatcher	<i>Empidonax flaviventris</i>	present	Secure	-	-	Secure	-
Least flycatcher	<i>Empidonax minimus</i>	present	Secure	-	-	Secure	-
Horned lark	<i>Eremophila alpestris</i>	migrant	Secure	-	-	Secure	-
Rusty blackbird	<i>Euphagus carolinus</i>	present	<i>Sensitive</i>	-	-	Sensitive	-
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	present	Undetermined	-	-	Undetermined	-
Merlin	<i>Falco columbarius</i>	present	Secure	Not at Risk	-	Secure	-
Peregrine falcon (anatum)	<i>Falco peregrinus anatum</i>	migrant	At Risk	Threatened	Schedule 1 - Threatened	Sensitive	-
Peregrine falcon (tundra)	<i>Falco peregrinus tundrius</i>	migrant	May be At Risk	<i>Special Concern</i>	<i>Schedule 3 - Special Concern</i>	Sensitive	-
Gyrfalcon	<i>Falco rusticolus</i>	winter	Secure	Not at Risk	-	Secure	-
American kestrel	<i>Falco sparverius</i>	present	Secure	-	-	Secure	-
American coot	<i>Fulica americana</i>	present	<i>Sensitive</i>	Not at Risk	-	Sensitive	-
Common snipe	<i>Gallinago gallinago</i>	present	<i>Sensitive</i>	-	-	Sensitive	-
Common loon	<i>Gavia immer</i>	present	Secure	Not at Risk	-	Secure	-
Sandhill crane	<i>Grus canadensis</i>	present	Secure	-	-	Secure	-
Bald eagle	<i>Haliaeetus leucocephalus</i>	present	Secure	Not at Risk	-	Secure	-
Cliff swallow	<i>Hirundo pyrrhonota</i>	present	Secure	-	-	Secure	-



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Common Name	Scientific Name	Occurrence	Status				
			RWD (RWD 2000)	COSEWIC (COSEWIC 2004)	SARA (Environment Canada 2004a)	Wild Species 2000 (CWS 2004)	IUCN Red List (IUCN 2004)
Barn swallow	<i>Hirundo rustica</i>	present	Sensitive	-	-	Sensitive	-
Northern oriole	<i>Icterus galbula</i>	present	-	-	-	-	-
Varied thrush	<i>Lxoreus naevius</i>	present	Undetermined	-	-	Undetermined	-
Dark-eyed junco	<i>Junco hyemalis</i>	present	Secure	-	-	Secure	-
Willow ptarmigan	<i>Lagopus lagopus</i>	present	Secure	-	-	Secure	-
Rock ptarmigan	<i>Lagopus mutus</i>	winter	Sensitive	-	-	Sensitive	-
Northern shrike	<i>Lanius excubitor</i>	present	Secure	-	-	Secure	-
Herring gull	<i>Larus argentatus</i>	present	Secure	-	-	Secure	-
Mew gull	<i>Larus canus</i>	present	Secure	-	-	Secure	-
Glaucous gull	<i>Larus hyperboreus</i>	migrant	Secure	-	-	Secure	-
Bonaparte's gull	<i>Larus philadelphia</i>	present	Secure	-	-	Secure	-
Thayer's Gull	<i>Larus thayeri</i>	migrant	Secure	-	-	Secure	-
Short-billed dowitcher	<i>Limnodromus griseus</i>	present	Not assessed	-	-	Not Assessed	-
Long-billed dowitcher	<i>Limnodromus scolopaceus</i>	migrant	Sensitive	-	-	Sensitive	-
Hudsonian godwit	<i>Limosa haemastica</i>	migrant	Undetermined	-	-	Undetermined	-
Hooded merganser	<i>Lophodytes cucullatus</i>	present	Secure	-	-	Secure	-
Red crossbill	<i>Loxia curvirostra</i>	present	Secure	-	-	Secure	-
White-winged crossbill	<i>Loxia leucoptera</i>	present	Secure	-	-	Secure	-
White-winged scoter	<i>Melanitta fusca</i>	present	Sensitive	-	-	Sensitive	-
Black scoter	<i>Melanitta nigra</i>	migrant	Sensitive	-	-	Sensitive	-
Surf scoter	<i>Melanitta persicillata</i>	present	Sensitive	-	-	Sensitive	-
Swamp sparrow	<i>Melospiza georgiana</i>	present	Secure	-	-	Secure	-
Lincoln's sparrow	<i>Melospiza lincolni</i>	present	Secure	-	-	Secure	-
Song sparrow	<i>Melospiza melodia</i>	present	Undetermined	-	-	Undetermined	-
Common merganser	<i>Mergus merganser</i>	present	Secure	-	-	Secure	-

