

ENVIRONMENTAL ASSESSMENT  
SCREENING REPORT

INTERIM WOOD SUPPLY PLAN FOR THE  
KASKA YUKON TRADITIONAL TERRITORY

Prepared by:  
Yukon Government  
Forest Management Branch  
May 2004.

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<sup>1</sup> Burton, P. J., C. Messier, D. Smith and W. Adamowicz (editors), 2003. Towards Sustainable Management of the Boreal Forest. National Research Council of Canada.

<sup>2</sup> Adapted from Shuetz, P. 2004. pers.comm.

<sup>3</sup> Slocan Forest Products, Ltd. Mackenzie Division. 2002. Integrated Resources Management.

**DISCLAIMER:**

This environmental assessment screening report is a synopsis of various forest development plans, site plans, block reports and various recommendations. For complete understanding of this document, it is important to read all documents in their entirety.

## EXECUTIVE SUMMARY

The Director of the Yukon Forest Management Branch (Director FMB) is delegated as the representative of the Responsible Authority (the Minister) for purposes of carrying out environmental assessments under Section 4.1 of the *Yukon Environmental Assessment Act* for forest management projects. This environmental assessment is for five blocks of timber located in the Cosh Creek area in southeast Yukon. The issues that the RA determined might be significant or might have potentially significant adverse environmental effects with respect to this project, and the RA's conclusions about those issues, are as follows:

**i. Amount of Forest Cover to be Removed**

**It is the opinion of the RA that there will be no significantly adverse environmental effects from the amount of forest cover removed by this project.**

**ii. Appropriateness of Partial Cutting Systems in Upland Ecosystems**

**It is the opinion of the RA that there will be no significant adverse environmental effects from the silviculture systems that have been prescribed for the cut-blocks in this project.**

**iii. Cumulative Effects**

**The RA is satisfied that the screening report appropriately describes the cumulative effects of this project, and is of the opinion that the cumulative effects of this project will not result in significant or potentially significant adverse environmental effects.**

**iv. Cut-Block Sizes and Fragmentation**

**It is the opinion of the RA that the fragmentation reduction strategy recommended by the IWSC for the Cosh Creek watershed is appropriate, and that the outcome of using that strategy (as it has been incorporated into the project plan) will not result in significant adverse environmental effects.**

**It is also the RA's opinion that there will be no significant adverse environmental effects from the opening sizes and distribution created by this project, and that a higher overall potential adverse environmental effect could occur by prescribing a greater number of smaller openings to capture the same amount of volume to be harvested.**



**v. External Retention / Retention Levels**

It is the opinion of the RA that the amount, type and configuration of the retention proposed is appropriate to the prescription for the cut-blocks in this project, and that no significant adverse environmental effects will occur from this project as the result of the proposed site plans, combined with the other retention areas.

**vi. Fire Disturbance Emulation**

The RA is satisfied that no significant adverse environmental effects will occur as the result of the decision to use fire emulation as one of the concepts to develop the timber harvesting plans for the Cosh Creek watershed.

**vii. Forest Ecosystem Network (FEN)**

It is the opinion of the RA that no significant adverse environmental effects will result from adoption of the FENs proposed in this project. It is also the RA's opinion that the FEN for the planning area (as recommended by the IWSC and endorsed by the KFRSC) incorporated into the project plan is appropriate, but that they should not be established on a permanent basis.

**viii. Heritage Concerns and Traditional Use Values**

The RA is satisfied that heritage concerns and traditional use values have been addressed to the degree that is possible and that no significant adverse effects on traditional use and/or heritage resources should occur because of this project.

**ix. Hydrology and Fisheries**

It is the opinion of the RA that this project will have no significant adverse environmental effects on the hydrology and/or the fisheries of the Cosh Creek watershed.

**x. Irreversible Changes and Adaptive Management**

It is the opinion of the RA that the screening document mitigations, along with current enforcement programs activities and both post-harvest and silviculture surveys, combined with the adaptive management approaches that are developed and implemented through the regional forest management plan at the landscape level, will provide sufficient monitoring mechanisms to implement a meaningful adaptive management approach.

**xi. Marten Habitat Concerns**

It is the opinion of the RA that there will be no significant adverse environmental effects on overall marten populations in the project planning area from this project.

**xii. Natural Regeneration**

Reforestation methods for the cut-blocks in the project will be prescribed based on post-logging site inspections, combined with the site plan information contained in the project description for this project.

**xiii. Need To Retain Older Age Forests / Reduce Harvest of Old Growth**

It is the opinion of the RA that the concerns about the need to protect old growth conifer and Sub-alpine fir in particular (with respect to this project) are unfounded and that there will be no significant adverse environmental effects from the project related to this concern.

**xiv. Northern Goshawk Concerns**

Where active Northern goshawk nests are identified at the reconnaissance level in timber development planning, the RA instructs that 24 hectare protection zones for these nests be incorporated into the planning. Alternatively, when Northern goshawk nests are not identified until after a cut-block has been engineered and approved, a minimum of a 200-metre buffer shall be applied around the perimeter of active nests. Further detailed management prescriptions for this sub-species are found in the screening report. It is the opinion of the RA that these combined mitigation measures should provide sufficient protection so that no significant or potentially significant adverse effects will occur with respect to Northern goshawks.

**Decision**

Given the mitigations provided in the screening report, combined with the analysis and mitigations provided above, the RA is satisfied that this project is not likely to cause significant adverse environmental effects. Accordingly, the *Environmental Assessment Act* determination is that, subject to the mitigation requirements contained in the screening report and in the Reasons for Decision section, this project is hereby authorized.

## 1. TOMBSTONE DATA

**Table 1.0.** Environmental Assessment File Information

<b>Application Number</b>	
<b>Proponent Name</b>	Yukon Government Forest Management Branch
<b>Contact Information</b>	Gary Miltenberger, Director, Forest Management Branch Box 2703 (K-918) Whitehorse, YT Y1A 2C6 Phone: (867) 456-3838 Fax: (867) 667-3138
<b>Project Title</b>	Interim Wood Supply Plan for the Kaska Yukon Traditional Territory.
<b>Physical Work or Activity</b>	Timber harvesting and all associated activities.
<b>Multiple Activity</b>	No
<b>E. A. Start Date</b>	December 15, 2003
<b>E. A. Finish Date</b>	May 19, 2004
<b>E. A. Determination</b>	This project is not likely to cause significant adverse environmental effects (s. 16) of <i>YEAA</i> .
<b>Subject Descriptor</b>	Forestry
<b>Project Category Code</b>	Point

**Table 2.0.** Responsible Authority Identification

<b>Lead Responsible Authority</b>	Department of Energy, Mines and Resources
<b>Responsible Authority Contact Information</b>	c/o Gary Miltenberger, Director, Forest Management Branch Box 2703 (K-918) Whitehorse, Yukon Y1A 2C6 Ph: (867) 456-3838 Fax: (867) 667-3138
<b>Other Responsible Authority</b>	None identified.
<b>Date EAA Coordination Regulations Triggered</b>	Not applicable.
<b>Project Trigger</b>	(s. 8) Inclusion List Regulations; timber volume > 1000 m <sup>3</sup> .
<b>Lead Type of Approval</b>	Commercial Timber Permits.
<b>Status of Approval</b>	Ongoing
<b>Integrated Screening</b>	No
<b>Other Triggers</b>	None
<b>Other Types of Approval</b>	None
<b>Project File Location</b>	Forest Management Branch, Whitehorse, YT.

**Table 3.0.** Project Location

<b>Region</b>	Yukon Territory
<b>NTS Map #s</b>	095D04
<b>Geographic Location Name</b>	East Hyland Planning Area.
<b>Latitude/Longitude</b>	Approximately 60 deg. 04'N., 127 deg. 48'W.
<b>Watershed/Drainage Region</b>	Cosh Creek, flows into the Liard River.
<b>Nearest Community</b>	Watson Lake, Yukon
<b>First Nation Traditional Territories</b>	Kaska Dene, Liard First Nation, Daylu Dena, Ross River Dene, Kaska Tribal Council.
<b>Surrounding Land Status</b>	Crown
<b>Special Designation</b>	None

## 2. PROJECT BACKGROUND

### a. Relevant History

A *Memorandum of Understanding (MOU) on Forest Stewardship for the Kaska Traditional Territory* was signed by the Liard First Nation, Ross River Dena Council, Kaska Dene Council, Indian Affairs and Northern Development and the Government of Yukon on July 29, 2002. The MOU empowered the Kaska Forest Resources Stewardship Council (KFRSC) to pursue a forest management plan for southeast Yukon and an interim wood supply in Forest Management Units (FMUs) Y02 and Y03. As well, the portion of Y09 which covers the Kaska Traditional Territory was included in the planning process.

The KFRSC is composed of Kaska First Nation members and Yukon government representatives. On February 3, 2003, the KFRSC recommended that planning begin for an interim wood supply of up to 128,000 m<sup>3</sup>/ year for 3 years in the East Hyland, Watson Lake and West Rancheria planning areas.

The MOU states that forest planning should follow these principles:

- Plans must be ecosystem based.
- Process must be integrated and balanced.
- Timber Supply Analysis and Annual Allowable Cut and must be based on forest plans.
- Management requires integration of Traditional Knowledge (TK) with science.
- Kaska land stewards and information must be considered.

The interim supply planning requirements of the MOU are:

- Traditional Knowledge must be obtained and used once a TK Protocol has been agreed upon between the Kaska and Council.
- Must make best efforts to avoid areas of high conflict with forest values and lands under selection by the Kaska.
- Public input is included in planning process.

An interagency technical team, the Interim Wood Supply Committee (IWSC), consisted of representatives from the Kaska Nation, Yukon Government (Department of Energy, Mines and Resources-Forest Management Branch and Department of Environment), Federal Government

(Environment Canada, Fisheries and Oceans Canada) and the KFRSC. As directed by the KFRSC, the goals of the IWSC were:

- Identify up to 128,000 m<sup>3</sup>/year of commercial timber for three years.
- To apply an ecosystem-based approach so that biodiversity and forest patterns are maintained and impacts to forest values are minimized (refer to IFS 2003a).
- To apply adaptive management strategies<sup>4</sup> (refer to IFS 2003a; page 7 and KFRSC 2004; page 21 and Appendix 11 of this screening report).
- To be technical, concise and clearly understood.

The IWSC considered a number of planning requirements, principles, approaches and management prescriptions as per KFRSC direction. To assist the IWSC, the Yukon Government Forest Management Branch (FMB) retained a consultant to prepare the *Interim Wood Supply Plan for Forest Management Units Y02, Y03 and Y09 in the Kaska Yukon Traditional Territory* (Appendix #2; Industrial Forestry Service Ltd. 2003a). In addition, a report authored by three members of the IWSC titled *Interim Wood Supply for Southeast Yukon, Proposed Amendments and Additions Draft November 30, 2003* is attached (Appendix #4; Kiemele et al. 2003).

In February 2004, the KFRSC produced *Interim Wood Supply Plan Summary Report of the Kaska Forest Resources Stewardship Council Interim Wood Supply Recommendations* (Appendix #1; KFRSC 2004). The information in this document reflects:

- Information presented in the above-mentioned reports.
- The most recent information.
- Recommendations of the KFRSC.

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<sup>4</sup> Adaptive management will be based on prescribed activities such as harvest based inspections and regeneration and free-to-grow surveys. Refer to Appendix 11; IFS 2003a; page 7 and KFRSC 2004; page 21 and Appendix 11 of this screening report) for more information on adaptive management.

The stated objective of the *Interim Wood Supply Plan for Forest Management Units Y02, Y03 and Y09 in the Kaska Yukon Traditional Territory* (IFS 2003a), referred to in this document as the “IWS Plan,” was developed as a landscape level overview for the purpose of identifying an ecosystem based, three-year supply of harvestable wood without compromising the sustainability of either the future timber supply or the non-timber values. The *Interim Wood Supply Plan, Summary Report of the Kaska Forest Resources Stewardship Council Interim Wood Supply Recommendations* (KFRSC 2004), referred in this document as the “Project Plan,” brought forward eighteen recommendations (Appendix #5).

The IWS Plan and the addendum package were considered an integral part of the environmental assessment and form the project description for this environmental assessment. The Project Plan, along with a detailed information package (maps, site plans, block reports, cruise data and visual viewpoints), was considered as an addendum to the IWS Plan (IFS 2003a). These documents were distributed to various government, community, First Nation and interest stakeholders in December 2003 and January/February 2004.

The purpose of the IWSC was to provide the KFRSC technical support and mitigation options for developing an Interim Wood Supply Plan for the southeast Yukon. Consensus could not be reached regarding:

- The amount of deviation that should be allowed from the Timber Harvest Planning and Operating Guidebook (THPOG; DIAND 1999).
- Harvesting impacts related to female marten (*Martes americana*) home ranges in the Cosh Creek watershed.
- Whether logging can emulate fire disturbance.

There were also concerns with this screening process. Some of the concerns raised include:

- The early initiation of the environmental assessment prior to receiving recommendations from the KFRSC.
- Political and policy concerns.
- Communication delays.
- Inadequate distribution of information.
- The perceived bias of the FMB towards the IWS Plan.

The goal of this environmental assessment is to focus on significant and potentially significant environmental effects. All comments received from stakeholders were considered and are present in Appendix #6, although only those comments relevant to the environmental assessment are discussed in Section 9.

## **b. Requirement for Project Assessment**

The *Yukon Environmental Assessment Act (YEAA 2003)* describes a project as:

*“an undertaking in relation to a physical work such as any proposed construction, operation, modification, decommissioning, abandonment or other undertaking” or “any proposed physical activity not relating to a physical work that is listed in the regulations to YEAA.”*

This project consists of timber harvesting and the associated activities of blocks C4, C6, C8, C10 and C11 (Cosh Creek Operating Area Map; Appendix #7). The proposed harvest volumes are approximately 60,000 m<sup>3</sup> in a total of approximately 250 hectares.

## **3. DESCRIPTION OF PROJECT**

### **a. East Hyland**

The East Hyland planning unit, as identified by the KFRSC, is located approximately 45 km east of Watson Lake, adjacent to the Alaska Highway. It is bounded by the Hyland River on the west; Contact Creek on the east; the BC/Yukon border on the south and the headwaters of Irons Creek on the north (IFS 2003a).

The East Hyland is a large planning unit with a large percentage of forested area (89%; Table 4.0). The total area of the East Hyland planning unit is approximately 109,000 ha; 38% (or approximately 41,000 ha) of the area is less than 30 years old and considered not satisfactorily restocked; however, recent colour air photos show the area has considerable lodgepole pine regeneration. It is likely that this area is fully stocked with 10-15 year old lodgepole pine regeneration (M. Thorp 2004 pers. comm.). According to IFS 2003a, 39% (or just less than 43,000 ha) of the area is 80-130 years old.

**Table 4.0.** Land Cover of the East Hyland Planning Unit.<sup>1</sup>

Planning Area	Approximate Total Forest (ha)	%	Approximate Total Non-Forest <sup>2</sup> (ha)	%	Approximate Unit Area (ha)
East Hyland	97,600	89	11,500	11	109,000

<sup>1</sup>Adapted from IFS 2003a.

