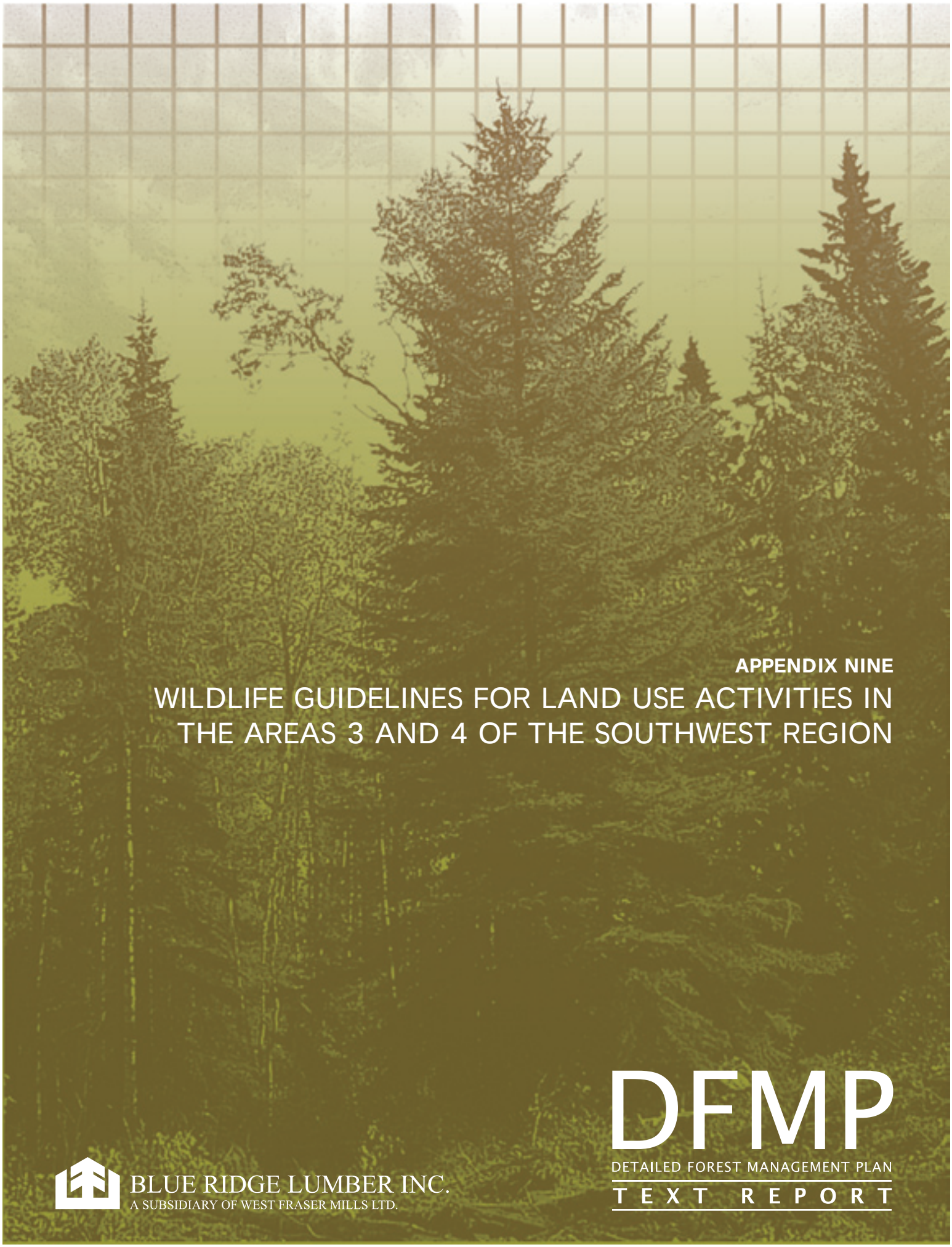

APPENDIX NINE

WILDLIFE GUIDELINES FOR LAND USE ACTIVITIES IN THE AREAS 3 AND 4 OF THE SOUTHWEST REGION

BLUE RIDGE LUMBER INC.
A SUBSIDIARY OF WEST FRASER MILLS LTD.

DFMP
DETAILED FOREST MANAGEMENT PLAN
TEXT REPORT

Wildlife Guidelines For Land Use Activities In Areas 3 and 4 of the Southwest Region

Fish and Wildlife Division

Alberta Sustainable Resource Development

September 15, 2005

These guidelines are endorsed by:

Original Signed

Glenn Selland,

Land Use Operations Branch, Executive Director

Original Signed

Jim Skrenek

Wildlife Branch, Executive Director

Date: Nov. 18, 2005

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Introduction

The following guidelines are not intended to conflict with any existing agreement between the government and any industrial stakeholder (e.g. Detailed Forest Management Plans, Operating Ground Rules). Specific guidelines are not applicable where they conflict with specific objectives and strategies in existing agreements. Much of the area falls within Forest Management Agreement areas and FWD staff will attempt to provide meaningful input into the conservation and protection of the wildlife resource through the forest management planning process.

In September 1991, staff of the Fish and Wildlife Division, Eastern Slopes Region developed a set of land use guidelines for industrial activities for the conservation and protection of wildlife populations and their habitats in the Rocky Mountain House, Edson and Whitecourt Forests. These guidelines and associated referral maps have been updated and revised, where applicable, to reflect changes in wildlife inventories, policies and ongoing land use activities, as well as changes in jurisdictional boundaries.

This report and the new June 8, 2004 version of the referral map are to be used by both industry wishing to conduct an activity on public land and an Officer of the appropriate land management agency for applying wildlife conditions to all land use activities in Areas 3 and 4 of the Southwest Region. As before, the system is based on land classification, each class with a set of guidelines, which are described in this document and depicted on the "Wildlife Referral Map for Land Use Activities in Areas 3 and 4 of the Southwest Region" (Referral Map).

Although the majority of the area is not zoned, this is not meant to imply that there are no wildlife concerns. This document includes a set of *General Conditions* that are to be applied to all lands. The impact of human development on wildlife habitat needs to be assessed and addressed in the land use approval process throughout the region.

Land use activity restrictions still apply to Zone 1 (Prime Protection - East Slopes Policy) and other legislated protected areas (e.g., ecological reserves, natural areas, Parks and protected areas, etc.).