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Common Name	Scientific Name	Occurrence	Status				
			FWED (FWED 2000)	COSEWIC (COSEWIC 2004)	SARA (Environment Canada 2004a)	Wild Species 2000 (CWS 2004)	IUCN Red List (IUCN 2004)
Red-breasted merganser	<i>Mergus serrator</i>	present	Secure	-	-	Secure	-
Black-and-white warbler	<i>Mniotilta varia</i>	present	Secure		-	Secure	-
Brown-headed cowbird	<i>Molothrus ater</i>	present	Undetermined	-	-	Undetermined	-
Townsend's solitaire	<i>Myadestes townsendi</i>	migrant	Undetermined	-	-	Undetermined	-
American Whimbrel	<i>Numenius phaeopus</i>	migrant	<i>Sensitive</i>	-	-	Sensitive	-
Olive-sided flycatcher	<i>Nuttallornis borealis</i>	present	<i>Sensitive</i>		-	Sensitive	-
Snowy owl	<i>Nyctea scandiaca</i>	winter	Secure	Not at Risk	-	Secure	-
Tundra swan	<i>Olor columbianus</i>	migrant	Secure	-	-	Secure	-
Ruddy duck	<i>Oxyura jamaicensis</i>	present	Secure	-	-	Secure	-
Osprey	<i>Pandion haliaetus</i>	present	Secure	-	-	Secure	-
Black-capped chickadee	<i>Parus atricapillus</i>	present	Secure		-	Secure	-
Boreal chickadee	<i>Parus hudsonicus</i>	present	<i>Sensitive</i>		-	Sensitive	-
Fox sparrow	<i>Passerella iliaca</i>	present	Undetermined	-	-	Undetermined	-
House sparrow	<i>Passer domesticus</i>	present	Exotic/Alien	-	-	Exotic	-
Savannah sparrow	<i>Passerculus sandwichensis</i>	present	Secure	-	-	Secure	-
Gray jay	<i>Perisoreus canadensis</i>	present	Secure	-	-	Secure	-
Red phalarope	<i>Phalaropus fulicaria</i>	migrant	<i>Sensitive</i>	-	-	Sensitive	-
Red-necked phalarope	<i>Phalaropus lobatus</i>	present	<i>Sensitive</i>		-	Sensitive	-
Wilson's phalarope	<i>Phalaropus tricolor</i>	present	Not assessed	-	-	Not Assessed	-
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	present	Undetermined	-	-	Undetermined	-
Black-billed magpie	<i>Pica pica</i>	present	Secure		-	Secure	-
Black-backed woodpecker	<i>Picoides arcticus</i>	present	Secure		-	Secure	-