<sup>2</sup>Water and alpine area.

In 2000, a resource report was completed for the East Hyland area (DIAND 2000). Parts of the resource report were considered as baseline data for the IWS Plan reconnaissance and have been inputted into the existing forest plans.

The East Hyland Planning Area has been divided into five operating areas (Irons, Boundary, Cosh, Lost and Hyland). The Cosh Creek Operating Area is the only operating unit addressed in this environmental assessment and was chosen as a priority area to locate an interim wood supply for 3 years. The area had:

- Previous logging history.
- Resource information existed (Final Resource Report East Hyland Planning Area; DIAND 2000).
- Fewer conflicts with non-timber values compared to other areas.
- Existing road access; which would limit new road access which has wildlife management benefits; amalgamation of forest disturbance to create large patches which provide less disturbance to marten home ranges (large blocks provide opportunity to leave large blocks).
- Sufficient volume was available for 3 years timber supply.
- Opportunity to remove timber and create a forest stand pattern which better represented natural disturbance patterns.
- Tradeoff opportunity to harvest volume and then decommission roads, short duration impact versus numerous entries.

## **b. Block Descriptions**

Table 5.0 presents stand type, approximate total opening sizes (sum of existing and proposed blocks), total block area, net block area and tree species details for blocks C4, C6, C8, C10 and C11 in the Cosh Creek operating unit, while Table 6.0 describes the same information for the deferred blocks.



**Table 5.0.** Blocks C4, C6, C8, C10 and C11 in the Cosh Creek Area.<sup>1</sup>

Block	Approximate Total Block Size (ha)	Approximate Total Opening Size (ha; Sum of Existing and Proposed Blocks)	Timber Type <sup>2</sup>	Approximate Opening Size/Timber Type (ha)	Approximate Volume Estimated to be Harvested (m <sup>3</sup> )	Species <sup>3</sup>
C4			V22	20.2	6,733	Pl; Sw
<b>Total</b>	<b>33.1</b>	<b>37</b>	V17	12.9	2,708	Sw; F; Pl; W
C6, A	13.7	-	V16	7.1	1,944	F; Pl; Sw
			V17	5.7	1,608	Sw; F; Pl
			V22	0.9	247	Pl; F; Sw
B	1.7	-	V22	1.7	467	Pl; F; Sw
C	49.9	-	V16	39.4	10,787	F; Pl; Sw
			V22	10.5	2,885	Pl; F; Sw
D	10.5	-	V17	5.3	1,496	Sw; F; Pl
			V22	5.2	1,429	Pl; F; Sw
<b>C6 Total</b>	<b>75.8</b>	<b>110</b>				
C8			V16	10.5	1,390	F; Sw; Pl
			V22	5.4	1,371	Pl; F; Sw
<b>C8 Total</b>	<b>15.9</b>	<b>23</b>				
C10A		-	V16	44.5	8,464	F; Sw; Pl
			V22	20.6	3,698	Pl; F; Sw
B		-	V16	1.2	228	F; Sw; P
			V22	45.5	8,163	Pl; F; Sw
<b>C10 Total</b>	<b>111.8</b>	<b>183</b>				
C11			V17	8.3	3,857	Sw; F; Pl
			V22	5.3	2,138	Pl; Sw
<b>C11 Total</b>	<b>14.1</b>	<b>25</b>				

<sup>1</sup>Adapted from KFRSC (2004).

<sup>2</sup>Zoladeski, C.A. et. al. 1996. *Ecosystem Classification for the Southeast Yukon, Field Guide*. V9-Closed alpine forest (tree cover  $\geq 50\%$ ); V16-open alpine fir forest (tree cover  $< 50\%$ ); V17-open white spruce forest (tree cover  $< 50\%$ ); V21-open lodgepole pine-spruce forest; V22-Open lodgepole pine forest (tree cover  $< 50\%$ ).

<sup>3</sup> Sw= white spruce; F=sub alpine fir; Pl=lodgepole pine; W=willow.

**Table 6.0.** Deferred Blocks C5, C9, C12 in the Cosh Creek Area.<sup>1</sup>

Block	Approximate Total Opening Size (ha)	Approximate Total Opening Size (ha; Sum of Existing and Proposed Blocks)	Timber Type <sup>2</sup>	Approximate Opening Size/Timber Type (ha)	Approximate Volume estimated to be Harvested (m <sup>3</sup> )	Species <sup>3</sup>
C5, A	27.6	-	V17	8.1	2,650	Sw; F
			V21	18.5	6,897	Pl; Sw
			V22	1.6	489	Pl; Sw; F
B	4.7	-	V17	1.7	558	Sw; F
			V22	3.0	918	Pl; Sw; F
C	11.8	-	V17	7.8	2,562	Sw; F
			V22	4.0	1,224	Pl; Sw; F
D	30.0	-	V9	23.0	4,149	F; Sw; Pl
			V17	4.4	1,440	Sw; F
			V22	2.6	795	Pl; Sw; F
<b>C5 Total</b>	<b>74.7</b>	<b>167</b>				
C9		-	V16	44.1	8,215	F; Pl; Sw
			V16	26.1	6,320	F; Sw
			V22	6.9	1,481	Pl; F; Sw
<b>C9 Total</b>	<b>77.1</b>	<b>116</b>				
C12, A	31.7	-	V17	15.0	5,889	Sw; F
			V22	16.4	4,872	Pl; Sw
B	33.0	-	V22	32.7	9,715	Pl; Sw
C	7.7	-	V17	2.7	1,056	Sw; F
			V22	4.7	1,396	Pl; Sw
<b>C12 Total</b>	<b>71.5</b>	<b>87</b>				

<sup>1</sup>Adapted from KFRSC (2004).

<sup>2</sup>Zoladeski, C.A., et al. 1996. *Ecosystem System Classification for the Southeast Yukon, Field Guide*. V9-Closed alpine forest (tree cover ≥50%); V16-open alpine fir forest (tree cover <50%); V17-open white spruce forest (tree cover <50%); V21-open lodgepole pine-spruce forest; V22-Open lodgepole pine forest (tree cover <50%).

<sup>3</sup>Sw= white spruce; F=sub alpine fir; Pl=lodgepole pine; W=willow.

### **c. Ecoregion Description and Environment**

The East Hyland Planning Unit is located within the Liard Basin that spans the British Columbia–Yukon-NWT boundary. The East Hyland Planning Unit incorporates the Liard Plain, a broad, rolling, low-lying area mantled with glacial drift and outwash deposits in which the Liard River is entrenched (Fisheries and Environment Canada 1977).

The mean annual temperature for the area is approximately  $-3^{\circ}\text{C}$ , with a summer mean of  $11^{\circ}\text{C}$  and a winter mean of  $-18.5^{\circ}\text{C}$ . Annual precipitation is 350–450 mm (Fisheries and Environment Canada 1977).

The ecoregion is characterized by extensive stands of boreal forest composed of lodgepole pine (*Pinus contorta*), white spruce (*Picea glauca*), black spruce (*P. mariana*) and trembling aspen (*Populus tremuloides*). In the Liard ecoregion, dry sites support lodgepole pine while moist sites support black spruce and typically a Labrador tea (*Ledum groenlandicum*) and horsetail (Fam. *Equisteraceae*) understory. Permafrost is discontinuous, confined mainly to lower north-facing slopes and sphagnum bogs.

Characteristic wildlife in the greater Liard Basin includes moose: (*Alces alces*), black bear (*Ursus americanus*), wood bison (*Bison bison*), caribou (*Rangifer tarandus*), marten (*Martes americana*), beaver (*Castor Canadensis*), muskrat (*Ondatra zibethica*), Snowshoe hare (*Lepus Americanus*), ruffed grouse (*Bonasa umbellus*), various owl, raptor, passerine species and waterfowl.

## **4. PROJECT TRIGGERS AND RESPONSIBLE AUTHORITIES**

According to the *YEAA*, an environmental assessment is required for a project requiring a timber permit for a volume over  $1,000\text{ m}^3$  or if the project requires an environmental screening for any of its components. Since the project involves the timber harvesting of five blocks in the Cosh Creek operating area, the Yukon Government Department of Energy, Mines and Resources (EMR) Forest Management Branch is the representative of the Responsible Authority (RA), the Minister of the Department of EMR. A RA is an authority that either has proposed the project or

has been asked to provide support or approval in the form of funding, land, or a permit, license or other approval specified by regulation (YEAA 2003).

Yukon Government, Department of EMR is the only department that declared themselves an RA for this assessment. Questions were raised during the planning for this project about why authorizations or permits from the following agencies were not required.

- Government of Yukon, EMR, Land-Use Section. No land use permits will be required if all proposed roads are within the planned cut blocks. The cut blocks will have to have a common boundary with the existing Cosh Creek mainline. A Department of Highways and Public Works permit “work within the right of way permit” will be required for any upgrading of the Cosh Creek mainline.
- Fisheries and Oceans Canada is not an RA for this EA as an authorization under the *Fisheries Act* is not required.
- Water Board is not a RA, as the streams in the vicinity are less than 5 m wide and a water authorization is not required.

## **5. SCOPE**

Scope is defined as those components of the proposed development that are considered part of the project for the purposes of environment assessment (YEAA Practitioners Guide 2003).

### **a. Scope of the Project**

The scope of the project identifies the development activities. The scope of the project includes:

- All phases of the project, including but not limited to, the construction of new in-block roads and the upgrade of existing roads, construction of stream crossings, decommissioning of roads and stream crossings, regeneration of the blocks and associated activities such as regeneration surveys.
- The operation of equipment and machinery.
- Potential accidents and malfunctions related to the project, or that may occur in connection with the project (i.e. spills, etc.).

### **b. Scope of the Assessment**

The scope of the assessment identifies the environmental components in the screening. The temporal scope of this assessment includes the environmental effects of the project for 10 years (including the one year period for forest harvesting, three year period for regeneration and six years for regeneration establishment and the deactivation and rehabilitation of the site), plus the durations of any adverse environmental effects triggered during that time period.

The spatial scope of this assessment includes the environment (land, water, air) contained within the proposed project boundaries and the environment outside the project that could be potentially affected through the administration of the project.

## **6. FACTORS CONSIDERED IN THIS ASSESSMENT**

This assessment considers the following factors from Section 12 of *EAA (Yukon)*:

- The environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative effects that is likely to result from the project in combination with other projects or activities that have been, or will be carried out.
- The significance of the above environmental effects.
- Technically and economically feasible mitigation measures, implemented to mitigate potentially significant adverse environmental effects related to the project.
- Comments from the public.

## **7. CUMULATIVE EFFECTS**

A cumulative environmental effect is defined as the effects on the environment (i.e. Valued Ecosystem and Cultural Components; VECC) which result from effects of a project when combined with those of other past, existing and imminent projects and activities, occurring over a certain period of time and distance (Government of Canada 1994). The cumulative effects evaluation considers past and proposed forest harvesting and other activities that have occurred, are occurring or are forecasted to occur in the Cosh Creek area. Ten evaluations were conducted as part of the cumulative effects review; refer to Appendix 15 for the analysis and the associated user guide that assisted with the evaluation of cumulative effects.

### **a. Scope of the Cumulative Effects**

The purpose of defining the scope of the cumulative effects section is to identify the environmental effects to be considered in regards to a project; identify the likely cumulative environmental effect and set appropriate geographic and temporal boundaries. The scoping of cumulative effects section has been divided into: i) regional issues of concerns; ii) appropriate regional VECCs; iii) spatial and temporal boundaries; iv) other actions that may affect the same VECCs and v) uncertainty.

### **i. Regional Issues of Concern**

In regards to regional issues of concern, this section has been divided into past, present and future harvesting activities. Harvesting in the Contact Creek, Cosh Creek and Irons Creek areas began in 1995 (D. White pers. comm. 2004) and a total of 209 blocks were harvested (approximately 1,800 hectares). Most harvesting that occurred during this time consisted of small patch-cuts ranging from less than one hectare to 30 hectares; the average block size was 8.8 hectares. Some of the harvested blocks have islands of trees or scattered trees left behind. (D. White pers. comm. 2004). Refer to Appendix 7 to view the overview map and the project map.

Blocks C4, C6, C8, C10 and C11 are proposed for harvesting. Future forest harvesting activities in the Cosh Creek area may include blocks C5, C9 and C12 (which are presently deferred from this project), as well as other blocks forecasted to be harvested in the next three years in the Cosh Creek watershed. Future forest harvesting in Boundary Creek, Irons Creek, Lost Creek and the Hyland operating areas is also forecasted.

Other projects have occurred in the vicinity of the Cosh Creek operating area which contributes to the cumulative effects of the area. For example, the Alaska Highway was completed (but not paved) in 1942 and was completely paved in 1988 (S. Cole pers. comm. 2004). The Alaska Highway is periodically upgraded (i.e. widened, paved, etc.) and gravel is obtained for the construction activities from the borrow pits along Alaska Highway. No known oil/gas or mineral exploration has occurred in the Cosh Creek operating area; although there is active exploration mining occurring northeast of the planning area at Hulse Lake (S. Cole, pers. comm. 2004). Hulse Lake flows into the Coal River and is not part of the Cosh Creek watershed.

### **ii. Appropriate Regional VECCs**

The regional VECCs are discussed in Tables 7.0 and 10.0. Also refer to Appendix 2 (IFS 2003a, page 14 and Appendix 1; KFRSC, page 7).

**Table 7.0.** Regional Valued Ecosystem and Cultural Components

<b>Component Type</b>	<b>VECCs</b>	<b>Justification</b>
<b>ENVIRONMENTAL</b>		
Ungulates	Woodland caribou.	Maintain quality habitat.
Ungulates	Moose.	Maintain quality habitat.
Furbearers	Marten.	Trapping values.
Forest Birds	Northern goshawk, boreal owl, three-toed woodpecker, pileated woodpecker, passerines, water fowl.	Maintain quality habitat.
Aquatic Resources	Fish and fish habitat, water quality.	Maintain quality.
<b>CULTURAL</b>		
Traditional and community lifestyle	Trapping, hunting, gatherings, berry picking.	Maintain traditional and cultural lifestyles.
Wilderness values	Recreation, visual quality, tourism, etc.	Maintain wilderness values of the area.

### **iii. Spatial and Temporal Boundaries**

The purpose of the spatial and temporal boundaries section establishes a frame of reference for assessing cumulative environmental effects and facilitates their identification (CEAA 2003). This section will discuss the spatial and temporal bounds of this project, the availability of existing data and knowledge and the relevant ecological boundaries.

#### **iii a. Spatial and Temporal Bounds**

In regards to the spatial scope of this assessment, this project is bounded by Cosh Creek to the west, Contact Creek to the east, a tributary to Contact Creek to the north and the Alaska Highway to the south. This project encompasses approximately 41 square km. The temporal scope of this cumulative effects assessment includes the environmental effects of any past projects in the Cosh Creek watershed, the environmental effects caused by the current project for 10 years (including the one year period for forest harvesting, three year period for regeneration and six years for regeneration establishment and the deactivation and rehabilitation of the site, plus the durations of any adverse environmental effects triggered during that time period) and any future projects forecasted for the Cosh Creek watershed.