For land use activities in proximity to watercourses, please consult the map for the "Code of Practice for Pipelines and Telecommunication Lines Crossing a Waterbody" or the "Code of Practice for Watercourse Crossings" to determine the appropriate Restricted Activity Periods for watercourses and the specific aquatic protection operating conditions required for these activities. Contact your local Alberta Environment Water Resources Branch (Spruce Grove 780-960-8635) for compliance with provincial Water Act legislation.

In relation to the application of federal laws relating to the Fisheries Act (Canada), proponents should contact Habitat Management, Prairie Region, Fisheries and Oceans, 7646 - 8th Street NE, Calgary, AB T2E 8X4 phone: (403-292-5160). In relation to the Navigable Waters Protection Act contact the Canadian Coast Guard, 9021- 46 Street, Edmonton, Alberta, phone (780-495-3701).

General Impacts of Developments on Wildlife

- Within the White Area, direct loss of wildlife habitat (e.g., removal of isolated "islands" of forest cover by wellsites, roads, cutblocks, etc.).
- Reduction of useable wildlife habitat as a result of displacement of wildlife from areas of ongoing land use activity (e.g., elk avoidance of meadows with roads in them).
- Seasonal disturbance of wildlife during critical periods (e.g., winter land use activities in ungulate winter range causing disturbance which can increase energy expenditure, reduce reproductive success, increase predation and contribute to over-hunting of populations).
- Excessive loss of wildlife through hunting and poaching due to proliferation of access and vehicle access being left open in important wildlife habitat.
- Destruction of unique or rare wildlife habitat sites (e.g., destruction of nesting sites, disruption of mineral lick).

These general types of impact concerns should be considered in placement of conditions on those applications where FWD referral does not occur.

Application of Conditions

In order to minimize impacts of industrial, recreational and agricultural developments on wildlife, site-specific conditions should be applied by the Forest Officer. The guidelines below are based on the classifications on the Referral Map and should be used to provide further assistance in determining the appropriate conditions to be placed on various activities.

As stated earlier, FWD staff will only be responding to these dispositions as a consequence of requests by a Forest Officer. Where questions arise, and for dispositions in those areas indicated as requiring consultation, there should be discussion of conditions between the Forest Officer and the appropriate wildlife staff.

Guidelines and Background Information

General Guidelines Outside of Specific Wildlife Zones

The following guidelines apply to all industrial activities within the region and are to be applied by the appropriate land management agency.

1. All new geophysical lines must follow the provincial "Policy and Procedures Document for Submitting the Geophysical Field Report Form" available on the Departmental website.

2. Road alignments should not parallel watercourses within 100m of the stream.

3. Important wildlife sites such as in river valleys, riparian meadows, south-facing hillsides, mineral licks, etc., should be avoided by roads and other surface disturbances.

4. There should be no resource extraction within areas affected by watercourse flows, 1:100yr flood events, and channel migrations; including islands and permanent water bodies such as oxbows, beaver ponds, sloughs, etc.

5. A buffer of natural undisturbed vegetation with a minimum width of 100m should exist between wellsites, PIL's, gravel exploration gravel pits and the banks of any watercourse.

6. Aggregate removal should avoid outside bends or banks with slopes greater than 25%.

7. Wellsites in meadows, open muskegs, or isolated forest cover stands should be avoided. Where, for site-specific reasons, locations of the above descriptions are being considered, wildlife staff should be consulted prior to condition placement. Conditions such as timing of activities, control of access etc., may be required in such cases.

8. For proposals of miscellaneous leases (ATRL leasing process), impacts of secondary activities associated with the disposition should be considered (e.g., ATV use, recreational activities, etc.).

Class A – Special Management Areas (SMA)

These areas require site specific conditions for a variety of reasons. Contact the appropriate land management agency for timing and surface access restrictions. The following guidelines apply to the Grazing Reserve SMA's:

1. New surface disturbances (roads, pipelines, powerlines, wellsites, gravel pits, miscellaneous leases) should not be approved in forested leave areas, wherever possible.

2. In forested leave areas, new cut lines should be 'minimal impact lines'.

Where exceptions to the above are requested, Forest Officer consultation with wildlife staff should take place.

Table 1. Intent of wildlife guidelines within SMA's in Areas 3 and 4.

Area	Primary Intent	Guidelines
Pembina, Connor Creek, and Sang Lake Grazing Reserves	To maintain existing forest reserves as habitat for wildlife.	Consult with local Wildlife Biologist
Pioneer Benchmark Site and Hornbeck Ski Area	Biodiversity benchmark sites. Areas where man-made disturbance will be minimal and thus will provide a measurement of natural disturbance/regeneration within the Lower Foothills Natural Subregion.	Consult with local Wildlife Biologist
Shiningbank Buck For Wildlife Area	To minimize the continued proliferation of all-weather roads. The Shiningbank Buck For Wildlife Area is critical winter range for a regionally significant moose population. In addition, the area supports good populations of mule deer and white-tailed deer and an expanding elk population.	Appendix 1
Pinto Creek Goat Cliffs	Forest-dwelling mountain goat herd.	Appendix 2
Whitecourt Mtn., Groat Creek, and Eagle Tower	Area biologists and the *Canada Land Inventory for Ungulates* have identified this as an area with unlimited ungulate carrying capacity and a winter range on which animals from surrounding areas depend.	Appendix 3
Athabina	This area is the intersection of two major riparian corridors: the Athabasca and the Pembina. As such it is regionally significant habitat for wildlife.	Appendix 3

Class B – Access Limitations

These are areas of high quality wildlife habitat, especially as grizzly bear habitat. Local research on grizzly bears (Foothills Model Forest Grizzly Bear Project) supports work from other jurisdictions (e.g. Parsnip, Swan Valley, East Slopes/Central Rockies Study) which indicate that that the preponderance of human-caused grizzly bear mortalities occur in close proximity to roads. Most non-hunting mortalities are illegal kills, however self-defense kills and vehicle collisions have also been documented. To exacerbate the situation, females spend more time closer to roads and hence have a higher risk of mortality. Given the denning habits of grizzly bears (late fall to early spring), there are two main access management strategies to reduce these types of mortalities:

- To limit industrial access usage to the winter season when bears are in their dens.
- To reduce the class and tenure of access in order to minimize the probability of human-bear contact. The creation of permanent summer access is of major concern and all new access should be limited to temporary frozen-ground access only.

The following guidelines should be applied by the appropriate land management agency.