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Common Name	Scientific Name	Occurrence	Status				
			RWD (RWD 2000)	COSEWIC (COSEWIC 2004)	SARA (Environment Canada 2004a)	Wild Species 2000 (CWS 2004)	IUCN Red List (IUCN 2004)
Downy woodpecker	<i>Picoides pubescens</i>	present	Secure	-	-	Secure	-
Three-toed woodpecker	<i>Picoides tridactylus</i>	present	Secure	-	-	Secure	-
Hairy woodpecker	<i>Picoides villosus</i>	present	Secure	-	-	Secure	-
Pine grosbeak	<i>Pinicola enucleator</i>	present	Undetermined	-	-	Undetermined	-
Western tanager	<i>Piranga ludoviciana</i>	present	Secure	-	-	Secure	-
Snow bunting	<i>Plectrophenax nivalis</i>	winter	Undetermined	-	-	Undetermined	-
American golden-plover	<i>Pluvialis dominica</i>	migrant	Sensitive	-	-	Sensitive	-
Black-bellied plover	<i>Pluvialis squatarola</i>	migrant	Sensitive	-	-	Sensitive	-
Horned grebe	<i>Podiceps auritus</i>	present	Secure	-	-	Secure	-
Red-necked grebe	<i>Podiceps grisegena</i>	present	Secure	Not at Risk	-	Secure	-
Pied-billed grebe	<i>Podilymbus podiceps</i>	present	Sensitive	-	-	Sensitive	-
Vesper sparrow	<i>Poocetes gramineus</i>	present	Undetermined	-	-	Undetermined	-
Sora	<i>Porzana carolina</i>	present	Secure	-	-	Secure	-
Common grackle	<i>Quiscalus quiscula</i>	present	Undetermined	-	-	Undetermined	-
Ruby-crowned kinglet	<i>Regulus calendula</i>	present	Secure	-	-	Secure	-
Golden-crowned kinglet	<i>Regulus satrapa</i>	present	Undetermined	-	-	Undetermined	-
Bank swallow	<i>Riparia riparia</i>	present	Sensitive	-	-	Sensitive	-
Eastern phoebe	<i>Sayornis phoebe</i>	present	Secure	-	-	Secure	-
Say's phoebe	<i>Sayornis saya</i>	present	Undetermined	-	-	Undetermined	-
Northern waterthrush	<i>Seiurus noveboracensis</i>	present	Secure	-	-	Secure	-
Ovenbird	<i>Seiurus aurocapillus</i>	present	Undetermined	-	-	Undetermined	-
Red-breasted nuthatch	<i>Sitta canadensis</i>	present	Secure	-	-	Secure	-
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	present	Secure	-	-	Secure	-

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Common Name	Scientific Name	Occurrence	Status				
			FWED (FWED 2000)	COSEWIC (COSEWIC 2004)	SARA (Environment Canada 2004a)	Wild Species 2000 (CWS 2004)	IUCN Red List (IUCN 2004)
Clay-colored sparrow	<i>Spizella pallida</i>	present	Undetermined	-	-	Undetermined	-
Chipping sparrow	<i>Spizella passerina</i>	present	Secure	-	-	Secure	-
American tree sparrow	<i>Spizella arborea</i>	migrant	Sensitive	-	-	Sensitive	-
American redstart	<i>Stenophaga ruticilla</i>	present	Secure	-	-	Secure	-
Common tern	<i>Sterna hirundo</i>	present	Secure	Not at Risk	-	Secure	-
Arctic tern	<i>Sterna paradisaea</i>	present	Secure	-	-	Secure	-
Great gray owl	<i>Strix nebulosa</i>	present	Secure	Not at Risk	-	Secure	-
European starling	<i>Sturnus vulgaris</i>	present	Exotic/Alien	-	-	Exotic	-
Northern hawk-owl	<i>Surnia ulula</i>	present	Secure	Not at Risk	-	Secure	-
Tree swallow	<i>Tachycineta bicolor</i>	present	Secure	-	-	Secure	-
Lesser yellowlegs	<i>Tringa flavipes</i>	present	Sensitive	-	-	Sensitive	-
Greater yellowlegs	<i>Tringa melanoleuca</i>	present	Undetermined	-	-	Undetermined	-
Solitary sandpiper	<i>Tringa solitaria</i>	present	Undetermined	-	-	Undetermined	-
Winter wren	<i>Troglodytes troglodytes</i>	present	Undetermined	-	-	Undetermined	-
Buff-breasted sandpiper	<i>Tryngites subruficollis</i>	migrant	Sensitive	-	-	Sensitive	Lower Risk- Near Threatened
American robin	<i>Turdus migratorius</i>	present	Secure	-	-	Secure	-
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>	present	Secure	-	-	Secure	-
Eastern kingbird	<i>Tyrannus tyrannus</i>	present	Secure	-	-	Secure	-
Orange-crowned warbler	<i>Vermivora celata</i>	present	Secure	-	-	Secure	-
Tennessee warbler	<i>Vermivora peregrina</i>	present	Secure	-	-	Secure	-
Warbling vireo	<i>Vireo gilvus</i>	present	Secure	-	-	Secure	-
Red-eyed vireo	<i>Vireo olivaceus</i>	present	Secure	-	-	Secure	-
Philadelphia vireo	<i>Vireo philadelphicus</i>	present	Undetermined	-	-	Undetermined	-
Blue-headed vireo	<i>Vireo solitarius</i>	present	Undetermined	-	-	Undetermined	-