#### **iii b. The Availability of Existing Data and Knowledge**

The availability of existing data is important in assessing the cumulative effects. There has been previous forest harvesting in the Cosh Creek watershed where information has been obtained and was useful for this project (regeneration, operability, etc.). This information includes air photos, a resource report, forest cover maps, overview flights and field assessments. There is sufficient data and knowledge of the Cosh area to be able to assess the cumulative effects of this project. However, there are some data and knowledge gaps for the Cosh Creek area. These data and knowledge gaps include: field heritage assessments, wildlife and bird assessments and fisheries assessments. To overcome these data and knowledge gaps, a precautionary approach has been taken in relation to mitigative measures prescribed. These measures include: riparian management areas, set-aside areas and Forest Ecosystem Networks, variable retention (and retention of all deciduous and snags that are considered safe), reserves, coarse woody debris piles left randomly on blocks, etc. It is believed that the mitigations proposed are conservative enough



to overcome these gaps. Also the Land Steward and the KFRSC has provided valuable information in regards to this project.

### **iii c. Relevant Ecological Boundaries**

Currently there are no known ecological boundaries (such as physiographic, vegetation, land use, habitat, soil and surface materials) that are limiting to this project. The Rancheria Caribou Herd's range is not within the bounds of this project.

### **iv. Other Actions That May Affect The Same VECCs**

Other actions that may affect the VECCs are listed below:

- woodland caribou and moose populations-increase in noise, increase in road access, increase in hunting.
- Forest bird populations (northern goshawk, boreal owl, three-toed woodpecker, pileated woodpecker, passerines)-increase in noise; decrease in cover
- Old forest species (marten)-increase in noise, access, cover
- Maintenance of traditional and community lifestyle and uses-increase of access may cause an increase of usage.
- Wilderness values (e.g. recreation, visual quality, tourism)-increase of usage, affect to visual quality.

### **v. Uncertainty**

There will always be some uncertainty associated with any environmental assessment (CEAA 2003). According to CEAA (2003), uncertainty can be related to scientific methodology, data availability and accuracy, new or unproven technology, new or unfamiliar environmental setting, or the uncertainty of future projects. In the preparation of this screening report, the most up to date information and professional knowledge and judgment was used.

### **b. Changes in the Environment Caused by the Project**

The project, timber harvesting of five blocks in the Cosh Creek operating unit, will cause changes to the environment in the Cosh Creek watershed. The volume estimated for harvest is 60,000 m<sup>3</sup>, or approximately 250 hectares with block sizes ranging from 14.1 hectares (C11) to 111.8 hectares (C10). This would remove an additional 7-10% of the forest cover in the Cosh Creek watershed. With adjacent past forest harvesting, the opening sizes will be larger (Tables 5 and 6), making the sum of the footprint approximately 18% total removal (L. Dinn pers. comm

2004). Forest harvesting of blocks C5, C9 and C12 will further increase the amount of forest removed in the Cosh Creek watershed to approximately 22.7% (P. Beaudry and Associates 2004). The main species harvested includes pine, spruce and fir (Appendix 3); all deciduous trees and snags will be left.

Roads already are present in the Cosh Creek watershed and will be upgraded as necessary for winter logging. These roads will be deactivated and rehabilitated following harvesting activities (when the reforested areas are considered at the free-growing stage). In block roads and landings will be similarly deactivated and rehabilitated when the reforested areas are considered free-to-grow.

There is a summer harvest option for C4, C8, C10 and C11 making road access permanent for any road that accesses more than one landing. Block C6 is considered as winter logging only. Therefore the changes in the environment caused by the project will be more significant if summer harvesting occurs.

### **c. The Effects of any Such Changes**

There could be effects to the environment caused by this project. These effects are described below in Table 8.0.

**Table 8.0.** Possible Environmental Effects Caused by Forest Harvesting in the Cosh Creek Watershed.

Alterations	Possible Environmental Effects
Harvesting	There will be an effect on wildlife habitat and forest dependent wildlife species; industrial noise; fragmentation and visual quality. For visual quality, Block C4 will not be visible from the Alaska Highway. Blocks C6/C8/C10/C11 will be visible from the Alaska Highway; however, variable retention harvesting using dispersed/aggregated retention will minimize visual impact of blocks.
Reforestation	Brush competition, increased snow press damage.
Roads and landings	Erosion, increase in access. Until the roads are deactivated (winter harvesting), the Cosh Creek area will be more easily accessed than it is currently. In-block roads and the Cosh Creek mainline will allow all-terrain traffic as well as potential 4WD truck traffic. The increase in access may result in the Cosh Creek watershed being frequented more by recreationalists and other users temporarily.
Hydrology	Erosion and sediment caused by culvert installation for summer harvesting.
Pollution	Oil, litter, sewage, etc.

Concerns regarding the potential adverse environmental effects were identified in incoming comments during the referral/consultation are discussed in Section 9.

**d. Health and Socio-economic Conditions**

No known health conditions will be caused by this project. The following socio-economic conditions with regards to this project have been raised:

- Economic effect on trappers and guide outfitters is expected to be minor.
- Short-term increased access for hunters and berry pickers and negative affects from increased harvesting.

**e. Physical and Cultural Heritage**

According to Thomas Heritage Consulting (2004), no heritage sites have been identified within the East Hyland Planning Area to date. However, there are areas within the East Hyland Planning Area that correspond, in whole or partially, with areas of heritage potential; these cut blocks include C-14, C16, L-31, L32, L33 and H26 (Refer to Appendix 6, Thomas Heritage

Consulting, pages 10-11).<sup>5</sup> These cut blocks will potentially be parts of future projects, for which environmental assessment screenings will be conducted.

**f. Current uses of Lands and Resources for Traditional Purposes by Community Members**

The Cosh Creek Operating Area is traditionally used by community members and recreationalists; some of the outdoor recreation activities include: hunting, trapping, berry picking and traditional gatherings. Furbearer trapping has been conducted for many years in the Cosh Creek area and in nearby Contact Creek and Coal River (R. Hennings, pers. comm. 2004). According to IFS (2003b), there is evidence that the Cosh Creek mainline had been used as a trapping route.

**g. Structures or Site that are of Historical, Palentological or Architectural Significance.**

In relation to this project, there was no structure or site that is of historical, palentological or architectural significance located.

**h. Any Change to the Project Caused by the Environment**

It is difficult to determine or predict whether there will be any change to the project caused by the environment. Some examples of possible changes to the project caused by the environment include, but are not limited to:

- Unusual weather occurrences.
- Insect and disease outbreak.
- Forest fire.

**i. Cumulative Effects Evaluation**

The likelihood and significance of the cumulative effects was determined to be low (Appendix 15, Form 10). The forms in Appendix 15 summarize the cumulative effects evaluation.

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<sup>5</sup> C=Cosh; L=Lost; H=Hyland.

## **8. COMMENTS/RECOMMENDATIONS RECEIVED THROUGH CONSULTATION PROCESS**

Stakeholder groups, identified in Table 9.0, were asked to review the IWS Plan (IFS 2003a) and the Project Plan (KFRSC 2004). A detailed information package (maps, site plans, block reports, cruise data and visual viewpoints) were distributed to various government, community and interest stakeholders between December 2003 and February 2004. The consultation/referral list has been separated into tables according to the interests of the group (Table 9.0).

**Table 9.0.** Consultation/ Referral List.

<b>Organization</b>	<b>Contact Person</b>	<b>Incoming Comments</b>
<b>FEDERAL GOVERNMENT</b>		
Canadian Wildlife Service	Martin Raillard Mile 91782 Alaska Hwy, Whitehorse, Y1A 5B7	Response received from Paula Pacholek and Benoit Godin (March 1, 2004) included comments/responses from CWS.
Department of Indian and Northern Affairs Canada	Laura Spicer 667-3326	January 30, 2004 (email from Erin Evans); no concerns.
Environment Canada	Benoit Godin 667-3402 Mile 91782 Alaska Hwy, Whitehorse, Y1A 5B7	March 1, 2004, Received from Paula Pacholek and Benoit Godin; concerns addressed in Table 13.0.
Fisheries and Oceans Canada	Eero Karanka 393-6703 100-419 Range Road, Whitehorse, Y1A 3V1	No response.
<b>YUKON GOVERNMENT</b>		
	<b>Box 2703 Whitehorse, Y1A 2C6</b>	
Community Services-Community Development Branch	Gerry Gerein 667-5707	No response.
Community Services-Protective Services, Wildland Fire Management	Ken Colbert 456-3904	January 12, 2004; concerns addressed in Table 13.0.
Community Services-Land Development	Brian Ritchie 667-3093	No response.
ECO- Development Assessment Process Branch	Colleen Tyrner 393-6425	No response.
ECO-Development Assessment Process Branch	Heidi Rumscheidt 667-8195	No response.
ECO-Environmental Assessment	Ian Church 456-3860	No response.
ECO-Environmental Assessment	Ryan Parry 456-3876	January 12, 2004; concerns addressed in Table 13.0.
Economic Development- Investment, Trade and Business Development	Rick Sudeyko 667-3430	No response.
EMR- Assessment and Abandoned Mines	Marg Crombie 393-7098	No response.
EMR-Agriculture Branch	David Beckman 667-5838	No response.

**Table 9.0.** Consultation/ Referral List cont'd.

<b>Organization</b>	<b>Contact Person</b>	<b>Incoming Comments</b>
EMR-Client Services and Inspections Branch	Richard Potvin 536-2256 Box 289 Watson Lake Y0A 1C0	No response.
EMR-Forest Management Branch	Greg Cowman 456-3805	No response.
EMR-Forest Management Branch-Silviculture	Debra Wortley 633-7908	January 15, 2004; concerns addressed in Table 13.0.
EMR-Integrated Resource, Policy and Planning	Diane Brent 667-5471	No response.
EMR-Land Use	Marg White 667-3173	March 24, 2004; concern addressed in Table 13.0.
EMR-Lands Branch	Lyle Henderson 667-5218	No response.
EMR-Mineral Development Branch	Jesse Duke 667-3422	No response.
EMR-Mineral Development Branch Yukon Geology Survey	Ken Galambos 667-5996	No response.
EMR-Mineral Management Branch	Robert Holmes 667-3126	No response.
EMR-Minerals Management Branch	Dave Wiebe 456-3822	No response.
EMR-Oil and Gas Business Development and Pipeline Branch	Brian Love 667-3566	No response.
EMR-Oil and Gas Management Branch	John Masterson 667-5026	March 3, 2004, received from Kevin McDonnell; no concerns.
Environment-Deputy Minister's Office	Edward Huebert 667-5460	January 23, 2004, received from Jon Bowen; supports KFRSC's recommendations.
Environment-Environmental Affairs Section	Ken Kiemele 667-5093	Member of IWSC technical committee.
Environment-Policy and Planning Branch	Mike Connor 667-5634	Previous member of IWSC technical committee.
Highways and Public Works-Lands and Granular Resources	Florian Vedress 633-7905	No response.
Justice-Solicitor	Laurie Henderson 667-5391	No response.
Tourism and Culture- Tourism Product Development and Research	Robert Clark 667-5632	No response.
Tourism and Culture-Tourism Product Development and Research	Cathryn Paish 667-5433	No response.

**Table 9.0.** Consultation/ Referral List cont'd.

<b>Organization</b>	<b>Contact Person</b>	<b>Incoming Comments</b>
Tourism and Culture-Yukon Archaeology	Ruth Gotthardt 667-5983	Received from Christian Thomas (November 21, 2003 DRAFT and January 2004); concerns addressed in Table 13.0.
Yukon Water Board	Judi White 456-3984	No response.
<b>INTEREST GROUPS</b>		
Association of Yukon Renewable Resources	-	No response.
Canadian Parks and Wilderness Society	Peter Sandiford 393-8080 Box 31095 Whitehorse, Y1A 5P7	March 5, 2004; concerns addressed in Table 13.0.
South East Proper Land Use Society	Ulla Rembe	March 5, 2004; concerns addressed in Table 13.0.
Tourism Industry Association	-	No response.
Town of Watson Lake	-	No response.
Watson Lake Chamber of Commerce	-	No response.
Wilderness Tourism Association	-	No response.
Yukon Agricultural Association	-	No response.
Yukon Chamber of Mines	-	No response.
Yukon Conservation Society	Karen Baltgailis 668-5678 302 Hawkins Street Whitehorse, Y1A 1X6	March 1, 2004; concerns addressed in Table 13.0.
Yukon Fish and Game Association	-	No response.
Yukon Fish and Wildlife Management Board	-	No response.
Yukon Land Use Planning Council	-	No response.
Yukon Prospectors Association	-	No response.
Yukon Outfitters Association	Terry Kennedy 4194 A 4th Avenue Whitehorse, Y1A 1J8	No response.
Yukon Trappers Association	-	No response.



**Table 9.0.** Consultation/ Referral List cont'd.

<b>Organization</b>	<b>Contact Person</b>	<b>Incoming Comments</b>
<b>FIRST NATIONS</b>		
Kaska Forest Stewardship Council	Norm MacLean	January 29, 2004, KFRSC report received February 10, 2004.
Kaska Dene Council	Dave Porter	No response.
Kaska Tribal Council	Hammond Dick	No response.
Liard First Nation	Liard McMillan	No response.
Daylu Dena	George Miller	No response.
Ross River Dene Council	Jack Caesar	No response.
Council of Yukon First Nations	-	No response.

As part of the review process, the FMB Environmental Assessment (EA) Coordinator reviewed and compiled all of the responses received by the FMB. All documentation received by the FMB is attached to this report (Appendix #6). Although all of the responses were reviewed by the FMB EA Coordinator, only those comments that are EA related were addressed in the body of this report. Comments related to policy and other issues that are beyond the objectives and scope of this assessment were not formally addressed in this report.

This assessment will examine the significant and potentially significant effects that the project will have on the environment under the authority of *YEAA*, as well as determine if any mitigation is required. Table 10.0 describes the VECCS and the potential impact from harvesting and significance of the impact that the proposed forest harvesting will have on the Cosh Creek watershed. The mitigation, if required, is also described in Table 10.0.

#### **a. Mitigation**

Mitigation is the elimination, reduction, or control of a project's adverse environmental effects, including restitution for any damage to the environment caused by such effects through replacement, restoration, compensation, or any other means (Canadian Environmental Assessment Agency 1994). There is a summer harvesting option for Blocks C4, C8, C10 and C11. According to the site plans<sup>6</sup>, summer harvesting should only be proposed if the following conditions are met:

- Upgraded summer-haul access roads.
- Harvesting only conducted in dry soil conditions.
- Wide, rubber tired skidders should be used to reduce compaction.
- Access would become permanent for any road that accesses more than one landing.
- Five meter machine free zone ribbon must be placed on either side of all non-classified drainages or seepages.

Mitigation options are discussed in Tables 10.0 and 13.0 and Appendix 11.

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<sup>6</sup> IFS. 2003. *Site and Harvest Plan, Block Summary and Cosh Creek Cruise Summary*. Prepared for the Yukon Government Forest Management Branch, December 2003.