1. All new geophysical lines must follow the provincial "Policy and Procedures Document for Submitting the Geophysical Field Report Form" available on the Departmental website except west of Hwy 40 where new lines will be heli-portable, unless approved by a Forest Officer.

2. For lines required to be greater than 4.5 m wide (pipelines, powerlines, etc.) one or more of the following should be applied:
    - Roll-back is required across the entire width of the clearing at 400m intervals, and where the line intersects a watercourse or existing access. Rollback should be of sufficient height to limit 4x4 pick-up truck access,
    - Replace all rollback along the entire length of line, or
    - Use live vegetation to block line-of-sight and vehicle access at intersections with existing access.

3. Where vehicle access is required, low grade frozen ground access should be used. An example of the type of road preferred is the use of Type I or II access as defined by the Oil and Gas Access- Best Practices in the West-Central Alberta Caribou Ranges document (see *Glossary*). Grading or gravelling at specific intervals on the road alignment to address unfrozen ground or slope conditions is acceptable upon review by a Wildlife Biologist and approval by a Forest Officer.

4. In order to discourage an increase in recreational vehicle use, access should be designed as dead-ends and should not loop through the area. Roads should be designed to avoid as many creek/river crossings as possible.

5. Regulations are in place to establish re-vegetation reclamation standards. Not withstanding this, preference is for re-vegetation to replicate community types present prior to disturbance. Planning and operations should focus on appropriate soil protection measures, plantings and avoidance of competition to achieve this preference. For more information consult the Native Plant Revegetation Guidelines for Alberta (February 2001) (http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/webdoc2721).

6. Upgraded access, similar to that described in the Best Practices document as Type III and IV access *(See Glossary)* will be discouraged within the zone). Exceptions will be considered for sour gas wells, sweet gas wells with liquids, or sour oil wells, contingent upon demonstration that drilling from outside the zone or from existing all-weather access is not feasible. In addition, it is recognized that a higher standard of road may be required in areas of steep topography or other areas where there are high environmental concerns. Access control is needed to minimize vehicle traffic on all-weather roads. Acceptable forms of access control are gates, concrete barriers, and removal of bridges.

Table 2. Intent of access limitations with Class B Areas.

Area	Primary Intent
Grave Flats and Cardinal River	Has potential to be good elk and moose habitat, however populations are in a recovery phase.
Beaverdam Creek	Good moose habitat
Obed Hills	Elk and moose range
Lovett Ridge	Good ungulate habitat (moose, deer, elk).
West of Hwy 40/North of Hwy 16	Grizzly Bear, Elk, moose and deer habitat

Class C – Key Wildlife and Watercourse

This wildlife zone is a combination of critical wildlife habitat from both uplands and major watercourse valleys. The intent of this zone is to

- protect regionally-significant wildlife movement corridors;
- protect areas with rich habitat diversity and regionally-significant habitat types;
- protect critical hiding and thermal cover for ungulates; and
- protect the complex structure and processes of riparian areas

To achieve the above goals, guidelines for industrial activities in this zone aim to (in order of priority) prevent loss and fragmentation of habitat; prevent long-term all-weather vehicle access; prevent sensory disturbance during periods of thermal or nutritional stress on wildlife; and prevent the development of barriers to wildlife corridors (e.g. stream crossings).

The boundaries for the zone were digitized at the 1:20,000 scale. The *watercourse valley zone* is the area affected by the watercourse flows, 1:100yr flood events, and channel migrations; including islands and permanent water bodies such as oxbows, beaver ponds, sloughs, etc. The zone extends 100m wider than the landform break between uplands and the fluvial hillslopes dropping into a major watercourse (Figure 1). In addition to the *watercourse valley zones*, *key wildlife zones* were based on wildlife survey data, rare landforms, and areas with high potential for biodiversity.

The following guidelines are not intended to conflict with any existing agreement between the government and any industrial stakeholder (e.g. Detailed Forest Management Plans). Specific guidelines are not applicable where they conflict with specific objectives and strategies in existing agreements.

Guidelines

Provincial land use guidelines for industrial activities within "Key Ungulate Areas" are found in Appendix 4. The Class C wildlife zone is considered key ungulate habitat, therefore these provincial guidelines are applicable to the Class C areas. Areas 3 and 4 of the Southwest Region are considered part of southern Alberta; therefore the January 1 to April 30 timing restriction is applicable (see exceptions below). Updates for these provincial guidelines can be found on the web at www3.gov.ab.ca/srd/fw/landuse.

In addition to the provincial guidelines, the following guidelines should be applied by the appropriate land management agency.

1. There should be no resource extraction within areas affected by watercourse flows, 1:100yr flood events, and channel migrations; including islands and permanent water bodies such as oxbows, beaver ponds, sloughs, etc.

2. Regulations are in place to establish re-vegetation reclamation standards. Not withstanding this, preference is for re-vegetation to replicate community types present prior to disturbance. Planning and operations should focus on appropriate soil protection measures, plantings and avoidance of competition to achieve this preference...

Geophysical

3. Seismic will be a maximum of 4.5m wide Low Impact Seismic (LIS).

4. For lines required to be greater than 4.5 m wide (pipelines, powerlines, etc.) one or more of the following should be applied:
    - Roll-back is required across the entire width of the clearing at 400m intervals, and where the line intersects a watercourse or existing access. Rollback should be of sufficient height to limit 4x4 pick-up truck access,
    - Replace all rollback along the entire length of line, or
    - Use live vegetation to block line-of-sight and vehicle access at intersections with existing access.

Access

5. Where vehicle access is required, the use of temporary low grade frozen ground access will be used. An example of the type of road preferred is the use of Type I or II access as defined by the Oil and Gas Access- Best Practices in the West-Central Alberta Caribou Ranges document (see *Glossary)*). Grading or gravelling at specific intervals on the road alignment to address unfrozen ground or slope conditions is acceptable upon review by the Wildlife Biologist and approval by the Forest Officer. If Type I or II access is used, activities (e.g. drilling, harvesting) should start prior to January 1 and terminate prior to breakup.

6. In order to discourage an increase in recreational vehicle use, access should be designed as dead-ends and should not loop through the area. Roads should be designed to avoid as many creek/river crossings as possible. There should be no more than one road crossing per 20 kilometers of the creek or river.