**Table 2 [DAR DR 9.0 (MVEIRB)]: Species at Risk: listings of birds that occur in the Deh Cho Geotechnical Investigation study area (including both residential and migratory bird species).**

Common Name	Scientific Name	Occurrence	Status				
			RWED (RWED 2000)	COSEWIC (COSEWIC 2004)	SARA (Environment Canada 2004a)	Wild Species 2000 (CWS 2004)	IUCN Red List (IUCN 2004)
Canada warbler	<i>Wilsonia canadensis</i>	present	Undetermined	-	-	Undetermined	-
Wilson's warbler	<i>Wilsonia pusilla</i>	present	Secure	-	-	Secure	-
White-throated sparrow	<i>Zonotrichia albicollis</i>	present	Sensitive	-	-	Sensitive	-
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	present	Secure	-	-	Secure	-
Harris' sparrow	<i>Zonotrichia querula</i>	migrant	Sensitive	-	-	Sensitive	-
<p><i>Alberta Sustainable Resource Development (ASRD). 2000. The General Status of Alberta Wild Species 2000. Last accessed June 4, 2004: <a href="http://www3.gov.ab.ca/srd/fw/risk/species/speciesatrisk/index.html">http://www3.gov.ab.ca/srd/fw/risk/species/speciesatrisk/index.html</a>.</i></p> <p><i>Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2004. Species assessment database. Last accessed June 4, 2004: <a href="http://www.cosewic.gc.ca/eng/sct1/index_e.cfm">http://www.cosewic.gc.ca/eng/sct1/index_e.cfm</a>.</i></p> <p><i>Environment Canada. 2004a. Consultation on Amending the List of Species under the Species At Risk Act: March 2004. Species At Risk Act Public Registry Website. Last accessed June 4, 2004: <a href="http://www.sararegistry.gc.ca/public/showDocument_e.cfm?id=270">http://www.sararegistry.gc.ca/public/showDocument_e.cfm?id=270</a>.</i></p> <p><i>* Status is to reassigned (i.e., potentially added to Schedule 1) pending results of public consultation (ends June 14, 2004), stakeholder consultation, and final Ministerial approval (Environment Canada 2004a)</i></p> <p><i>Environment Canada 2004b. Species List. Species At Risk Act Public Registry. Last accessed June 4, 2004: <a href="http://www.sararegistry.gc.ca/species/default_e.cfm">http://www.sararegistry.gc.ca/species/default_e.cfm</a>.</i></p> <p><i>Environment Canada 2004c. The general status of species. <a href="http://www.wildspecies.ca/wildspecies2000/en/Search.cfm">http://www.wildspecies.ca/wildspecies2000/en/Search.cfm</a> last accessed July 30, 2004</i></p> <p><i>Resources, Wildlife and Economic Development (RWED). 2000. NWT Species 2000: General Status Ranks of Wild Species in the Northwest Territories. Last accessed June 4, 2004: <a href="http://www.nwtwildlife.rwed.gov.nt.ca/monitoring/speciesmonitoring/Monitoring%20report%20NEW.pdf">http://www.nwtwildlife.rwed.gov.nt.ca/monitoring/speciesmonitoring/Monitoring%20report%20NEW.pdf</a></i></p> <p><i>International Union for Conservation of Nature and Natural Resources <a href="http://www.redlist.org">http://www.redlist.org</a>, last accessed August 3, 2004</i></p>							