**Table 10.0.** Valued Ecosystem and Cultural Components, their Significance and Mitigation Required.

VECC	Potential Impact From Harvesting	Mitigation Required	Significant Effects
Woodland caribou population.	Low; the winter range of the Rancheria Caribou Herd presently does not extend into the East Hyland planning area. Caribou were viewed in alpine sites of the northeast corner of the East Hyland planning area (part of summer range), which is not in proximity to the planned areas.	There is no evidence that the current plan will impact caribou or caribou habitat; no mitigation required.	None.
Moose population.	Low; moose is a key sport hunting species and there is key calving habitat within 4 km of the Hyland River, which is not in close proximity to the five blocks in the Cosh Creek watershed. Refer to IFS 2003, pages 14, 16.	No further mitigation required.	None.
Marten population.	Low-moderate; currently there are no thresholds for marten in the Yukon.	Mitigations have been addressed for the marten in the plans (i.e. coarse woody debris piles (3m x 3m x 3m) will be left randomly in the blocks, all snags, except those that are considered safety hazards, dispersed retention, FEN, internal reserves). Marten will be managed based on a simulated risk assessment of female marten home ranges (Appendix 8). Refer to IFS 2003a, page 14, IFS 2003b, KFRSC 2004; no additional mitigation required.	None.

**Table 10.0.** Valued Ecosystem and Cultural Components, their Significance and Mitigation Required cont'd.

VECC	Potential Impact From Harvesting	Mitigation Required	Significant Effects
Forest Birds	<p>Species that are known to use boreal forests in the Yukon are likely to be present in the Cosh Creek watershed (C. Eckert pers. comm.).</p> <p><u>Northern goshawk</u>- The harvest area has not been surveyed for Northern goshawks so that their nesting density is not known, although the forest type offers suitable nesting habitat (C. Eckert pers. comm. 2004). No Northern goshawk nests were noted by field crews during the engineering and layout phases.</p> <p><u>Black tern</u>-low; Yukon's only recorded black tern colony is located at Blind Lake, approximately 22 km from the planned cut blocks (Refer to IFS 2003a, page 14. <u>Boreal owl</u>- Forest Ecosystem Network (FEN) will provide habitat for later seral species such as the boreal owl (Refer to IFS 2003a, page 15. <u>Three-toed woodpecker</u>-low; FEN will provide habitat for later seral species such as the three-toed woodpeckers. Refer to IFS 2003a, page 15. <u>Passerines</u>-low (moderate if summer harvest); the harvesting area is at the northern edge of range; however, harvesting activities are scheduled for winter when the impact is anticipated to be low. <u>Trumpeter swan</u>-low; forest harvesting is not within proximity of large bodies of water (such as Blind Lake). Blind Lake is located approximately 22 km from the planned cut blocks. Refer to IFS 2003a, page 16.</p>	<p>Mitigation has been provided for forest bird species (i.e. winter harvesting, leaving all safe snags, deciduous trees and coarse woody debris in blocks and riparian zones in riverine areas). Northern goshawk nests found during the reconnaissance level planning stage will have a 24 ha. reserve area established adjacent to contiguous mature forests to prevent islands of harvested areas forming around them. Nests found post project approval will be buffered with a 200-metre leave area, without a 24 ha. reserve area.</p>	None.

**Table 10.0.** Valued Ecosystem and Cultural Components, their Significance and Mitigation Required cont'd.

VECC	Potential Impact From Harvesting	Mitigation Required	Significant Effects
Aquatic Resources.	Low-the potential impact to the aquatic resources from this project is considered low.	Mitigations have been addressed for aquatic resources (i.e. riparian management areas; machine free zone around non-classified drainages and seepages that are adjacent to or within summer harvest blocks, use of clean snow and corduroy for winter stream crossings).	None.
Maintenance of traditional and community lifestyle (trapping, wilderness values, hunting, berry picking, traditional gathering sites).	Minor; the IWSC is not privy to traditional land use practices, nor land steward information. At this time the Kaska and the KFRSC do not have a TK Protocol, but a TK Protocol will likely be developed in the future to guide the collection and use of TK of Kaska people as per the MOU.	Blocks C1, C2 and C3 were dropped from the plans because of concerns raised by elders. According to field crew, no known cultural sites or issues exist within the harvest area of the five blocks. It is recommended that TK pertaining to the harvest area be documented as soon as possible.	Minor.
Wilderness Values (visual quality; recreation; tourism).	Low; Block C4-no portions of the block are visible from the Alaska Highway. Blocks C6/C8/C10/C11-Variable retention harvesting using dispersed/aggregated retention will minimize visual impact of blocks ( Attachment #8). Refer to IFS 2003a (pages 17-18) and IFS 2003b.	Although visual quality from the Alaska Highway will be affected by harvesting, dispersed/aggregated retention will minimize the visual impacts of the blocks; no further mitigation required.	None.

## **b. Timber Harvesting Planning and Operational Guidebook**

The Timber Harvesting Planning and Operational Guidebook (THPOG; DIAND 1999) is a useful document that contains information to help resource managers and proponents develop an acceptable logging plan for review, and as such, focus on cut block design and layout, access and operational recommendations for incorporating timber and non-timber values (DIAND 1999). As stated on page 1 of the guide, the THPOG is not part of any legislation, making the literature in the guidebook, recommendations rather than mandatory requirements.

It is the RA's view that it is acceptable to deviate from the suggestions in the THPOG; however, the rationale for such deviations must be adequately described. On an individual basis, the following deviations from the THPOG are discussed: block sizes and riparian management zones.

### **i. Block Sizes**

According to the THPOG, the recommended block size is 40 ha; however the proposed block sizes in this project range from 14.1 ha (Block C11) to 111.8 ha (Block C10; Table 5.0). Large block sizes are a contentious issue, as large blocks can be seen as socially unacceptable.

Current thinking about sustainable timber harvest planning and development is towards "ecosystem management" combined with natural disturbance emulation, both at the landscape and watershed levels. In order to effectively implement ecosystem-based natural disturbance emulation in timber harvesting, arbitrary limits on cut-block sizes deserve review. Unless found to be ecologically or socially inappropriate for other reasons, artificially restrictive limits should not be placed on cut-block sizes.

On a site-specific basis, other reasons to limit cut-block size may be found. Critical wildlife habitat areas may be at risk, cultural and social values may need to be intensely managed, viewsapes of local or regional significance may be identified, or preservation of watershed hydrology regimes may be a serious consideration. Refer to IFS 2003a, pages 32-34.

In the absence of valid site-specific conditions that support smaller cut-blocks, there are a several sound reasons to support a mosaic of cut-block sizes, including larger ones:

- 1) Far less road construction is required for an array of larger openings (*Towards Sustainable Management of the Boreal Forest* (Burton et al. 2003).
  - a) Less roads = less access; therefore, less wildlife mortality from both human and natural predators.
  - b) Less roads = less siltation into water courses.
  - c) Less roads = easier access management.
- 2) Larger openings result in less “edge effect,” which is receiving increasing acknowledgement as an issue of concern in managing wildlife that require an intact “interior forest condition” for critical parts of their life history.
- 3) Large openings will often be more useful to manage the effects of insects, disease and wild fire events.

The goals of reducing fragmentation and emulating natural disturbances are being met by a variety of cut-block sizes with irregular shaped block boundaries, combined with partial retention and leave areas. Accordingly, deviation from the THPOG on the block-size issue for this timber harvesting plan is considered appropriate by the RA.

## **ii. Riparian Features**

The THPOG has stream classification guidelines (Table 11.0). Streams in the Cosh Creek Operating Area were classified by the layout crews as Class 1, 2, 3, 4 or 5, according to stream channel widths. Ephemeral draws or seepages are not streams and were classified as non classified drainages (NCD); therefore, riparian management widths (reserve and management zones) were not required.

**Table 11.0.** Stream Classification Guidelines.<sup>1</sup>

Stream Class	Stream Width	Potential Management Issues/Values	Reserve Zone Width (m)	Management Zone Width (m)	Riparian Management Area Width (m)
1	>20	erosion, slumping habitat, game trails, fish, flood protection, slope stability, regional connectivity/movement corridors, thermal cover	80	120	200
2	5 – 20	fish, spawning beds, slumping, siltation, flood protection, insecure snags (safety vs. habitat), game trails, thermal cover, water/soil temperature	60	80	140
3	1.5 – 5	fish, siltation, slope stability, insecure snags (safety vs. habitat), root damage, blowdown, water/soil temperature	40	60	100
4	<1.5	fish, siltation, root damage, slope stability, blowdown, insecure snags (safety vs. habitat), water/soil temperature	30	70	100
5	All streams	site specific assessment	20	30	50

<sup>1</sup>Timber Harvest Planning and Operating Guidebook (DIAND 1999).



The following methodology was used to classify the streams<sup>7</sup>:

- All streams within or adjacent to the blocks were walked by the layout crew in the fall of 2003. Streams that were not within the vicinity of the blocks were classified based on aerial photography.
- The stream reach was walked and separated into six fairly proportionate sections and measurements were taken from each section. The average channel width of each section was determined by calculating the sum of the measurements and dividing the sum by the number of measurements.

Table 12.0 presents the stream classification given, the Riparian Reserve Zone (RRZ), the Riparian Management Zone (RMZ) and the total Riparian Management Area (RMA) for each of the seven streams associated with blocks C4, C6, C8, C10 and C11. During the fieldwork phases of this project, the layout crews determined that riparian deviations would be necessary. In five cases (Stream A-C4; Stream G-C6; streams H and I-C8 and Stream F-C10), a small portion of the RMZs are within the harvesting boundary and are planned to be treated as per the remainder of the blocks using a variable retention harvest method (Table 13.0). The following rationale was provided for the deviation of the RMZ within the harvesting boundary (P. Shuetz pers. comm. 2004a):

- Natural boundary features are favoured over defined distances from streams.
- Wind firmness.
- Edge effect.
- Ease of operability.

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<sup>7</sup> P. Shuetz pers. comm., 2004.

**Table 12.0.** Stream Classification in Blocks C4, C6, C8, C10, C11.

Block	Stream	Classification <sup>1</sup>	Reserve Zone Width (m)	Management Zone Width (m)	Riparian Management Area Width (m)	Comments
C4	A	4	30	70	100	Small 0.06 ha portion of the RMZ is within the harvesting boundary.
C6	G	4	30	70	100	Small 0.47 ha portion of the RMZ is within the harvesting boundary.
C8	H	4	30	70	100	Small 1.74 ha portion of the RMZ is within the harvesting boundary.
	I	4	30	70	100	Small 1.32 ha portion of the RMZ is within the harvesting boundary.
C10	F	4	30	70	100	Small 0.27 ha portion of the RMZ is within the harvesting boundary.
	K	4	30	70	100	Boundary excludes entire RMZ.
C11	D	4	30	70	100	Boundary excludes entire RMZ.

<sup>1</sup>As per stream classification guidelines (THPOG; DIAND 1999).

**c. Yukon and Federal Government Agencies**

Responses to the environmental assessment were received from two Federal Government departments: Environment Canada and Indian and Northern Affairs Canada and various Government of Yukon departments including: Energy Mines and Resources, Environment, Executive Council Office and Tourism and Culture. Specific comments or recommendations and suggested mitigations have been identified in Table 13.0.

**Table 13.0.** Identified Concerns, Suggested Mitigation and Mitigation Measures.

<b>Organization: Government of Yukon, Department of Energy, Mines and Resources, Forest Management Branch, Silviculture</b>		
<b>Identified Concerns</b>	<b>Comments and Suggested Mitigation</b>	<b>Mitigation Measures</b>
Debris disposal.	Recommends that permit holders are required to pile and burn logging slash on all blocks.	Excess slash accumulated on roads and landings will be piled and burned on all blocks. Slash left on the blocks for marten will not be burnt.
Brush disposal.	In Block C10, post harvest inspection may indicate that site should be left for three years to allow time for moss and ground debris to settle before planting. Plant two years after harvest.	As per mitigation suggested by FMB Silviculture Forester (see Appendix 6-Silviculture comments).
Regeneration delay.	Except for extremely brushy areas, sites should be left for 1-2 full years prior to raw planting to allow both slash and moss to compress. For block C11 and perhaps block C4, planting within the first growing season is recommended due to brush.	As per mitigation suggested by FMB Silviculture Forester (see Appendix 6-Silviculture comments).
Regeneration surveys.	Indication that early stocking surveys will take place five years after harvest and late performance surveys ten years after harvest. Early and late surveys should take place 5 and 10 years, respectively, following treatment. Silviculture Section suggests changing the nomenclature on the site and harvest plan forms from “H+5” to “T+5”.	As per mitigation suggested by FMB Silviculture Forester (see Appendix 6-Silviculture comments).
Stock size recommended is 410 for blocks C4, C6, C8 and C10, although if site appears to have a brush problem in C4 and C6, plant 412 stock.	Experience has shown that 415 stock (i.e. root plug length of 15 cm) are too long for the cold soils that commonly occur in Yukon. The bottom few centimeters of the root plug rot in the cold soil.	As per mitigation suggested by FMB Silviculture Forester (see Appendix 6-Silviculture comments).

**Table 13.0.** Identified Concerns, Suggested Mitigation and Mitigation Measures cont'd.

Identified Concerns	Comments and Suggested Mitigation	Mitigation Measures
Site preparation.	Planting is required for block C8 as it is unlikely that scarification will achieve stocking standards.	As per mitigation suggested by FMB Silviculture Forester (see Appendix 6- Silviculture comments).
<b>Organization: Government of Yukon, Energy, Mines and Resources, Forest Management Branch, Forest Practices</b>		
Identified Concerns	Suggested Mitigation	Mitigation Measures
Exterior retention.	The gross block area as defined by the site plan should be exterior measured boundary of the block.	The exterior retention will not be included as part of the blocks. Net downs from the gross block area will include internal reserves, non-productive ground, rock and water.
Culverts in winter operations.	In the Yukon, it is acceptable to use clean snow fill or corduroy with snow to cross small non-classified drains and creeks with a channel width of less than 1.5 m.	As suggested by the Forest Practices Forester, clean snow or corduroy with clean snow is acceptable in the winter for crossing non-classified drainages or streams that have a channel width of less than 1.5.
<b>Organization: Government of Yukon, Energy, Mines and Resources, Lands Branch, Land Use</b>		
Identified Concerns	Suggested Mitigation	Mitigation Measures
Secondary access into Block C10.	Is there a need of a secondary access into Block C10 the proposed access crosses a stream? Can Block C10 be accessed from inside the block?	The small spur road on the western section of Block C10 is necessary to access timber from the west side of the block as: 1) it provides an access to landing #1, which is the lowest point of the block; 2) the road contours the topography; 3) the road makes use of an existing built road for approximately 150 m. The reasons why landing #1 cannot be accessed from the other spur roads to the east are: 1) there are steep slopes in the area resulting in steep adverse grades which would result in a larger amount of backhauling (P. Shuetz pers. comm. 2004a).