7. All access should be reclaimed within two years of completion of operations (e.g. timber harvest, hole abandonment).

8. The intent in these key wildlife and watercourse areas is to minimize the creation of new all-weather access. Consequently, upgraded access should not be permitted within the zone. Exceptions will be considered for sour gas wells, sweet gas wells with liquids, or sour oil wells, contingent upon demonstration that drilling from outside the zone or from existing all-weather access is not feasible. If upgraded access is necessary, provincial timing restrictions (January 1 to April 30) on industrial activities are applicable and required. Access control is needed to minimize highway vehicle traffic on these roads. The following are acceptable forms of access control: gates, concrete barriers, and removal of bridges. **Again, the highest priority should be to approve the option that uses winter access and strives to develop the resource out of the valley (e.g. remote well production).**

Oil and Gas

9. All gas and oil wells should be operated remotely from outside the zone. Exceptions will be considered for sour gas wells, sweet gas wells with liquids, or sour oil wells.

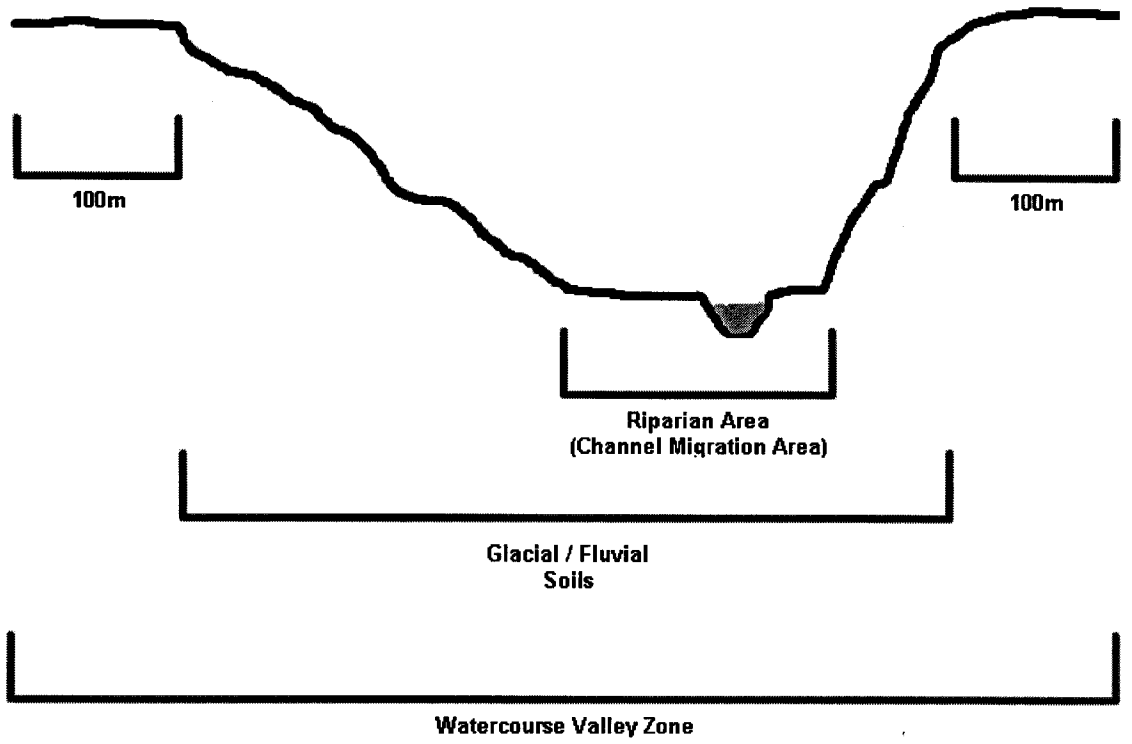

Figure 1. Cross section of idealized watercourse illustrating areas designated as *Watercourse Valleys*.

Class D - Trumpeter Swan and Heron Nesting Colonies

Provincial land use guidelines for industrial activities within the Class D zone are found in Appendix 5. Updates for these provincial guidelines can be found on the web at www3.gov.ab.ca/srd/fw/landuse.

In addition to the provincial guidelines, Wild Rice plantings (WRO) should not be approved.

Class E – Caribou Range

There are two caribou ranges within Areas 3 and 4 of the Southwest Region, the Smoky/Al la Peche and the Slave Lake range. Activities within the West Central Alberta Caribou Range must comply with 1996 West Central Alberta Caribou Standing Committee Operating Guidelines and the Oil and Gas Access – Best Practices Within the West Central Caribou Range. A key component of these guidelines is the requirement for a Caribou Protection Plan (CPP) to be submitted prior to October 15. For further direction, please consult these documents.

The following guidelines apply in addition to the aforementioned documents:

1. Perpendicular all-weather road extensions are permitted to access wells within 100m of existing all-weather roads.

2. All access should be reclaimed to natural vegetation within two years of completion of operations (e.g. timber harvest, hole abandonment).

Activities within the Slave Lake Caribou Range (northeast tip of Area 4) must comply with the "Strategic Plan and Industrial Guidelines for Boreal Caribou Ranges in Northern Alberta" (September 2001).

Class F – Bighorn Sheep and Mountain Goat Ranges

These areas contain regionally and provincially significant concentrations of bighorn sheep and mountain goats. Provincial guidelines are provided in Appendix 6 and will be applied by the appropriate land management agency. Forest Officer consultation with wildlife staff should take place for all disposition requests. The Pinto Creek goat range is a special management area and is considered a Class A wildlife zone (see above).

Appendix 1. Shiningbank Buck For Wildlife Area Access Management Plan - December 1999[1]

Introduction

This plan was developed through a series of meetings and correspondence with representatives from the oil and gas industry, Weyerhaeuser (Edson), and Alberta Fish and Wildlife Division and Public Lands and Forest Division, Alberta Sustainable Resource Development (Edson) from July through September of 1999 (see Appendix 1 for participant list). This plan provides guidelines for the location of roads, quality of roads, access control measures and season of activity within the Shiningbank Buck For Wildlife Area (SB BFWA). This plan should be reviewed every 5 years by all concerned stakeholders or more frequently if necessary.

Intent

The intent of the SB BFWA access management plan is to limit the fragmentation of the landscape by linear developments. In particular the intent is to minimize the amount (# of kilometres) of all weather roads and the number of entry and exit points, and to ensure that no loop roads occur.