**Table 3 [DAR DR 9.0 (MVEIRB)]: Species at Risk: listings of mammals and amphibians that occur in the Deh Cho Geotechnical Investigation study area (including both residential and migratory bird species).**

Common Name	Scientific Name	Status				
		RWED (RWED 2000)	COSEWIC (COSEWIC 2004)	SARA (Environment Canada 2004a)	Wild Species 2000 (CWS 2004)	IUCN Red List (IUCN 2004)
TERRESTRIAL MAMMALS						
American beaver	<i>Castor canadensis</i>	Secure	-	-	Secure	Lower Risk- Least Concern
American marten	<i>Martes americana</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Barrenground shrew	<i>Sorex ugyunak</i>	Undetermined	-	-	Undetermined	Lower Risk- Least Concern
Black bear	<i>Ursus americanus</i>	Secure	Not at Risk	-	Secure	Lower Risk- Least Concern
Canada lynx	<i>Lynx canadensis</i>	Secure	Not at Risk	-	Secure	Least Concern
Chestnut-cheeked vole (Taiga vole)	<i>Microtus xanthognathus</i>	Secure	-	-		Lower Risk- Least Concern
Common porcupine	<i>Erethizon dorsatum</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Coyote	<i>Canis latrans</i>	Undetermined	-	-	Undetermined	Lower Risk- Least Concern
Deer mouse	<i>Peromyscus maniculatus</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Dusky shrew	<i>Sorex monticolus</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Ermine	<i>Mustela erminea</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Fisher	<i>Martes pennanti</i>	May be At Risk	-	-	May be at Risk	Lower Risk- Least Concern
Gray wolf	<i>Canis lupus</i>	Secure	Not at Risk	-	Secure	Lower Risk- Least Concern
Heather vole	<i>Phenacomys intermedius</i> ( <i>ungava</i> )	Secure	-	-	Secure	Lower Risk- Least Concern
Least chipmunk	<i>Eutamias (Tamias)</i> <i>minimus</i>	Secure	-	-	Secure	Lower Risk- Least Concern

**Table 3** [DAR DR 9.0 (MVEIRB)]: Species at Risk: listings of mammals and amphibians that occur in the Deh Cho Geotechnical Investigation study area (including both residential and migratory bird species).

Common Name	Scientific Name	Status				
		RWED (RWED 2000)	COSEWIC (COSEWIC 2004)	SARA (Environment Canada 2004a)	Wild Species 2000 (CWS 2004)	IUCN Red List (IUCN 2004)
Least weasel	<i>Mustela nivalis</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Little brown bat	<i>Myotis lucifugus</i>	Sensitive	-	-	Sensitive	Lower Risk- Least Concern
Masked shrew	<i>Sorex cinereus</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Meadow jumping mouse	<i>Zapus hudsonius</i>	Undetermined	-	-	Undetermined	Lower Risk- Least Concern
Meadow vole	<i>Microtus pennsylvanicus</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Mink	<i>Mustela vison</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Moose	<i>Alces alces</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Mule deer	<i>Odocoileus hemionus</i>	Undetermined	-	-	Undetermined	Lower Risk- Least Concern
Muskrat	<i>Ondatra zibethicus</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Northern bog lemming	<i>Synaptomys borealis</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Northern flying squirrel	<i>Glaucomys sabrinus</i>	Sensitive	-	-	Sensitive	Lower Risk- Least Concern
Northern long-eared bat	<i>Myotis septentrionalis</i>	-	-	-	Undetermined	Lower Risk- Least Concern
Northern red-backed vole	<i>Clethrionomys rutilus</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Pigmy shrew	<i>Sorex hoyi</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Red fox	<i>Vulpes vulpes</i>	Secure	-	-	Secure	Lower Risk- Least Concern
Red squirrel	<i>Tamiasciurus hudsonicus</i>	Secure	-	-	Secure	Lower Risk- Least Concern

**Table 3 [DAR DR 9.0 (MVEIRB)]:** Species at Risk: listings of mammals and amphibians that occur in the Deh Cho Geotechnical Investigation study area (including both residential and migratory bird species).