**Table 13.0.** Identified Concerns, Suggested Mitigation and Mitigation Measures cont'd.

<b>Organization: Government of Yukon, Executive Council Unit, Environmental Assessment Unit</b>		
<b>Identified Concerns</b>	<b>Suggested Mitigation</b>	<b>Mitigation Measures</b>
Adaptive management principles.	How will phases of adaptive management for the interim wood supply be timed such that irreversible changes will not already have occurred once the blocks and associated infrastructure have been allocated and cut?	Strategies have been prescribed in order to minimize the risks with regard to irreversible effects; for example concentrative cut blocks, preferred winter harvest; marten risk assessment; regeneration strategies; road deactivation. Refer to IFS 2003a, page 7 and KFRSC 2004, page 21.
Harvesting of large river valleys with extensive operable forests.	Do areas as described occur in the operating areas and if so, to what extent will they be harvested?	Large river valleys with extensive operable forests are not part of the Interim Wood Supply Plan; no mitigation required.
Lichen growth.	Over-simplified assumption that the removal of dense vegetation will promote lichen growth.	The proposed cut blocks are not located near significant lichen areas; no mitigation required.
Wildlife occurrences.	Wildlife occurrences in respective planning units should be based upon expert knowledge and input from regional biologists.	Members of the IWSC include Environment Canada and Government of Yukon Department of Environment biologists have provided wildlife management input. No further mitigation required.
Archaeological resources and knowledge.	The Department of Heritage is the expert department that should be contacted regarding the potential occurrence of archaeological resources.	The Department of Tourism and Culture, Heritage Resources was contacted regarding archeological resources (Refer to Thomas Consulting 2004 in Appendix 6). No mitigation required.

**Table 13.0.** Identified Concerns, Suggested Mitigation and Mitigation Measures cont'd.

<b>Organization: Government of Yukon, Community Services, Protective Services, Wildland Fire Management</b>		
<b>Identified Concerns</b>	<b>Comments and Suggested Mitigation</b>	<b>Mitigation Measures</b>
Harvest economics.	Harvest economics does not appear to include any associated costs for fire control.	Harvest economics was not considered to be an EA issue.
Slash.	Insufficient detail upon which to base an informed comment.	Post harvest survey will determine appropriateness for burning. Ventilation index will be used when determining suitable day for burning; no further mitigation required.
Planting.	With regards to planting there is no advantage to planting traditional conifer species, mechanisms to encourage deciduous species including ground disturbance may be a viable option.	The site plans call for planting of conifers; although aspen and other deciduous species will like regenerate naturally; no further mitigation required.
Lack of temporal or spatial information.	Lack of temporal and spatial information supporting declining burn rate over the last 100 years.	No mitigation required.
<b>Organization: Government of Yukon, Tourism and Culture, Heritage Resources</b>		
<b>Identified Concerns</b>	<b>Comments and Suggested Mitigation</b>	<b>Mitigation Measures</b>
Traditional Knowledge.	Traditional Knowledge pertaining to the harvest area should be documented as soon as possible.	No mitigation required.
<b>Organization: Government of Canada, Environment Canada</b>		
<b>Identified Concerns</b>	<b>Comments and Suggested Mitigation</b>	<b>Mitigation Measures</b>
Cut block size-as proposed, Block C10 and adjacent cut blocks will result in an overall clearing size of 190 hectares.	Recommend that Block C10 receive further review and that the size of the block be modified by KFRSC to ensure that it is more consistent with the forest stand patterns found in the area.	The KFRSC has reviewed Block C10 and has made their recommendation that C10 be made available for winter harvesting. Variable retention strategies mitigate for opening sizes.

**Table 13.0.** Identified Concerns, Suggested Mitigation and Mitigation Measures cont'd.

<b>Organization: Canadian Parks and Wilderness Society-Yukon Chapter</b>		
<b>Identified Concerns</b>	<b>Suggested Mitigation</b>	<b>Mitigation Measures</b>
Eco-system based forestry.	Failure to follow basic ecosystem based process requirements.	The strategy within the plans (IFS 2003a, KFRSC 2004 and IFS 2003b) has addressed ecosystem-based planning.
Values	Failure to identify key values and describe how they were chosen (rationale for chosen measures and parameters that were used).	Key values were identified on page 7 of KFRSC 2004; some forest values are described on page 13 of KFRSC 2004. The IWSC identified some of the ecological, economic, and cultural values for interim wood supply and a set of criteria was established for considering ecological and cultural values. A number of values were managed by deferring planning units (West Rancheria), concentrating the harvest (e.g. black terns, marten), the proposed zoning (e.g. fish and amphibians), species that are considered generalists and the proposed zoning and practices provided for them (e.g. moose, northern flying squirrel, bats, birds). Concerns resulted in further changes to blocks (deferrals or boundary changes) and grouped retention. These changes were considered sufficient for the values if other concerns were considered by KFRSC (marten, Cosh Creek Watershed). Management of the values and these concerns were brought to KFRSC in January, and Council provided recommendations.



**Table 13.0.** Identified Concerns, Suggested Mitigation and Mitigation Measures cont'd.

Identified Concerns	Suggested Mitigation	Mitigation Measures
Thresholds.	Failure to set clear and defensible ecosystem targets and development thresholds.	Thresholds for wildlife have not yet been set for the Yukon. The Department of Environment and Environment Canada IWSC members contributed current thinking on habitat thresholds, which were incorporated into the plans. For example, mitigations have been addressed for the marten in the plans (i.e. coarse woody debris piles (3m x 3m x 3m) will be left randomly in the block, all snags, except those that are considered safety hazards, dispersed retention, FEN, internal reserves). Marten will be managed based on a simulated risk assessment of female marten home ranges (Appendix 8); no additional mitigation required.
Adaptive management and monitoring.	Failure to identify a framework for adaptive management and monitoring.	Adaptive management is a principle that will be applied and monitored annually. Refer to IFS 2003a, page 7 and KFRSC 2004, page 21.
Access management plan.	Lack of information regarding access management.	The environmental effects of roads will likely be low due to the standards of the construction being prescribed. Most roads already exist and minor ditch cleaning and grading has been conducted. The term of the project is 3 years and at the end of the operating period, the roads will be deactivated and all-terrain vehicles will be necessary to access the blocks. Deactivation will include: the installation of cross ditches for diverting water away from road surfaces and the removal of stream crossing structures.

**Table 13.0.** Identified Concerns, Suggested Mitigation and Mitigation Measures cont'd.

<b>Organization: Yukon Conservation Society</b>		
<b>Identified Concerns</b>	<b>Suggested Mitigation</b>	<b>Mitigation Measures</b>
Misnaming plan (IFS 2003).	IFS report is not a plan, but rather a total chance analysis.	The name of the report authored by IFS (2003) is not an EA issue.
Timber Harvest Planning and Operating Guidebook (THPOG 1999) is not being followed.	Follow the forest management and silviculture practices presented in the THPOG (1999).	THPOG acts as a guideline only; following the guidebook is not mandatory. Rationale is provided for any deviations.
Volume proposed.	Single volumes should be presented.	The proposed volume of wood is presented in Tables 5.0 and 6.0.
Only patch cutting is proposed.	Selection harvesting should be implemented in some areas.	Variable even-aged silviculture systems suit the boreal forest better than uneven-aged silviculture systems; no further mitigation required.
Unclear whether Kaska FN was formally involved in the identification and observation of cultural sites and issues.	Specification on what the role of the Kaska FN individuals in identifying cultural sites and issues.	The role the Kaska FN individuals had in identifying and observing cultural sites is not an EA issue.
Rotation length of 80-100 years.	Suggested rotation is the age of the oldest trees being logged.	Older age classes are abundant in the adjacent areas. The rotation and supply area is a timber supply issue and is not part of the EA; however, there are considerable hectares in the adjacent forests where these values are maintained. No mitigation required.
Set-aside is not representative of the area proposed for harvesting.	Set-aside should be set-aside as a permanent benchmark for assessing the short and long-term differences between natural forest succession and logging.	The set-aside area was established in an area of similar forest types, zones and merchantable forests in the IWS area. The set-aside will be re-assessed in 40 years; no additional mitigation required.

**Table 13.0.** Identified Concerns, Suggested Mitigation and Mitigation Measures cont'd.

Identified Concerns	Suggested Mitigation	Mitigation Measures
Proposed logging does not take into account the marten thresholds for removal indicated in the YTG Environment and Environment Canada report.	Thresholds for removal of forest cover in watersheds with marten habitat need to be explicitly acknowledged and followed.	Mitigations have been addressed for the marten in the plans (i.e. coarse woody debris piles (3m x 3m x 3m) will be left randomly in the block, all snags, except those that are considered safety hazards, dispersed retention, FEN, internal reserves). Marten will be managed based on a simulated risk assessment of female marten home ranges (Appendix 8); no additional mitigation required.
External retention is almost all non-merchantable or inoperable.	Forest around the outside of the block should not be named retention.	Forests outside of the block are not considered retention. The external retention area consists of merchantable timber.
Soil types in C4, C5, C9 and C12 are not rated as high for potential for frost heaving.	Frost heaves should be considered, along with the potential for compaction and erosion.	Soils and terrain were rated by field crew as low hazard; no mitigation required.
Mitigations for impacts from summer logging are inadequate.	Identification of areas most likely to be at risk of soil compaction and erosion from summer logging.	Soils will be monitored before and after harvest and appropriate compliance actions will be conducted when considered appropriate.
Site preparation.	Soil disturbance should be minimized.	Generally soil disturbance will be minimized; however, some soil disturbance is essential to the regeneration of fire based ecosystems. No mitigation required.
Remedial action.	Site and Harvest Plan calls for remedial action if brush or aspen prevent achievement of free-growing status. There is no description of what this remedial action is.	Remedial action is not addressed in this assessment; refer to additional planning process. No mitigation required.

**Table 13.0.** Identified Concerns, Suggested Mitigation and Mitigation Measures cont'd.

Identified Concerns	Suggested Mitigation	Mitigation Measures
Fire disturbance.	Fire disturbance is being used as the template for harvest practices in the Cosh Creek watershed.	Boreal forests are typically fire driven ecosystems, where fire is the main disturbance type. No mitigation required.
Riparian Management Zones.	Harvesting is proposed in the Riparian Management Zones.	The rationale for harvesting within the RMZ is provided in Section 9a iii. (Riparian Features); page 24 of this report; no mitigation required.
2-3% retention.	Unclear whether proposed 2-3% retention is for dominant/codominant wind firm trees.	Dominant/codominant trees can be considerably taller than suppressed trees and therefore, have been adapted for wind firmness and have developed a strong root system. The proposed 2-3% retention is for dominant/codominant trees; no further mitigation required.
Landscape connectivity.	Minimal landscape connectivity on the east side of Cosh Creek.	The set-asides, riparian areas and FEN provide connectivity.
Wildlife habitat.	Wildlife habitat is not adequately protected in plan.	Thresholds for wildlife have not yet been set for the Yukon. The Department of Environment and Environment Canada IWSC members contributed current thinking on habitat thresholds, which were incorporated into the plans. No further mitigation required.
Fragmentation.	Increase of fragmentation by proposing blocks that are adjacent to existing cut blocks.	Proposing blocks that are adjacent to existing cut blocks reduces landscape level fragmentation, which is more important than site level fragmentation for most interior dependent forest species.

**Table 13.0.** Identified Concerns, Suggested Mitigation and Mitigation Measures cont'd.

Identified Concerns	Comments and Suggested Mitigation	Mitigation Measures
Forest Ecosystem Network.	Lack of details regarding Forest Ecosystem Network.	Details regarding the Forest Ecosystem Network are presented in the plans (refer to IFS 2003a, page 5 and pages 21-23 and IFS 2003b); no mitigation required.
Simple Upland versus Complex Upland.	Misleading to claim that Cosh Creek watershed is a simple upland, it is characteristically a complex upland.	The THPOG definitions of a simple upland and complex upland ecosystem with their key block attributes have been described in Appendix 12 (P. Shuetz, 2004 pers. comm.).
Logging mimicking fire.	Logging mimics fire is a faulty statement.	Refer to Appendix 13 (P. Shuetz, 2004, pers. comm.).
Uniqueness of the Cosh Creek watershed.	The Cosh Creek watershed has unique characteristics (older trees, high volumes) and is one of the smallest watersheds in the Yukon; therefore, the effects of proposed logging on the Cosh Creek watershed will have more impact. The proposed harvesting would remove 75.5 ha (31%) of the total 240 hectares of 131 year old forests.	The Cosh Creek watershed is a small drainage; however, the forests are not considered unique. The mix of tree species and vegetation in the Cosh Creek watershed are well represented in forests adjacent to the Cosh Creek watershed. With 60% of this specific age class and the distribution of this age class and species within the East Hyland landscape unit, there is a low risk of significant effects to this forest component. Prompt silviculture treatments will set the forest off on a successional path that should replace this forest structure in time. Further there are younger age classes in the remaining unharvested land base that will recruit this habitat type in the future.

**Table 13.0.** Identified Concerns, Suggested Mitigation and Mitigation Measures cont'd.

Identified Concerns	Comments and Suggested Mitigation	Mitigation Measures
Fragmentation.	Misleading to state that large cutblocks reduce fragmentation.	The goals of reducing fragmentation and emulating natural disturbances are being met by a variety of cut-block sizes with irregular shaped block boundaries combined with partial retention and leave areas. Larger cutblocks mean that larger “leave areas” are available and less fragmentation occurs.
<b>Organization: Southeast Yukon Proper Land Use Society</b>		
Identified Concerns	Suggested Mitigation	Mitigation Measures
Summary has lack of detail (i.e. regarding harvest methods, use of machinery, equipment, roads, etc.) and language used in general is vague.	Lack of detail for public to make an informed decision.	It is important for decision-makers to have the most complete and updated information possible; however, there appears to be adequate information available. The level of detail in the plans is satisfactory; no mitigation required.
Traditional Knowledge.	TK and knowledge has to be implemented as well as other knowledge from other local people (land stewards and elders).	The RA does not consider this an EA issue.
Marten and traditional lifestyle.	Impacts on the marten population and the traditional lifestyle of trapping have to be clearly demonstrated and mitigated.	Mitigations have been addressed for the marten in the plans (i.e. coarse woody debris piles (3m x 3m x 3m) will be left randomly in the block, all snags, except those that are considered safety hazards, dispersed retention, FEN, internal reserves). Marten will be managed based on a simulated risk assessment of female marten home ranges (Appendix 8); no additional mitigation required.