Rationale

The SB BFWA is a regionally and provincially significant moose habitat area (as well as for deer and elk). This area is also becoming an intensely industrialized landscape with increasing timber harvesting and oil and gas development. One of our major fisheries and wildlife management concerns is the increasing amount of all weather/high grade roads that have been constructed and are planned for the future. The continued high value of this area for the fish and wildlife is threatened as an extensive network of high grade roads make the area easily accessible all year round.

Presently SB BFWA has a healthy population of moose and with mature forest being converted to young stands through logging, plentiful habitat will be available in the future. Adequate enforcement is not possible over a network of interconnecting roads with many entrance and exit points. Our concern is not with the hunting season which is currently well regulated, in particular for moose (bulls only on permit) and there is no intent to limit OHV access in the area beyond current regulations. However with the close proximity of this area to Edmonton it is vulnerable to overexploitation from unregulated harvest as roads continue to be built. If populations go into decline due to over harvest it will be too late to close roads already built. We need to be proactive in our planning and try to head off a problem before it happens. In addition roads and road traffic in itself are a disturbance to wildlife populations that results in loss of habitat through avoidance or less effective use. It is important to minimize the loss of habitat to roads in this area.

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[1] This area is part of Class A - Special Management Area

In general the high grade roads will not have gates as unmanned gates do not remain closed on roads that are used by several companies.

Guidelines

These guidelines provide a variety of tools that can be used to meet the intent of the SB-BFWA Access Management Plan. Additional tools and ideas may arise over time and could be applied as long as they do not compromise the intent of the plan. Any proposals that deviate significantly from the guidelines will require review by the stakeholders as a whole. Minor deviations from the guidelines will be a joint decision of PLFD and FWD.

1. There are 5 access control zones. Each zone has only one entry/exit point for a primary access route (see Figure 1). All new activity within the zones will occur off a primary route using low quality access. Site specific exceptions will be considered.

2. After activities are completed (e.g. harvest operations are finished or a well proves to be dry), low quality access will be effectively blocked[2] at any point of intersection with a high grade road.

3. Additional high grade roads that enter an access zone may be considered but should be for short term use (≤1 year) and should be effectively blocked upon completion of activity. This would primarily apply to timber harvesting where summer harvesting or several entries over time are required.

4. No gates are required on the primary access routes into each zone. If a portion of these routes are single operator use only then that portion of the road should have an effectively locked gate[1].

5. There will be no high grade roads connecting access zones. In addition low quality access that is no longer required for operations and that connect or intersect a high grade road should be effectively blocked.

6. Winter will be the primary time for resource extraction activity on winter quality roads. Exceptions will be reviewed on a site specific basis; for example if activity is localized (such as a well site) and within 0.5 km of a primary access route. The intent of this guideline is to minimize the amount of high quality roads.

7. Well site roads off of a primary access route should be low quality. If a high grade road is required, for example, oil or sour gas well, then a locked gate should be installed.

8. Localized activity within 1 km of the SB BFWA boundary does not need to be accessed by a primary access route. Locked gates are required for high quality access.

9. Seismic activity will be low impact, preferably hand cut, portable. Where effective, low impact tree avoidance seismic will apply. Where material is available, seismic lines should have rollback for 30 m where they intersect a primary access route.

10. Pipelines will have effective access control for all motorized vehicles unless required as a low quality access route to a well site, harvest block, etc.

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[2] See definitions at end of Guidelines

It is important to understand that these guidelines may not provide a solution for all situations. Additional approaches or solutions can be proposed for access to this area. Such proposals should meet the intent of the SB BFWA Access Plan and be fair with respect to previous commitments and future needs of other operators in the area.

These guidelines apply to all activity that occurs within the SB BFWA as of September 2, 1999. However this planning area requires additional actions (road closures, new gates) with respect to current roads before the intent of the plan is met. The following section describes what actions are required and the time frame to complete the SB BFWA Access Plan.

Definitions

1. 'Effectively blocked' means that as a minimum a berm and cross ditching will be constructed to the satisfaction of the Lands and Forest Officer in charge.

2. 'Effectively locked' means that the gate will be locked at all times. Gates can be unlocked during periods of short-term intensive activity when the road is used by multiple parties.

Short Term Implementation Plan

1. Use Cricks Creek Road as the primary access route for Zone 2*. This requires the following road closures(see Figure 1):

- the Kathleen Lake Road will be effectively closed except for short-term use.
- the Whiteside Road will be blocked where it crosses from Section 2 in Twp 57 Rge 15 W5 to Section 35 in Twp 56 Rge 15 W5. A joint field inspection between Talisman and Public Lands is required to determine exact location. The Whiteside Road will then be connected to the Cricks Creek Road. The gate on the property of Russell Hakes will be maintained.
- the Ladd Road will be blocked at the 'Y' (Sec. 27 Twp 56 Rge 15 W5) at a location that is acceptable to Public Lands, Beau Resources and Talisman. The Ladd Road will then be connected to the Cricks Creek Road.
- the loop road between Zone 1 and 2 will be blocked at existing gate on road that runs north from Long Lake.

*Portions of this road that are single operator use only will require a locked gate.

2. The existing loop road in Zone 5 will be blocked. A gate will be installed at the north end of Shiningbank Energy's LOC and the exact location will be based on a joint field inspection by Shiningbank Energy, Talisman and Weyerhaeuser.

3. Any single operator roads that currently enter the planning area for a short distance should have effective locked gates. Such roads are Beau Canada road between sections 5 and 6-57-14-W5M, Poco road NW30-57-13-W5M, Rio Alto road1 section 2-56-16-W5M. There may be more such roads.

Participant List

The original document included a list of participants who helped develop the plan. This list can be obtained from the appropriate land management agency upon request.

Appendix 2. Criteria for Industrial Activity in Pinto Creek Goat Special Management Area

Introduction

Mountain goats inhabiting the Pinto Creek "H" zone are a unique forest dwelling population, dependant on cliff complexes and adjacent forested lands extending an estimated 2 kilometers from the cliffs (Harrison 1999). Population size is estimated at 25-35 animals (unpublished NRS and Weldwood of Canada data). The Pinto Creek "H" zone may form a core population concentration allowing goat presence in low densities throughout the Wildhay River and Pinto Creek drainages. Mountain goats are susceptible to disturbance, resulting in increased energy expenditure, reducing time on preferred habitats and increased risk of injury to individuals (Cote 1996). Mountain goats are believed more susceptible to disturbance than other ungulates and industrial activity likely reduces mountain goat ability to move unpredictably over large areas, as an anti-predator strategy (Festa-Bianchet 2000). Industrial activity may increase the concentration of predators (bears and wolves) into undisturbed habitats sought by goats, thus increasing predation risk (Harrison 1999). Mountain goats have low reproductive potential and resiliency to environmental change (AENV 2000). Small population size and isolation from other populations renders the Pinto Creek mountain goat population susceptible to environmental change and disturbance with low potential for recovery. Therefore very conservative land-use strategies are required in order provide reasonable probability of maintaining the Pinto Creek mountain goats.