Common Name	Scientific Name	Status					IUCN Red List (IUCN 2004)
		RWED (RWED 2000)	COSEWIC (COSEWIC 2004)	SARA (Environment Canada 2004a)	Wild Species 2000 (CWS 2004)		
River otter	<i>Lutra canadensis</i>	Sensitive	-	-	Sensitive	Lower Risk- Least Concern	
Snowshoe hare	<i>Lepus americanus</i>	Secure	-	-	Secure	Lower Risk- Least Concern	
Southern red-backed vole	<i>Clethrionomys gapperi</i>	Secure	-	-	Secure	Lower Risk- Least Concern	
Striped skunk	<i>Mephitis mephitis</i>	Secure	-	-	Secure	Lower Risk- Least Concern	
Tundra shrew	<i>Sorex tundrensis</i>	Undetermined	-	-	Undetermined	Lower Risk- Least Concern	
Water shrew	<i>Sorex palustris</i>	Secure	-	-	Secure	Lower Risk- Least Concern	
White-tailed deer	<i>Odocoileus virginianus</i>	Undetermined	-	-	Undetermined	Lower Risk- Least Concern	
Wolverine	<i>Gulo gulo</i>	Secure	Special Concern	Schedule 3 - Special Concern*	Secure	Vulnerable	
Wood bison	<i>Bison bison</i>	At Risk	Threatened	Schedule 1 - Threatened	At Risk	Lower Risk- Conservation Dependent	
Woodchuck	<i>Marmota monax</i>	Secure	-	-	Secure	Lower Risk- Least Concern	
Woodland caribou (Boreal population)	<i>Rangifer tarandus caribou</i>	Sensitive	Threatened	Schedule 1 - Threatened	-	Lower Risk- Least Concern	
AMPHIBIANS							
Wood frog	<i>Rana sylvatica</i>	Secure	-	-	Secure	-	
Boreal chorus frog	<i>Pseudacris triserata maculata</i>	Sensitive	-	-	Sensitive	-	
REPTILES							
Red-sided garter snake	<i>Thamnophis sirtalis</i>	May be At Risk	-	-	May be at Risk	-	



**Table 3** [DAR DR 9.0 (MVEIRB)]: Species at Risk: listings of mammals and amphibians that occur in the Deh Cho Geotechnical Investigation study area (including both residential and migratory bird species).

Common Name	Scientific Name	Status				
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	Alberta Sustainable Resource Development (ASRD). 2000. The General Status of Alberta Wild Species 2000. Last accessed June 4, 2004: <a href="http://www3.gov.ab.ca/srd/tw/riskspecies/speciesatrisk/index.html">http://www3.gov.ab.ca/srd/tw/riskspecies/speciesatrisk/index.html</a> .					
	Environment Canada. 2004a. Consultation on Amending the List of Species under the Species At Risk Act: March 2004. Species At Risk Act Public Registry Website. Last accessed June 4, 2004: <a href="http://www.sararegistry.gc.ca/public/showDocument_e.cfm?id=270">http://www.sararegistry.gc.ca/public/showDocument_e.cfm?id=270</a>					
	Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2004. Species assessment database. Last accessed June 4, 2004: <a href="http://www.cosewic.gc.ca/eng/sct1/index_e.cfm">http://www.cosewic.gc.ca/eng/sct1/index_e.cfm</a> .					
	* Status is to be reassigned (i.e., potentially added to Schedule 1) pending results of public consultation (ends June 14, 2004), stakeholder consultation, and final Ministerial approval (Environment Canada 2004a)					
	Resources, Wildlife and Economic Development (RWED). 2000. NWT Species 2000: General Status Ranks of Wild Species in the Northwest Territories. Last accessed June 4, 2004: <a href="http://www.nwtwildlife.nwtd.gov.nt.ca/monitoring/speciesmonitoring/Monitoring%20report%20NEW.pdf">http://www.nwtwildlife.nwtd.gov.nt.ca/monitoring/speciesmonitoring/Monitoring%20report%20NEW.pdf</a>					
	Environment Canada 2004b. Species List. Species At Risk Act Public Registry. Last accessed June 4, 2004: <a href="http://www.sararegistry.gc.ca/species/default_e.cfm">http://www.sararegistry.gc.ca/species/default_e.cfm</a> .					
	Environment Canada 2004c. The general status of species. <a href="http://www.wildspecies.ca/wildspecies2000/en/Search.cfm">http://www.wildspecies.ca/wildspecies2000/en/Search.cfm</a> last accessed July 30, 2004					
	International Union for Conservation of Nature and Natural Resources <a href="http://www.redlist.org">http://www.redlist.org</a> , last accessed August 3, 2004					