**Table 13.0.** Identified Concerns, Suggested Mitigation and Mitigation Measures cont'd.

Identified Concerns	Comments and Suggested Mitigation	Mitigation Measures
THPOG.	Deviations from THPOG.	Rationale for deviations from the THPOG is provided in Section 9.
Forest Ecosystem Network.	FEN should be set aside in perpetuity.	A FEN is not static through time and new FENs may be established in the future.
Clear-cut logging/natural disturbance.	The impacts of clear-cuts are not clearly demonstrated and the IFS report claims that logging emulates fire.	Clearcuts with partial retention and wildlife corridors must contain features that are characteristic of fire. No further mitigation prescribed.
Adaptive management.	All available data and information of comparable stands and ecosystems from other jurisdictions must be considered and included and as such adaptive management should be applied to a small study area only within a short-term plan.	Adaptive management processes have been applied; no additional mitigation required. Refer to IFS 2003a, page 7 and KRFSC 2004, page 21.
Set-aside area.	The size and composition of the set-aside is quite different from the IWS area. The proposed 40 year turn around should be a full rotation cycle of the average age of the forest (i.e. 140 years).	The set-aside area was determined through forest cover, merchantability, height of land analysis and was identified as a forested area with similar values (forest cover and % age class) and was agreed upon by the IWSC. The set-aside will be re-assessed in 40 years; no mitigation required.
<b>Organization: Southeast Resident, Rhonda Rosie</b>		
Identified Concerns	Suggested Mitigation	Mitigation Measures
Concern regarding impact of logging on wildlife species and habitat such as marten, black bear, moose, etc. habitat and populations.	Expressed need for research on the impacts that logging has marten, bear, moose, etc. that will assist future forest planning.	Adaptive management processes have been applied; no further mitigation required. Refer to IFS 2003a, page 7 and KFRSC 2004, page 21.

## 9. REASONS FOR DECISION

On April 1, 2003, the Director (Director FMB) of the Yukon Government Forest Management Branch was delegated as representative of the Responsible Authority (the Minister) for purposes of carrying out environmental assessments under the Section 4.1 of *Yukon Environmental Assessment Act* by the Department of Energy, Mines and Resources Deputy Minister Mr. Angus Robertson for matters relating to forest management for the Yukon Territory. Accordingly, it is the responsibility of the Director FMB to render a decision on this environmental assessment.

Preliminary referral background information, in the context of the Interim Wood Supply Plan (IWS Plan) about this project was made available to 53 known referral stakeholders, government agencies, and First Nations on December 9, 2003. The IWS Plan was then posted to the Forest Management Branch web-site and the web-site of the Kaska Forest Resources Stewardship Council (KFRSC). The KFRSC is the body that has been delegated responsibility for forest management planning for the Southeast Yukon by way of a July, 2002 MOU between the Federal, Territorial and Kaska governments. The KFRSC is comprised of three Yukon government appointees, three Kaska appointees, and a third-party neutral chair.

The screening process was clarified by a memo from the RA to the same 53 referees on December 19, 2003. As a result of this initial contact with stakeholders and interested parties, four more referral entities were identified, raising the total to 57. The final project description recommendations were received by the Forest Management Branch (FMB) from the KFRSC on February 11, 2004 and were distributed for referral review and comments on February 16, 2004. Referral comments were due back to FMB on March 1, 2004, but with the absence of the FMB Environmental Assessment Coordinator, a de-facto extension of the review period occurred, until March 8, 2004. Fourteen referral comments were received and reviewed and the screening report was drafted.

The draft environmental assessment screening report for this project was referred on April 8, 2004. Comments were received from eight of the 57 referrals. (Note: there is no legal or policy requirement to release a draft screening report for a 10-day review; this was done as a courtesy to those who had previously expressed interest in the project and because it is the first major forestry environmental screening since devolution from the Federal Government on April 1, 2003). The period of review for the draft screening report ended on April 22, 2004. All referral comments were then reviewed and evaluated. A summary of all referral comments and a revised draft screening report was provided to the RA on April



30, 2004. A summary of the referral process follows the Reasons for Decision. The RA's decision is based on the final screening report document.

### **a. Project Description and What the RA Considered**

This project consists of the background information provided by the IWS Plan and the project description as provided by the February 11, 2004 package received from the KFRSC. Notably, the project does not include the “*Proposed Amendments and Additions Draft November 30, 2003*” (also known as Option 2). This document was prepared to support internal discussions within the Interim Wood Supply Technical Committee (IWSC). After said discussions concluded, Yukon Department of Environment supported the recommendations of the KFRSC.

Many issues were raised by referral respondents that are not environmental assessment issues. The issues raised could be broadly classified into three categories: (1) process issues, (2) policy issues and (3) potential environmental effect issues. The screening report and the Reasons for Decision deal with only issues of the third category.

For the record, the RA has read and given consideration to every referral response received for this project.

### **The Legislation**

The *Yukon Environmental Assessment Act* requires that the factors the RA must consider, as per Section 12(1) of the *YEAA* are:

- (a) *the environmental affects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other projects that have been or will be carried out;*
- (b) *the significance of the effects referred to in paragraph (a);*
- (c) *comments from the public that are received in accordance with this Act and regulations;*
- (d) *measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project;*
- (e) *any other matter relevant to the screening, comprehensive study, mediation, or assessment by a review panel, such as the need for the project, that the responsible authority or, except in the case of a screening, the Minister after consulting with the responsible authority may require to be considered.*

### **Definition of “Significant”**

The major outcome of an environmental assessment is to determine whether or not a project is likely to cause **significant** adverse environmental effects and to mitigate those significant effects. The significance of the environmental effect is determined by a combination of scientific data, regulated thresholds,

standards, social values and professional judgement. It must be determined in a transparent, systematic and supportable fashion.

For the purpose of this screening, the RA has used the definition of “significant” supplied by the Merriam-Webster Dictionary (1997), namely: “*having or likely to have considerable influence or effect*”.

## **b. Significant or Potentially Significant Environmental Effects of this Project**

In alphabetical order, below is the RA’s evaluation of the referral comments the FMB received which are felt to warrant designation as significant or potentially significant environmental effects directly linked to this proposed project and analysis of their relevance and significance for each potential environmental effect. Any referral comments not found in the following discussion below the RA has deemed them to be:

- 1) otherwise adequately addressed in the screening report
- 2) irrelevant to this project screening and/or
- 3) irrelevant as to the factors which the RA must consider in rendering the decision on this project.

It should be noted that a discussion of “Other Important Directly Related Significant Issues Identified by Screening Referral Respondents,” may be found in Appendix 17.

### **i. Amount of Forest Cover to be Removed**

A general concern was identified that too much forest cover is planned to be removed from the Cosh Creek watershed. Less than 20% (including previously existing cut-blocks) of the planning area will be harvested once the five blocks in this project are logged. See discussion below on Hydrology and Fisheries.

**It is the opinion of the RA that there will be no significantly adverse environmental effects from the amount of forest cover removed by this project.**

### **ii. Appropriateness of Partial Cutting Systems in Upland Ecosystems**

The silvicultural systems (which includes timber harvesting prescriptions) for these cut-blocks were prescribed based on the ecological attributes of the sites and the silvics of the tree species. See further discussion below with respect to the “Marten Habitat Concerns” topic.

**It is the opinion of the RA that there will be no significant adverse environmental effects from the silvicultural systems that have been prescribed for the cut-blocks of this project.**

### iii. Cumulative Effects

Referral comments were made suggesting that cumulative effects were not sufficiently considered in the draft screening document. The RA concurs with this observation. This section of the screening report document has since been expanded and re-written, and now includes discussion about:

- Scope of cumulative effects
  - Regional issues of concern
  - Valued Ecosystem and Cultural Components (VECCs),
  - Spatial and temporal boundaries
  - Other actions that may affect the VECCs, and
  - Uncertainty.
  
- Changes in the environment caused by the project
  - The effects of any changes
  - Health and socio-economic conditions
  - Physical and cultural heritage
  - Current uses of land and resources for traditional purposes by community members
  - Any structure or site that is of historical, archaeological, palentological, or architectural significance, and
  - Changes to the environment caused by the environment.

Comment should be made with respect to the data that is available, and about uncertainties. With respect to availability of existing data and knowledge, it must be noted that there was previous timber harvesting activity in the Cosh Creek drainage where useful information has been gathered for this project (forest inventory and cover maps, air photos, a resource report, overview flights and field assessments). However it must be acknowledged that there are also some data and knowledge gaps, notably with respect to field heritage assessments, wildlife and bird assessments, and fisheries assessments. To overcome these data and knowledge gaps, the following were undertaken, to manage and mitigate the cumulative effect concerns:

- establishment of the FEN
- riparian zone establishment and management
- external and internal block retention
- patch-size distribution analysis
- establishment of the set-aside area
- fire disturbance emulation
- the strategy to reduce fragmentation
- analysis of old-growth retention and
- the establishment of an interagency forest management planning team (IWSC), to collectively manage the forest management planning associated with this project.

**The RA is satisfied that the screening report appropriately describes the cumulative effects of this project, and is of the opinion that the cumulative effects of this project will not result in significant or potentially significant adverse environmental effects. It should be noted that that landscape level**

**cumulative effects is a specific issue that the KFRSC must consider and accommodate in the regional forest management plan.**

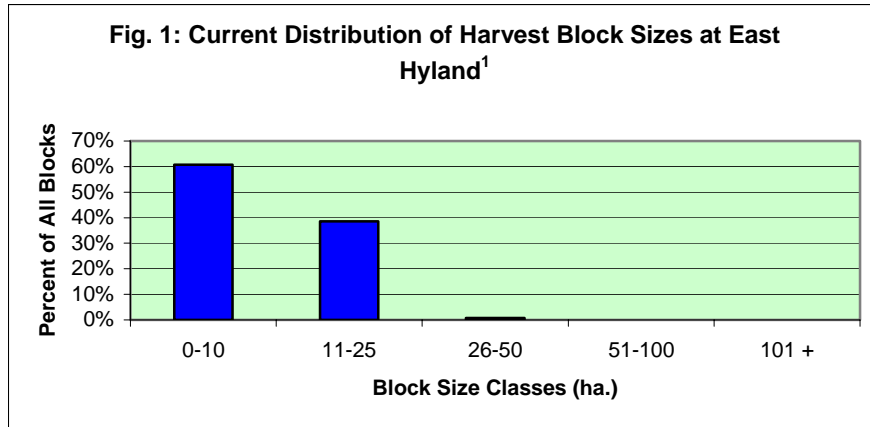
#### **iv. Cut-Block Sizes and Fragmentation**

There exists a concern that larger cut-block sizes are inappropriate to the East Hyland Planning Unit (or at least the Cosh Creek portion of it) and that the 40-60 hectare maximum clear-cut size in the *Timber Harvest Planning and Operating Guidelines* (THPOG) should be strictly adhered to. The evidence does not support this concern.

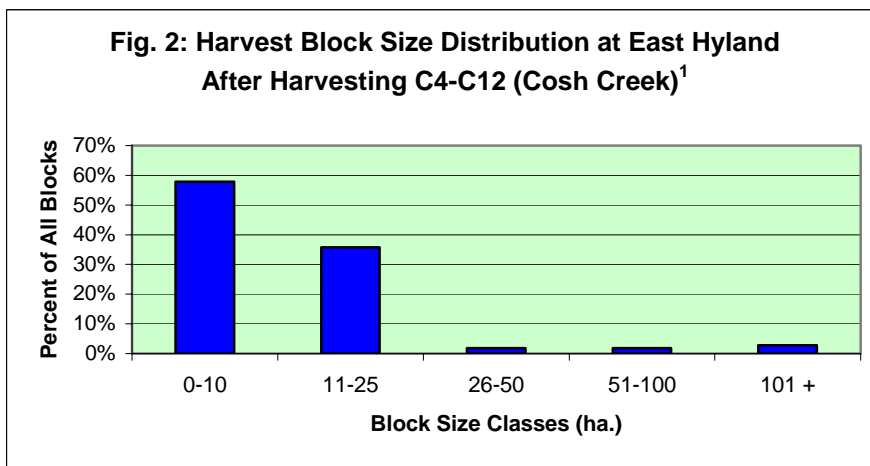
Block sizes being proposed for this project are: C-4 = 33.1 ha.; C-6 = 75.8 ha.; C-8 = 15.9 ha.; C-10 = 111.8 ha. and C-11 = 14.1 ha. The rationale behind the range of cut-block sizes proposed for the East Hyland Planning Unit is explained in Section 6 of the Interim Wood Supply (IWS) Plan. The size distribution of all proposed blocks (including those subsequently located on the ground at Cosh Creek) is compared with the size distribution of natural forest patches at the Unit (pages 33-34 of the IWS Plan). This shows that the harvest plan will increase the percentage of small patch sizes, but that the post-harvest range of sizes will not differ much from the current distribution.

Discussing block size, McRae et al. (2001) starts with the observation that “*By the late 1990s clear-cuts were generally smaller than 100 ha across most of Canada.*” They then state: “*Thus the typical patch sizes and frequencies created by wildfire and logging are clearly dissimilar. Fires typically create both smaller and larger patches, and a forested landscape is rarely burned in a uniform fashion over a large area (MacDonald, 1993).*” McRae et al. conclude, “*The patch sizes created by forest harvesting are only a small subset of the range created by wildfire.*”

To demonstrate this, Figure 1 shows the current distribution of the harvested block sizes in the East Hyland Planning Unit while Figure 2 compare the size distribution of previously harvested blocks in the East Hyland Planning Unit with the size distribution after the proposed Cosh Creek blocks are harvested (C4 to C12).



<sup>1</sup>Taken from IFS 2004.



<sup>1</sup>Taken from IFS 2004.

The majority of blocks are on the small end of the scale (as both McRae et al., 2001 and the IWS Plan suggest should be the case). Over 90% of the harvest blocks are less than 50 hectares in size. However, the current distribution of harvest block sizes (2-39 ha.) reflects a smaller block size range than either the natural patch-size distribution at Cosh Creek (i.e., 69% of patches less than 50 hectares) or the wide range of patch sizes observed by McRae et al. 2001. Accordingly, the IWS Plan proposes to increase the block-size distribution by amalgamating some previously harvested areas into a few larger blocks.

The Yukon's Natural Disturbance Zones (NDZ) are an analogue of the Natural Disturbance Types (NDT) found in Northern British Columbia. The NDT that best resembles the majority of the East Hyland area is NDT3, characterized by frequent stand-initiating events (i.e., fire). Patch sizes ranging from 250-1000 hectares are recommended for at least 60% and as much as 80% of forest area classed as NDT3 (Table 13, Biodiversity Guidebook, BC MOF, 1995). Delong (1998) has shown that the patch-size distribution of

forests in Northern BC has a range of <10 hectares to >10,000 hectares, with about 79% of patches exceeding 101 hectares.

One of the fundamental principles that the IWSC adopted in providing direction to the consultants (Industrial Forestry Services Ltd.; IFS) to produce this project plan, was that forest fragmentation should be minimized, by identifying proposed cut-blocks adjacent to previously harvested areas. The KFRSC approved this strategy and the IWSC then provided instruction to IFS to produce this IWS plan.