Background

In recognition of goat sensitivity to disturbance and low resiliency to environmental change, Alberta Environment, through Land and Forest Service land management team and Natural Resources Service, wildlife branch, implemented a strategy targeted at eliminating short-term industrial disturbance and long-term footprint in the Pinto Creek "H" zone. Activities have been conducted solely with the cooperation of the petroleum industry to date and implemented through the land-use approval process. Prospective petroleum exploration and development activities to date (Nov.22.2000) have all adopted the strategy (AENV- LFS files). Consistency among all industrial players in the "H" zone is critical to success for reasons of: maintaining a level economic and competitive playing field among industrial interests and ensuring industrial activities are compatible with respect to supporting the conservation efforts of individual land users. The strategy focuses on:

- conducting industrial activities at times when goats are least sensitive to disturbance;
- localizing industrial activity so that only small areas of the "H" zone are not available to goats at any point in time;

- providing periods of no industrial activity to allow goats full use of the H" zone following each industrial activity period and during sensitive periods in the goat life cycle and
- conducting activities such that ideally no long-term residue of industrial activity persists.

Strategy and Operating Conditions

1. No operations from May 1 – June 30 to accommodate goat kidding

2. No operations from Nov. 1- December 15 to accommodate goat rutting

3. Operations are allowed in the open windows subject to:
   - 3 open windows are defined: July 1- August 31, September 1- October 31; December 15- April 30
   - Only 1 program for each open window
   - Activity for any 1 program is limited to 1 to 2 lines
   - Lines are to be in close proximity to render the active area as a small portion of the "H" zone The intent is to limit the disturbance by limiting the amount of area that is active.
   - No new cutting preferred and where cutting is needed it is limited to handcuts for foot access preferably and secondarily for enviro-rigs
   - Approximately a maximum 14 day operating period within each open window, subject to minor (2-3 day) variance to accommodate individual programs
   - No helicopter flights below 400 meters at any time

4. The winter open window (December 15-April 30) is provided, contrary to other ungulate zones, based on the following rationale: That only one program of a maximum 14 day duration meeting conditions 1-6 above will occur. If this level of activity is not exceeded and is adequately localized we believe a winter open window can be offered to provide additional industrial operating opportunity in view of the 2 closed windows (May 1-June 30 and November 1-December 15) which do not occur in other ungulate zones and the limit of one industrial program per open window.

5. It is assumed that goats will move away from the program operating area for at least the duration of the program. Therefore a period of no activity of at least 14 days and preferably 30 days is required between the 2 programs that potentially may occur cumulatively between the 2 consecutive open windows of July1-August 31 and September 1- October 31.

6. The August 22 outdate required for alpine mountain goat and bighorn sheep ranges, as per proposed guidelines, is not applied in the Pinto Creek mountain goat "H" zone because bighorn sheep hunting does not occur.

7. No roads or wellsites within the "H" zone. Target zones within the "H" zone are to be directionally drilled

Literature Cited

AENV, 2000. Management Plans for Mountain Goats in Alberta. Wildlife Management Planning Series Number 7. Discussion Draft April 2000. Alberta Environment, Natural Resources Service.

Cote, S.D. 1996. Mountain goat responses to helicopter disturbance. Wildlife Society Bulletin 24: 681-685.

Festa- Bianchet, M. 2000. Expert opinion on likely consequences of coal mining on the Caw ridge mountain goat population. Submitted to Brian Bildson and copied to Rick Ostertag of AENV, October 31, 2000.

Harrison, D.G. 1999. Distribution and movements of canyon dwelling mountain goats along Pinto Creek, Alberta. M.Sc. Thesis, University of Northern British Columbia, Prince George, British Columbia.

Appendix 3. Wildlife Guidelines for Special Management Areas of the Woodlands Area (March 6, 2003).

Rationale for Special Management

In the fall of 2002, wildlife zones in the Woodlands Area were simplified and minimized to reflect realities of land use pressures. The former "moose zones" were chosen as areas that could be significantly reduced. To identify regionally significant areas of the "moose zone" that should be retained, the former moose zone was overlaid with the Canada Land Inventory Capability Map for Ungulates. The overlapping areas were retained and designated as Special Management Areas.

The Canada Land Inventory (CLI) was a co-operative federal-provincial program under the Agricultural and Rural Development Act (ARDA) designed to provide a basis for land use planning at the municipal, provincial and federal levels of government. It includes assessment of lands in the settled portion of Canada, according to their use capability for agriculture, forestry, wildlife and recreation.

The CLI wildlife classification system was developed in co-operation with the Canadian Wildlife Service and provincial wildlife agencies (e.g. Alberta Fish and Wildlife). The majority of Canada was surveyed at the 1:50,000 scale, the remainder was done at 1:250,000 scale.

Wildlife capability maps were prepared as follows:

- The land surface was separated into units based on biological and physical characteristics which control the numbers of ungulates that can be produced and supported on a unit of land. The ability of the land to provide sufficient quantity and quality of food and water, protective cover, and space for survival, growth, and reproduction were all considered in determining boundaries.
- Each land unit was assigned a class based on all known or inferred relevant information about the unit (parent material, soil profile, depth moisture, fertility, landforms, climatic factors, vegetation, etc.) which reflect the quantity and quality of food and cover for ungulates.
- Classifications were based on the natural state of the land under good, feasible wildlife management practices.
- Location, access, ownership, distance from cities or roads, present condition, present vegetative cover and wildlife production, and excessive or insufficient hunting pressure were not considered when assigning a capability class to a land unit since these factors can change through time and do not limit the inherent capability of the land.