## **Imperial Response - DAR DR 10.0 (MVEIRB)**

**Application Name:** 2004 Winter Field Geotechnical Investigation Program in the DCR  
**Document Reference:** Developer's Assessment Report  
**Request From:** Mackenzie Valley Environmental Impact Review Board  
**Regulatory Agency Reference:** Mackenzie Valley Environmental Impact Review Board  
**Imperial Reference:** DAR DR 10.0

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### **DEFICIENCY STATEMENT:**

**I-5      *Soil and Overburden: Describe the restoration and stabilization measures proposed for sites determined to be inappropriate for the pipeline.***

- Imperial did not describe the restoration and stabilization measures proposed for sites determined to be inappropriate for the pipeline.

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### **RESPONSE:**

The restoration and stabilization measures outlined below are completed at all investigation sites regardless of their potential to be developed at a future date.

#### **Drill Sites**

At borehole locations, a layer of compacted snow and ice will protect ground cover on the site. An area not exceeding 10 m x 10 m will be cleared of large vegetation to permit safe operation of equipment. On a smaller portion of this area, topsoil might be pushed to one side for operating the drilling rig. A support trailer and stockpiled topsoil and vegetation will be located on the edge of the cleared area. Drilling will be conducted through the ice and snow protective layer, through the ground cover, topsoil and subsoil. The borehole is a hole approximately 25 centimeters in diameter and about 10 m deep. Once the drilling is complete, the drill cuttings will be replaced into the borehole. Any excess will be hauled to the contractor's yard for disposal.

#### **Test-pits**

At the test pit locations, an area not exceeding 25 m x 25 m will be cleared of large vegetation and trees. On a smaller portion of this area (6 m x 15 m). The topsoil will be pushed to one side exposing the subsoil and gravel below. Vegetation and topsoil will be stockpiled on the edge of the site for use in restoration. A test pit with maximum dimensions of 5 m x 5 m and 5 m deep will be excavated with the spoil being stored on the rest of the stripped area. The total disturbed area amounts to 625 m<sup>2</sup>. This work is proposed to be completed under frozen, winter conditions. In all cases, the top organic layer from the test pits will be kept separate during excavation and will be replaced on top of the backfilled pit during restoration. The surface layers usually contain natural seed stock and organic materials that promotes the re-growth of vegetation. The test pit is crowned to reduce the chance of depressions forming. After previous winter programs, summer inspections were undertaken with local regulators and community representatives to assess the restoration and stabilization measures undertaken during the Program. If required, additional revegetation measures outlined below will be undertaken.

#### **Access trails**

At the conclusion of site investigation, all trees and shrubs that were removed (i.e., cut) in order to provide access to the investigation sites will be rolled-back onto the access trail to promote organic breakdown. Merchantable timber (>13 cm at the butt) will be decked along the primary access trail so as to be made available to local communities.

### Revegetation Measures

Areas where sites require additional revegetation measures will be seeded with either a non-persistent annual species or a mix of native grass species. Species identified that are suitable for revegetation in the Deh Cho Region include:

- Bearded wheatgrass      *Agropyron subsecundem*
- Violet wheatgrass      *Agropyron violaceum*
- Hairy wildrye      *Elymus innovatus*
- Tufted hairgrass      *Deschampsia caespitosa*
- Rocky Mountain fescue      *Festuca saximontana*
- Creeping red fescue      *Festuca rubra*
- Spike trisetum      *Trisetum spicatum*

### Additional Measures

At most locations, work will be conducted on frozen soil conditions, compacted snow or ice, thereby avoiding impacts to the ground vegetation. This vegetation is expected to keep the surface stable. Minor amounts of ground disturbance will occur at the drill sites but these areas are expected to quickly revegetate naturally without the need for assisted revegetation. During the summer following the Program, all sites will be inspected to determine if further stabilization measures are needed and any required actions will be scheduled and implemented at the appropriate time.