An ecological drawback of small single-sized blocks is their effect in fragmenting the forest landscape. The August 2000 *Final Resource Report for the East Hyland* includes the opinion that “*Continued application of small block sizes may lead to unnecessary levels of fragmentation...*”. The June 2003 *Biological Diversity Values Tables* by Adamczewski et al. (2003) states that “*Habitat fragmentation can have severe effects on sensitive species even where much of the forest remains.*” The IWSC has stated that a key strategy for the Cosh Creek area and the East Hyland Planning Unit is to reduce fragmentation of the landscape and the higher levels of access that would otherwise be created. Fragmentation due to small patch size does not just occur at East Hyland but throughout Western Canada, where foresters, ecologists, and environmental groups are increasingly realizing the problems created by limiting block sizes to 40 or 60 ha:

“...forest harvesting will emulate the temporal and spatial distribution of openings created by natural disturbance, and will prevent forest fragmentation consistent with objectives that balance biodiversity conservation with social and economic considerations ... the current Code places limits on clearcut blocks of 40 hectares or 60 hectares, depending on the geographic location ... these limits are inconsistent with the science of biodiversity conservation and, when combined with green-up and adjacency practices, they inappropriately constrain timber supply and forest development scheduling, while increasing operational costs and reducing government revenue.” (*Results-Based Forest and Range Practices Regime: Companion Document 2, May 2002*)

It is therefore appropriate that the THPOG, which is not a regulation but rather a series of guidelines, recognizes the need for flexibility (page 1) to make site-specific forest management decisions as follows:

*“The recommendations in this guidebook are not mandatory requirements.....a recommended practice may be modified when an alternative could provide better results for forest resource stewardship.”*

Several respondents contend that this strategy will have adverse environmental affects because the opening sizes are too large, especially when these cut-blocks are combined with the previous cut-blocks that these new blocks will be adjacent to. No specific significant or potentially significant adverse environmental effect for any of the VECCs linked to this concern convinced the RA that this might be so. In fact, there is a suite of evidence and experiences to suggest otherwise. Notably, the screening report included an excerpt from the book “*Towards Sustainable Management of the Boreal Forest*”, National Research Council of Canada, 2003 (pages 450-451), that capsulates this issue.

The block-size distribution in the IWS Plan and the project description is clearly a closer match of the natural disturbance regime at Cosh Creek than the range of sizes that have otherwise been suggested.

**It is the opinion of the RA that the fragmentation reduction strategy recommended by the IWSC for the Cosh Creek watershed is appropriate, and that the outcome of using that strategy as has been incorporated into the project plan will not result in significant adverse environmental effects.**

**Further, it is the RA’s opinion that there will be no significant adverse environmental effects from the opening sizes and distribution created by this project, and that a higher overall potential adverse environmental effect could occur by prescribing a greater number of smaller openings to capture the same amount of volume to be harvested.**

#### **v. External Retention / Retention Levels**

In the Cosh Creek area, questions have arisen regarding the definitions of internal and external retention, what these areas consist of (i.e., resource values, stand structure, etc), and the relationship between representative retention and merchantability. The following is provided to clarify any concerns:

As a rule, retention includes a full range of sizes and species, including merchantable trees. Appendix 1 of the IWS Plan provides a summary of all proposed blocks and corresponding retention targets to be pursued during operational development. This ‘stand-level’ or block retention is proportional to the diversity and importance of other potential resource values in proximity to the block in question, and is distinct from landscape level retention that is manifested as special zones or expressed as seral stage targets.

A review of the IWS Plan will confirm that, for Cosh Creek Blocks C4-C12, block retention is described in the block reports and site plans as well as being clearly defined on the accompanying maps. It is

subdivided into three categories, namely external retention (contiguous to the exterior of the block), internal retention (fully surrounded by harvesting), and dispersed retention (spread throughout the harvested area). There is no ambiguity between what is to be harvested and what is not and the proposed landscape-level targets have been met or exceeded.

Site plans for the cut-blocks call for between 10 and 30 conifer trees/hectare (C4:10-20 conifers/hectare; C6: 20-30 conifers/hectare; C8: 10-20 conifers/hectare; C10: 10-20 conifers/hectare; C11: 10-20 conifers/hectare) to be left un-harvested per hectare, uniformly spaced through the cut-block; the site plans call for these to be the largest trees on the blocks not the smallest ones. All snags and wildlife trees are also to be left standing, as are all deciduous trees.

**It is the opinion of the RA that the amount, type and configuration of the retention proposed is appropriate to the prescription for the cut-blocks proposed in this project, and that no significant adverse environmental effects will occur from this project as the result of the proposed site plans, combined with the other retention areas.**

#### **vi. Fire Disturbance Emulation**

Much debate has centered on whether timber harvesting can or cannot mimic or emulate disturbances caused by wildfires. The short answer is that, at best, timber harvesting and fire disturbance are not the same; to contend otherwise would be a scientific, technical and linguistic fraud. That said, there are many “preferred features” of fire disturbance that can be captured and reproduced by well planned timber harvesting. The IWSC chose to use fire disturbance, in part, as a template for timber harvest planning in the Cosh Creek watershed. The KFRSC endorsed the committee’s recommendation. Accordingly, instruction was provided to the consultant to, in part; emulate local fire disturbance patterns in the cut-block designs. Fire disturbance history is a reasonable analogue to assess the inherent dynamics and resilience of a landscape system. In my opinion, this is an appropriate practice in Cosh Creek (and in other Yukon watersheds), unless other significant resource values are identified to suggest otherwise. No such values were identified with respect to this planning area.

**The RA is satisfied that no significant adverse environmental effects will occur as the result of the decision to use fire emulation as one of the concepts to develop the timber harvesting plans for Cosh Creek.**



### **vii. Forest Ecosystem Network (FEN)**

The FEN proposed for the planning area is not an isolated entity, or independent of stand level connectivity. It provides a multitude of corridors between upland and lowland as well as within them. Variable retention harvesting completes the web of continuity from un-harvested forest stands to cut-block interiors. The result is that no part of the planning unit is unreachable from any other part by species that depend on continuous forest cover for travel or subsistence habitat.

The issue of connectivity is somewhat contradictory. On one hand, it is suggested that the Plan does not effectively capture and link upland habitats or provide ridge and valley-to-valley corridors. On the other hand, it is suggested that the Plan relies too heavily on in-block retention to provide stand level connectivity-movement corridors and linkages within the upland forests. These two suggestions cannot both be true. The stand level connectivity provided on, and between, the Cosh Creek blocks (C4-C12) cannot be viewed separately from the landscape level FEN provided for the entire East Hyland Planning Unit.

Forests are never static, especially in the boreal forest where wildfire designs and redesigns the landscape cover on an ongoing basis. As forest cover changes, so does wildlife uses of the cover. To suggest that FENs should be permanently protected areas in such a harvest application denies the fact that harvested forests will mature over time allowing the FEN to be harvested, and replacement of an old FEN with a new FEN.

**It is the opinion of the RA that no significant adverse environmental effects will result from adoption of the FENs proposed in this project. It is also the RA's opinion that the FENs for the planning area (as recommended by the IWSC, endorsed by the KFRSC) incorporated into the project plan are appropriate, but that they should not be established on a permanent basis.**

### **viii. Heritage Concerns and Traditional Use Values**

The following synopsis outlines how the IWS Plan and subsequent block layout at Cosh Creek have addressed traditional-use values to-date:

- The planning unit boundaries and harvest volume targets in the Plan are based on the *Interim Wood Supply recommendation* (11 Feb 2004) by the KFRSC.
- To the extent possible, the IWS Plan has incorporated traditional use information inherent presented in the *Final Resource Report East Hyland Planning Area* (Aug. 2000).
- Liard First Nation personnel participated in the reconnaissance of the East Hyland Planning Unit and were apprised of the general planning strategies.

- Any known or suspected cultural use sites, trails, etc. were incorporated into the forest ecosystem network (FEN) at each planning unit. A draft of the IWS Plan was then presented in July 2003 for KFRSC input and revisions.
- Liard First Nations persons assisted in site reconnaissance and collection of site data, and in cruising, boundary layout, and road location for all blocks in the Cosh Creek area (C4-C12).
- The project plan and draft screening report was referred to Kaska Dene Council, Kaska Tribal Council, Ross River First Nation, Liard First Nation, the Council of Yukon First Nations, and the KFRSC. Only the KFRSC responded with comments.
- The KFRSC, which is the entity responsible to ensure that traditional knowledge is included forest management planning within the Kaska Traditional Territory, has endorsed this project plan.

It is important to recall that half of the membership of the KFRSC are Kaska representatives.

The Yukon Heritage Resources Unit indicated no specific concerns for the cut-blocks proposed for this project.

**The RA is satisfied that heritage concerns and/or traditional use values have been addressed to the degree that is possible, and that no significant adverse effects on traditional use and heritage resources should occur because of this project.**

#### **ix. Hydrology and Fisheries**

The concern was raised as to whether the hydrology of Cosh Creek would be adversely affected by this project. Different watershed types have different “sensitivities” to increases in peak flows, which is the key event that causes detrimental adverse environmental impacts to streams and fish populations. For example, a watershed with flat or gentle topography which is dominated by swamps, lakes and wetlands, would generally be less sensitive than one that has steep topography and is not buffered by wetlands. Likewise, a stream that has recently been destabilized by a large flood event will remain sensitive to increased peak flows until the stream channel has recovered and returns to relative stability.

This project will result in less than 20% of the Cosh Creek watershed being harvested. In BC, a threshold of 20% has been established at which point it becomes mandatory to initiate a watershed assessment, but the level of harvest is not automatically constrained at this level. Stednick (1996), reports that in areas in low topography, there was no measurable increase in annual stream-flows until levels of harvest of 45 to 50% was reached. This situation may well best describe the conditions of much of the Yukon, and in particular the Liard basin, where Cosh Creek is located.

In a recent study (McFarlene, 2001) suggested that a level of harvest of at least 30% would be required before peak flows could be detected in snowmelt dominated watersheds of south-eastern BC, an area that is quite mountainous. Golding (1987) reported on a paired watershed study near Vancouver where 19.7% of the 300 hectare Jamieson Creek watershed was harvested over an 8 year period. He concluded that “the effects of logging on stream-flow peaks on Jamieson Creek have been minimal. Overall, the literature review suggests that impacts to significant peak flows would not be detectable until at least 30% of a watershed is harvested.

Excessive siltation and extreme low flows can also cause adverse environmental impacts to fish populations. The harvesting plans for Cosh Creek will re-activate only a limited length of previously established road, and there are few crossings planned for the watershed. This is an excellent situation to help minimize road-related impacts to both water quality and quantity.

This project plan for Cosh Creek has clearly recognized the importance of the riparian forest. Riparian reserve and management zones are to be established and will be maintained for all streams within the watershed. This will provide a filtration barrier to excessive siltation, and should result in stable natural stream flow regimes. There is no evidence to suggest that excessive siltation or extreme low flows will result from this project.

### **Ephemeral Draws**

An issue was identified with respect to the need to protect ephemeral draws from timber harvesting. Ephemeral draws are not streams, and therefore, stream protection guidelines do not apply. The screening report indicates a 5-metre machine free zone (MFZ) for summer harvesting as mitigation, however, widths can be and commonly are reduced during frozen ground and snow covered conditions. This is a proven practice that provides sufficient protection for this type of land feature.

### **Non-classified Drainages and Seepages**

A concern was identified with respect to an apparent contradiction to protection afforded non-classified drainages and seepages as opposed to streams. The contradiction stems from the fact that streams (even the smallest ones), are afforded different levels of protection than non-classified drainage or seepages (which are not streams). The writer of this comment should be referred to the definition of streams and non-classified drainages in the THPOG (pages 9-10) and the BC MOF Forest Practices Code Fish-stream Identification Guidebook (pages 8 and 10).

**It is the opinion of the RA that this project will have no significant adverse environmental effects on the hydrology, and/or on the fisheries of Cosh Creek.**

#### **x. Irreversible Changes and Adaptive Management**

One referral response comment suggested that there is confusion about how changes as a result of harvesting will be monitored. The writer questioned whether there would be monitoring of only the five blocks in this project, or would monitoring occur for the entire area harvested over the past several years? Operations will be monitored by Yukon government field staff during the harvesting activities, up to and including a final harvest inspection report when the harvesting is completed. The cut-blocks will also be monitored during reforestation activities. Finally, observations of the cut-blocks have historically occurred for several years following reforestation, both by government field staff, and members of the public. Results both from informal and formal monitoring processes are used, and will continue to be used, to constantly improve both harvesting and reforestation practices.

**It is the opinion of the RA that the screening document mitigations, along with current enforcement programs activities, and both post-harvest and silvicultural surveys, combined with whatever adaptive management approaches are developed and implemented through the regional forest management plan at the landscape level, will provide sufficient monitoring mechanisms to implement a meaningful adaptive management approach.**

#### **xi. Marten Habitat Concerns**

Concerns about marten, and maintenance of marten habitat were identified by referral respondents. Considerable debate about the need to protect marten and what was required to accomplish this occurred at the IWSC meetings. The issue was raised in regards to the use of marten species serving as a 'template' for managing certain other species with similar habitat needs. This practice is at odds with the intention of ecosystem-based management (see "Other Issues", below, following the screening decision) in which all members of the ecosystem would (presumably) be treated even-handedly.

There is a large amount of literature on the 'umbrella' or 'cornerstone' species idea as a putative shortcut to multiple species management. There is equally considerable literature to the contrary. The idea rests on assumptions with restricted validity. Firstly, it presupposes that the cohort of chosen species is deserving of priority, since the remainder are implicitly down-rated or ignored. Marten (nor for that matter, any other species) were not considered to need priority treatment in the objectives for the IWS Plan. Secondly, the idea that some species should take precedence over others is inconsistent with biodiversity principles, unless the species in question are unlikely to sustain themselves under the broader management scheme proposed (if that were the case, the management scheme as a whole should be replaced). Thirdly, the idea supposes that umbrella species management actually works; in other words, that the species in question occupies a dominant role in the biota and that the other members of the cohort are either ecologically

similar enough or interdependent enough to respond in a coordinated way. In a diverse ecosystem, this is more often the exception than the rule. To elevate marten or any other species to priority status is questionable on grounds of policy; the technical considerations are subordinate to this.

That there will be adverse influences from this project on individual marten and on marten families cannot be denied. However, in evaluating significant and potentially significant effects, one cannot base a decision on a single individual or small group of individuals of the species, unless they are threatened, endangered or rare; marten are not threatened, endangered or rare.

It should be noted that representatives from the Yukon Department of Environment (DOE), which is the territorial agency responsible for the management of fur-bearers, participated in the IWSC process and confirmed that, in their opinion, localized marten populations would not likely be endangered nor extirpated from the project area by this project.

**In reviewing the comments about the need to protect marten, combined with the results of discussions that occurred in the IWSC meetings, it is the opinion of the RA that there will be no significant adverse environmental effects on overall marten populations in the planning area from this project.**

## **xii. Natural Regeneration**

One of the first things that a silviculture forester is taught is that the choice of reforestation methods is best based on the silvics of the tree species to be reforested combined with the ecological attributes of the site to be reforested. In many cases in the Yukon, natural reforestation may work well without an unacceptable silviculture delay; in other cases, it may not. In the long term, length of silviculture delay will have an impact on the level of Annual Allowable Cut that can be maintained.

**Reforestation methods for the cut-blocks in the project will be prescribed based on post-logging site inspections, combined with the site plan information contained in the project description for this project.**

## **xiii. Need to Maintain Older Age Forests / Reduce Harvest Of Old Growth**

The overall amount of old growth coniferous forest remaining in the Liard basin, and for that matter, in the Cosh Creek drainage, will be insignificantly effected by the small amount of harvest that will occur due to this project. At the landscape level, this is an issue that is best addressed in the regional forest management plan that is being prepared by the KFRSC. That said, there were some issues raised

concerning the old growth Sub-alpine (balsam) fir in the Cosh Creek drainage that warrant consideration and comment.