The Athabina Special Management Area is located between the Pembina and Athabasca rivers, and lies north of the Hubert Lake Wildland Park. While there are some private agricultural lands and some grazing leases within the boundary, the area has many regionally significant wildlife values. The area is very important for elk, moose, and deer at the confluence of two major riparian corridors and winter cover. Woodland caribou have been observed in the area and it is possible that there are a few which still use the area today. In addition, the riparian area acts as a travel corridor and concentration for many species of wildlife including lynx, wolf, wolverine and fisher. The area also provides forested habitat for a variety of bird species which are losing habitat on private land to the east

Guidelines

The following land use guidelines apply to the Special Management Areas in the Woodlands Area:

1. Where vehicle access is required, the use of temporary access (Type I or II, see *Glossary*) is recommended.

2. Upgraded access (Type III or IV) should have sufficient road-side vegetation to eliminate line-of-sight into clearings (i.e. wellsites, cutblocks, etc). Road-side vegetation is not required if line-of-sight from the road is limited to a maximum of 200m using opening size, topography, residual structure, etc.

3. Roads should be designed as dead-ends and should not loop through the area. All roads should run perpendicular to creeks or rivers.

4. Seismic will be a maximum of 4.5m wide Low Impact Seismic (LIS).

5. For lines required to be greater than 4.5 m wide (pipelines, powerlines, etc.) one or more of the following should be applied:
    - Roll-back is required across the entire width of the clearing at 400m intervals, and where the line intersects a watercourse or existing access. Rollback should be of sufficient height to limit 4x4 pick-up truck access,
    - Replace all rollback along the entire length of line, or
    - Use live vegetation to block line-of-sight and vehicle access at intersections with existing access.

Appendix 4. Recommended Provincial Land Use Guidelines for Key Ungulate Areas (August 6, 2002).

The FWD website (www3.gov.ab.ca/srd/fw/landuse) should be checked regularly for updates to these guidelines.

Appendix 5. Recommended Provincial Land Use Guidelines for Trumpeter Swan Habitat (October 30, 2001).

The FWD website (www3.gov.ab.ca/srd/fw/landuse) should be checked regularly for updates to these guidelines.

Rationale for Special Protection of Trumpeter Swan Habitat

Trumpeter Swans breed on lakes, beaver ponds, and marshes scattered mainly across the Aspen Parkland and Boreal natural regions of Alberta. The majority of swans are found in northern Alberta near Grande Prairie, Peace River, High Level, High Prairie, Edson, and Lac La Biche. Small populations are also found in southern Alberta near Pincher Creek and central Alberta near Elk Island National Park. The species formerly bred throughout Alberta, but was thought to have been extirpated by the early 1900s, at which time it was thought to be close to extinction across its range.

Today, trumpeter swans are listed as a Threatened species under Alberta's *Wildlife Act*, and as such are afforded protection against hunting and the destruction of nests. The population of trumpeter swans in Alberta is increasing, but very small (fewer than 1000 breeding individuals). There are still concerns about whether the recovery will continue, as well as concerns about the security of the wintering habitat of the Alberta birds. Populations do not appear to establish themselves easily in new wintering habitat. Therefore, as long as wintering habitat is limited, the risk of regional extinction for Trumpeter Swans in Alberta will not be reduced by immigration from neighbouring populations. Accidental hunting and power line collisions are also threats.

Trumpeter swans are sensitive to human disturbance, and human activity in breeding areas may decrease survival of eggs or cygnets. Trumpeter swans that are disturbed repeatedly may not nest or may abandon an existing nest. Therefore, the breeding population continues to be dependent on current management practices and habitat protection. For further information on trumpeter swans, please see *Alberta's Threatened Wildlife* (www3.gov.ab.ca/srd/fw/threatsp/index.html) and *Alberta Wildlife Status Reports* (www3.gov.ab.ca/srd/fw/status/reports/index.html).

In an effort to continue the recovery of trumpeter swans, industrial land use guidelines should reflect the sensitive nature of this species. These guidelines serve three primary purposes:

- protection of the long term integrity and productivity of trumpeter swan breeding habitat;
- avoidance of industrial disturbance to trumpeter swans during nesting and rearing of cygnets; and

- minimise the access created near swan lakes to reduce the potential for secondary disturbance of trumpeter swans from recreational use.

Land Use Guidelines in Trumpeter Swan Habitat

The Fish and Wildlife Division of Alberta Sustainable Resource Development recommends the following conditions be applied to activities near trumpeter swan habitat through the land use permit system:

All Activities

1. April 1 to Sept. 30, no activity within 800 m of the high water mark of identified lakes or water bodies.

2. April 1 to Sept. 30, no direct flights over identified lakes or water bodies.

3. No long term development (roads, wells, pipelines, etc.) within 500 m of the high water mark on identified lakes or water bodies.

Geophysical

4. Conventional clearing of new lines should terminate 800 m from the high water mark of identified lakes or water bodies.

5. Low impact seismic (LIS) lines should terminate 500 m from the high water mark of identified lakes or water bodies.

6. Heli-portable and/or hand-cut lines (up to 2.5 m wide) should terminate 100 m from the high water mark of identified lakes or water bodies.

7. A survey line of sight (0.5 m) is permitted from 100 m up to the edge of the water body.

8. Reuse of existing lines is permitted, however, no re-clearing or disturbance of vegetation is permitted beyond the line widths listed above.

9. No shot holes where water or ice exists or on dry lakes (air/mud guns only).

Livestock Grazing:

10. No new grazing leases issued adjacent to identified lakes or water bodies

11. No range improvement within 500 m of the high water mark on identified lakes or water bodies

Timber Harvesting

12. No timber harvesting within 200 m of high water mark for identified lakes or water bodies. Establishment of a special management zone for timber harvesting between 200 m and 500 m from high water mark, with a detailed plan, is required.

Appendix 6. Recommended Land Use Guidelines for Mountain Goat and Bighorn Sheep Ranges in Alberta.

The FWD website (www3.gov.ab.ca/srd/fw/landuse) should be checked regularly for updates to these guidelines.

May 23, 2001

Introduction and Rationale

Mountain goat and bighorn sheep are alpine ungulates that react to predator/human disturbance by running to escape terrain typically consisting of cliffs and very steep slopes. The majority of goat and sheep ranges in Alberta are contained in Prime Protection Zones (Zone 1) where industrial activity is not permitted (A Policy for Resource Management of the Eastern Slopes 1977, revised 1984). However, there are a number of ranges that fall within the 'Critical Wildlife Zone' (Zone 2) designation (initially under the Eastern Slopes Policy and subsequently under various Regional and Sub-Regional Integrated Resource Plans). In these areas, the intent "is to protect ranges of terrestrial and aquatic habitats that are crucial to the maintenance of specific fish and wildlife populations".