## **Imperial Response - DAR DR 11.0 (MVEIRB)**

**Application Name:** 2004 Winter Field Geotechnical Investigation Program in the DCR

**Document Reference:** Developer's Assessment Report

**Request From:** Mackenzie Valley Environmental Impact Review Board

**Regulatory Agency Reference:** Mackenzie Valley Environmental Impact Review Board

**Imperial Reference:** DAR DR 11.0

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### **DEFICIENCY STATEMENT:**

**J-1**     ***Predict the cumulative impacts that might result from access created by the proposed development impacts in combination with other past, present or reasonably foreseeable future developments and activities (excluding the Mackenzie Valley Pipeline). Describe detailed mitigations to minimize or avoid those impacts.***

- The DAR did not provide a prediction of what the effects would be, but simply states that they are likely insignificant. Insufficient supporting information was provided. Also, Imperial did not characterize impacts according to the criteria described in ToR 4.1. (Imperial is advised to refer to Appendix H of the *MVEIRB EIA Guidelines* when revising this).
- 

### **RESPONSE:**

The approach outlined in the *Cumulative Effects Assessment Practitioners Guide* (Hegmann et al. 1999) was followed to carry out the cumulative effects assessment (CEA). Key steps in the approach included scoping, analysis of effects, identification of mitigation measures and evaluation of the significance of effects. As part of the scoping exercise the spatial boundary selected for the CEA was the Deh Cho Region. The valued components selected were the same as those for the environmental assessment of the Program itself as described in Section 3.1 of the DAR. Effects of the Program were evaluated in combination with past, current and reasonably foreseeable developments within the Deh Cho Region. As noted in the DAR the existing land uses in the Deh Cho Region where past and current activities could interact cumulatively with the Program are the Enbridge pipeline, the Mackenzie Highway, small-scale timber operations, and oil and gas exploration. Reasonably foreseeable projects include the Mackenzie River Bridge at Fort Providence, the Snap Lake diamond mine, the GNWT winter road bridges and the 2005 Winter Field Geotechnical Program. After considering the temporal and spatial overlap of the Program with these other developments the only potential adverse cumulative effects were related to wildlife.

Cumulative effects of access created by the Program in combination with other past, present or reasonably foreseeable future developments and activities could include an increase in regional effects on ungulate and furbearer species, primarily by creating travel corridors for hunters, trappers and predator species. Clearing will also result in a reduction in habitat availability. Mitigation to reduce the effect of newly created access is currently planned through roll-back of vegetation but the execution of this mitigation will ultimately depend on the community's vision for resource use. Overall, the cumulative impacts of increased access on wildlife populations are predicted to be adverse in direction, low in magnitude, regional in extent, lasting until the far future and of medium frequency. There is high probability and confidence in predicting that these impacts will occur, but they will be reversible with the proposed mitigation measures. However, impacts will not be reversible if these new access routes continue to be used and maintained by the community. In either case, impacts are not significant based on the low magnitude of impact.

Carnivore populations could be positively impacted by having increased access to prey species, but may also be subject to increased mortality due to hunting and trapping.

As to habitat loss from clearing, the cumulative effects of the access created by the past, current and reasonably foreseeable projects in addition to the Program will leave a negligible cumulative footprint (much less than 1% of the available land area in the Deh Cho Region), and therefore are expected to have no significant effect on wildlife populations in the Region.

Reference:

Hegmann, G., C. Conklin, R. Creasey, S. Dupuis, A. Kennedy, L. Kingsley, W. Ross, H. Spaling and D. Stalker. 1999. *Cumulative Effects Assessment Practitioners Guide*. Prepared by AXYS Environmental Consulting and the CEA Working Group for the Canadian Environmental Assessment Agency, Hull, Quebec.