### Representation of Rare and Old Upland Forests

An issue was raised regarding the need to take extraordinary steps to maintain rare and old upland forest as a management strategy. The rationale for such representation is two-fold. One is to enhance the relative social or economic value of the species or habitat concerned, on the premise that 'more is better'. The other is to lower the risk that the species or habitat might be lost by accident or other uncontrolled events.

Special focus on representation of certain species or habitats for social or economic reasons is a policy matter, not an ecological matter, and if taken too far can be self-defeating if 'value' is based on rarity per se. Over-representation to lower an extirpation risk is however, a matter of ecology if the species or habitat is unlikely to sustain itself unless increased in numbers or extent.

The values ascribed to old forests and their inhabitants at Cosh Creek are believed to be socio-economic rather than ecological. The RA is unaware of any decision by the IWSC to over-represent them on the basis of rarity. The RA knows of no species or habitat at Cosh Creek that can be considered rare enough or localized enough to be at risk of accidental loss solely on the basis of timber harvesting of this magnitude. In addition, one must not overlook the role of succession in maintaining the forest age-profile. The supply of 'old growth' sub-alpine fir is a case in point (next section).

### The Sub-alpine fir Component of Proposed Harvest Blocks

Conservation of appropriate 'old growth' stands in the East Hyland Planning Unit is not dependant on reserving the fir component of Blocks C4-C12 in the Cosh Creek watershed. Fir-leading stands have been considered to represent 'rare old growth' but, as illustrated in Table 14.0, the fir is in fact younger than the white spruce and the fir component is more than one quarter of the inventory by area.

**Table 14.0.** The Proportion and Ages of Leading Species in Cosh Creek Blocks<sup>1</sup>.

Leading Species	Proportion of Area	Average Age
Pine	39.1%	133.7
<i>White spruce</i>	34.1%	158.2
Sub-alpine fir	25.8%	148.8
Average, all species (weighted by area %)		142 years

<sup>1</sup>Taken from IFS 2004.

During block development in the Cosh Creek area, several strategies (variable retention, external reserves, internal reserves, exclusion of Block C7) were employed to maintain representative 'old growth' stand structures and attributes in and around the areas to be harvested. Care was taken to ensure that all desirable stand attributes were considered, not just species alone. For example, Block C7 was deleted from the Plan based on a number of timber and non-timber criteria, not solely on its content of Sub-alpine fir.

The concern expressed over Sub-alpine fir confounds three separate issues. These are dealt with individually as follows:

- 1) Economics- This very short section on economics is included as a matter of interest, as it has no bearing on the environmental or potential environmental effects of this project.

Sub-alpine fir (or balsam or simply 'fir' as it is often called) has been mislabeled as an inferior timber type because it has prominent pitch blisters under the bark and is "*difficult to dry uniformly*" (Mullins & Mcknight, 1981). Both of these problems are surmountable, but mill operators still shun balsam whenever they can. Yet Sub-alpine fir lumber commands the same price as pine or spruce<sup>8</sup>, and "*has excellent pulping properties*" (Alexander, 1987). It is also readily used for boxes, crates, sashes, doors, frames, food containers, and prefabricated wood products. As for economics, the IWS Plan shows (in Appendix 2) that sawmill profitability depends more on factors such as tree size, m<sup>3</sup>/hectare, haul distance, and market price, than it does on species of tree. There is no economic reason to discriminate against Sub-alpine fir.

- 2) The 'rarity' of *Abies lasiocarpa*.

*Sub-alpine fir makes up 10% of the tree species profile in the Yukon. Although not overly abundant, it is far from endangered or threatened with extinction. In 2001, it was designated as Yukon's official tree, but has not been accorded any other special status. In the past, it is believed to have stretched "as far north as Old Crow and was also more abundant than it is today" (Schweger, 2001). Schweger (2001) suggests that its historical decline has been the result of fires linked to human activity. "Sub-alpine fir is very fire sensitive and generally suffers high mortality even from low intensity fires" (Parminter, 1983).*

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<sup>8</sup> *Random Lengths*, 20 Feb. 2004, quoted Spruce-Pine-Fir #2 &Btr 2X4 @ \$393

*In the East Hyland planning unit, Sub-alpine fir comprises less than 4% of the forested land base (see Table 3 below). However, this low percentage is largely a result of the arbitrary designation of planning unit boundaries, which include very little sub-alpine stands (where balsam is most common), and a number of large recent burns colonized by pine. A map of Sub-alpine fir distribution at East Hyland shows that the largest contiguous patches of fir are at the north end of the unit. The vast majority of these areas have been assigned to the FEN for East Hyland and exempted from the harvestable land base.*

**Table 15.0.** The Proportion of Sub-alpine Fir in the East Hyland Planning Unit<sup>1</sup>.

	(area) ha	Total ha Sub-alpine fir	Sub-alpine fir (%)
Total forested area	97638.6	3736.9	3.8
Total, excluding NSR	56205.9		6.7

<sup>1</sup>Taken from IFS 2004.

- 2) *The harvest profile of the East Hyland planning unit, and the maintenance of old growth Sub-alpine fir.*

*An important goal of any harvest plan is to at least maintain the relative abundance of each species somewhere on the landscape over time. According to the East Hyland inventory, 2610 hectares of mature fir are available for harvest and at least 1127 hectares of immature are available for replacement. Table 16.0 and Figure 3 show the predicted trend in each category over the next 50 years. Since proposed cut-blocks contain only 9% of the total amount of fir at East Hyland, the proportion of mature fir will actually increase by 30% over the next 50 years, even if all proposed blocks in the IWS Plan were to be clear-cut harvested. Given that variable retention harvesting will focus on retaining both mature and immature Sub-alpine fir, the projected 30% increase in mature stock by 2054 is actually an underestimate.*

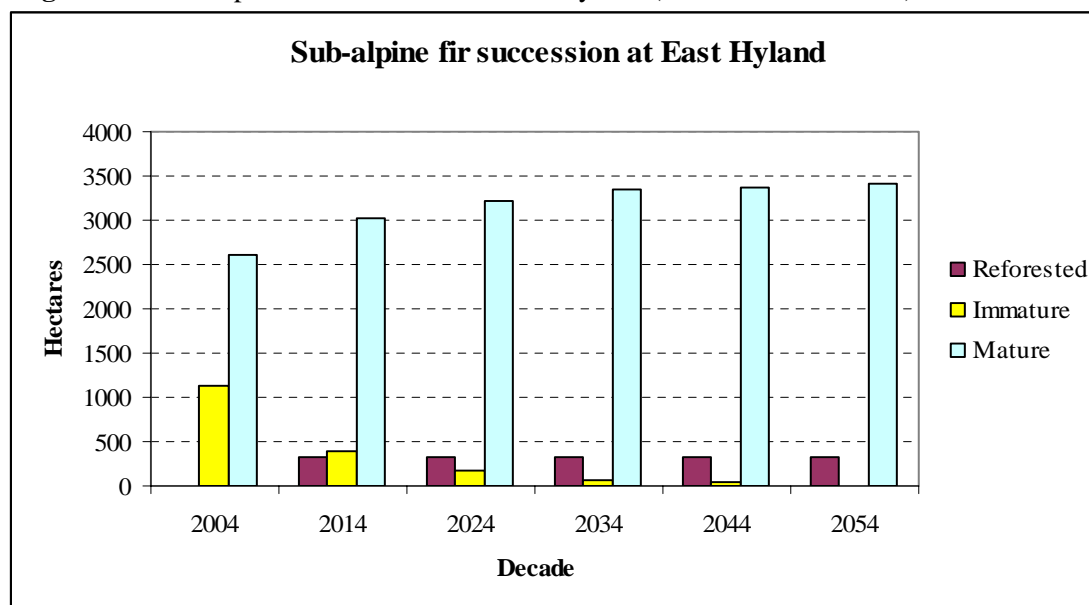
**Table 16.0.** Sub-alpine Fir Succession at East Hyland<sup>1</sup>.

Year	Reforested Fir	Immature Fir	Mature Fir
2004	0.0	1127.0	2610.0
2014	332.4	387.8	3016.8
2024	332.4	183.6	3221.0
2034	332.4	61.3	3343.3
2044	332.4	38.7	3365.9
2054	332.4	0.0	3405.0
			Increase (total): 30.5 %

<sup>1</sup>Taken from IFS 2004.



**Figure 3.0.** Sub-alpine Fir Succession at East Hyland (taken from IFS 2004).



The timber cruise data from Cosh Creek indicates that the proportion of Sub-alpine fir in blocks C4-C12 is 25.8%. However, this declines to only about 5% when all of the Cosh Creek blocks are considered together (Table 17.0). At East Hyland in general, the amount of mature fir proposed for harvest is less than 9% of the total available, and as already noted, succession will more than replace this as time proceeds. The proposed harvest levels for Sub-alpine fir are no cause for concern.

**Table 17.0.** Sub-alpine fir in Proposed Blocks<sup>1</sup>.

Sub-unit	Amount of Sub-alpine fir in Proposed Blocks	
	Ha	% of total
Cosh	186.8	5.0
Irons	0	0
Boundary	0	0
Lost	61.5	1.7
Hyland	84.1	2.2
East Hyland total	332.4	8.9
<b>Total Fir Component</b>	<b>3736.9</b>	<b>100</b>

<sup>1</sup>Taken from IFS 2004.

**Given the foregoing, it is the opinion of the RA that the concerns about the need to protect old growth conifer, and Sub-alpine fir in particular, with respect to this project are unfounded, and that there will be no significant adverse environmental effects from the project related to this concern.**

#### **xiv. Northern Goshawk**

The Northern goshawk (*Accipiter gentilis atricapillus*) sub-species found in northern boreal forests is designated “Not at Risk” by COSEWIC at the national level and also “Not at Risk” (yellow listed S4B S4N) by the Conservation Data Centre at the provincial level. This sub-species is considered to be “Regionally Important” in the Yukon, and a species of conservation concern, because it is associated with habitats that are becoming increasingly rare south of the 60<sup>th</sup> parallel.

Goshawk nests are typically in mature/old-growth coniferous stands that are even-aged and have a closed canopy and open under-stories. The observed breeding, nesting, and post-fledgling characteristics of this sub-species provide strong indications that they are exceptionally sensitive to industrial activity during these stages of their life cycles.

The discussion in #11 above with respect to marten, choosing any single wildlife species to drive forest management planning applies equally with respect to Northern goshawk concerns. The RA is unaware that any species of wildlife has been identified in the planning area, such as to warrant special consideration for the planning of the interim wood supply, including Northern goshawk. That said, the unique nesting characteristics of the Northern goshawk do warrant special consideration. As it is understood, unlike many other birds of prey, the Northern goshawk does not necessarily return to the same nest each year. Instead, they often return to the same area, and build a new nest not far from their previous years nests. This results in a number of nests or a “nest-cluster”, of both active and abandoned nests, being built in a small geographical area.

The THPOG suggests a minimum reserve (buffers) of 50-metres around any nest of a bird of prey. The Canadian Wildlife Service and the KFRSC have recommended a 24-hectare buffer zone around Northern goshawk nests. The order-of-magnitude in the difference between these two levels of buffering is so significant that investing any money what-so-ever in timber development planning would be a very poor business decision without first conducting a 100% inventory of goshawk nests for every proposed cut-block. It is the opinion of the RA that this is neither technically nor economically feasible. It would seem that a generic 24-hectare buffer without site-specific field evidence to support the need is a rather arbitrary approach, and extremely hard to defend from an economic standpoint. A site-specific approach has considerable appeal and must be seriously considered.

In the Mackenzie Forest District in BC, one major licensee (Slocan) has opted to request a two-tiered Wildlife Habitat Area, under the BC Forest Practices Code, be implemented for Northern Goshawk

breeding sites, of approximately 240 hectares, including three sites of 12 hectares around the perimeter of each nest site. For further details, see Appendix 14 of the screening report for the Cosh Creek project. In north-eastern BC (Fort Nelson Forest District), as per the guidelines provided by the BC Ministry of Water, Land and Air Protection, a 200-metre buffer is being applied to active Northern goshawk nests to protect this species.

The range in size of these two prescriptions is significant, and they represent two separate levels of application. If Northern goshawk nesting sites are identified at the reconnaissance level, before cut-blocks are laid out, engineered, timber-cruised and approved, then site-specific accommodation can be made at the first (preferred level) of protection. However, if a nesting site is not discovered until a cut-block has been approved, and timber harvesting is actually underway, then a less onerous level of accommodation is warranted, especially for a species that is not rare, endangered or threatened.

**Where active Northern goshawk nests are identified at the reconnaissance level in timber development planning, the RA instructs that 24 hectare protection zones for such nests be incorporated into the planning. Alternatively, when Northern goshawk nests are not identified until after a cut-block has been engineered and approved, a minimum of a 200-metre leave buffer shall be applied around the perimeter of active nests. Further detailed management prescriptions for this sub-species are found in the screening report. It is the opinion of the RA that these combined mitigation measures should provide sufficient protection so that no significant or potentially significant adverse effects will occur with respect to Northern goshawks.**

### **c. Decision Options**

Section 16.1 of the *Environmental Assessment Act* requires that:

*“The responsible authority shall take one of the following courses of action in respect of a project after taking into consideration the screening report and any comments filed pursuant to subsection 14(3):*

*(a) subject to subparagraph (c)(iii), where taking into account the measures that the responsible authority considers appropriate, the project is not likely to cause significant adverse environmental effects, the responsible authority may exercise any power or perform any duty or function that would permit the project to be carried out and shall ensure that any mitigation measures that the responsible authority considers appropriate are implemented;*

*(b) where, taking into account the implementation of any mitigation measures that the responsible authority considers appropriate, the project is likely to cause significant adverse environmental effects that cannot be justified in the circumstances, the responsible authority shall not exercise any power or perform any duty or function conferred on it by any other Act that would permit the project to be carried out in whole or in part; or*

*(c) where:*

- *the project, taking into account the implementation of any mitigation measures that the responsible authority considers appropriate, is likely to cause significant adverse environmental effects and paragraph (b) does not apply, or*
- *public concerns warrant a reference to a mediator or review panel, the responsible authority shall refer the project to the Minister for a referral to a mediator or a review panel in accordance with Section 25.*

#### **d. Screening Decision**

Having reviewed and considered the likely environmental effects of this project, and the issues raised in the referral responses by individuals and agencies to whom this project application was referred, and after due consideration, the RA has concluded that the final screening report for this project accurately and appropriately addresses the significant and/or potentially significant environmental effects that have been identified.

Given the mitigations provided in the screening report, combined with the analysis and mitigations provided above, the RA is satisfied that this project is not likely to cause significant adverse environmental effects. Accordingly, the *Environmental Assessment Act* determination is that, subject to the mitigation requirements contained in the screening report and in the Reasons for Decision as per above, this project is hereby authorized.

Authorization: \_\_\_\_\_ (original signed)  
Gary W. Miltenberger, R.P.F (BC)  
Director, Forest Management Branch

\_\_\_\_\_ May 19, 2004  
Date

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