Every effort should be made, within identified critical goat and sheep ranges, to: a) avoid land use disturbances that may have a direct or indirect adverse effect on the behaviour of the animals, and b) avoid permanent alteration of physical habitat conditions. The potential for significant direct effects on sheep and goat populations will vary with time of year and the total amount and duration of various land use activities. Of particular concern is low level aircraft activity (particularly helicopters) and any disturbances during the spring and early summer lambing and kidding period. Localized steep cliffs, that are likely to be used as escape terrain, should be given particular protection.

Research in Alberta involving heart-rate telemetry on bighorn sheep (MacArthur *et al* 1982; Stemp 1983) demonstrated negative responses to helicopter overflights. MacArthur *et al* (1982) recorded heart rate responses when helicopters were within 400 m and direct overflights at 90-250 m above ground level resulted in significant responses in terms of level and duration of heart rate and the observation of animals running to escape terrain. Stemp (1983) documented much greater responses to helicopters with repeated overpasses producing sustained anxiety for several hours. Stemp (1983) recommended avoiding helicopter use in and near to bighorn sheep range and restricting any flights to corridors and overflights to > 400 m above alpine terrain.

Cote (1996) studied the impact of geophysical helicopter activity on mountain goats on Caw Ridge, near Grande Cache, Alberta. This paper has become the definitive reference dealing with the effects of repeated helicopter activity on mountain goats in North America. The author recommends a 2000 m buffer between mountain goats (i.e. treeline) and intensive helicopter activity (i.e. heli-portable geophysical programs). Recently, this strategy has successfully been used to define limits for heli-hiking proposals in south-eastern British Columbia and for mineral exploration in Alaska.

The above-noted research findings from several ranges in Alberta, in combination with a significant increase in heli-portable geophysical proposals (particularly 3-D programs) in proximity to mountain goat and bighorn sheep ranges, has led to the development of this 'Provincial Land Use Operating Guideline'. The following specific guidelines are intended to be **minimum requirements for industrial land use activities** within, and adjacent to, identified goat and sheep ranges. Additional or different requirements may be applied where:

- Particularly unique conditions exist, such as at the Pinto Creek Goat Range north of Hinton, which is in a predominantly forested area.
- Unusually adverse weather conditions exist at the time of the proposed activity.
- Particularly critical habitat elements (e.g., cliffs providing escape terrain and mineral licks) occur within local portions of the identified range and require additional protection from industrial activity.
- Other types of land use activities are prevalent, such as heli-supported tourism, and potential cumulative impacts are a particular concern.

Guidelines

1. The **goat/sheep land use zone** shall apply to industrial land use activities within and adjacent to identified critical sheep and goat ranges.

2. The 'goat/sheep land use zone' includes all of the mapped critical sheep and/or goat range, plus an additional 800 m buffer around the range.

3. Industrial activity, within a 'goat/sheep land use zone', whether ground or air based, is to occur only between July 1 and Aug. 22, inclusive. [This is designed to avoid disturbance during the spring lambing/kidding season, land use conflicts with hunters during the late summer/fall big game hunting season in alpine areas, and stresses on animals restricted to localized areas during the critical winter season.]

4. Geophysical exploration (seismic) activity may be permitted within a 'goat/sheep land use zone' during the open window period of July 1 to Aug. 22 under the following conditions:

No more than one (1) composite program1 within a particular 'goat/sheep land use zone' in any given year, and
No more than one third of a particular 'goat/sheep land use zone', comprised of a contiguous block, is to be available to geophysical exploration during a given year.

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[1] A composite program for geophysical exploration would be a combined and co-ordinated seismic operation involving all private industry interests who want to conduct geophysical exploration within a designated goat/sheep land use zone during a particular year. Development of the composite program would require notification to Alberta Sustainable Resource Development by May 15th at the latest, so that companies could be put in touch with each other to develop a common program which would cover no more than one third of a given sheep/goat range, as a contiguous block, in any one year.

5. Where helicopter support is required for an approved seismic program within a portion of a 'goat/sheep land use zone', flight paths to and from the approved activity area should avoid all steep cliff faces that may be used as escape terrain, as well as other known high use areas, such as mineral licks. A qualified biologist, who is knowledgeable and experienced with mountain goats and bighorn sheep in field situations, should be hired by the exploration company to monitor the location and activity of sheep and/or goats within the land use zone. The monitoring activity is to be used to redirect or temporarily curtail exploration activities in the interest of minimizing disturbance to the animals, as well as to provide them with an opportunity to move into portions of their range that are not being actively explored.

6. All aircraft (helicopter and fixed-wing) flights over the 'goat/sheep land use zone' should be at least 400 m above ground level (agl), except where specifically authorized, within the intent of these guidelines.

7. No **new** ground access should be developed within the 'goat/sheep land use zone'. For those alpine ranges that currently have access, quad-supported ground crews should remain on existing exploration trails.

8. The drilling of exploration wells to prove up promising formations beneath 'goat/sheep land use zones' should be done from outside of the 'zone' using directional drilling technology, wherever feasible. Should any wells and other associated infrastructure be developed within the ' goat/sheep special management zone', road access should be designed for temporary use, and usage should be strictly controlled by locked gates and regular monitoring. Operations should involve remote technology to the fullest extent possible.

Approval Process: Roles and Responsibilities

The areas where these conditions apply will be illustrated on regional wildlife land use referral maps. The standard approval process will continue to be used.

Emergency Situations

It is recognized that in emergency situations (injuries, illness) that these helicopter restrictions will not apply.

Literature Cited

Cote, S.D. 1996. Mountain goat responses to helicopter disturbance. Wildlife Society Bulletin, 24(4): 681-685.

MacArthur, R.A., V. Geist and R.H. Johnston. 1982. Cardiac and behavioural responses of mountain sheep to human disturbance. J. Wild. Manage. 46(2): 351-358.

Stemp,R.E.1983. Heart rate responses of bighorn sheep to environmental factors and harassment. M .Env. Design. Univ. of Calgary. 314 pp plus Appendices.

Appendix 7. Glossary

Watercourse Valley Zone: areas affected by the watercourse flows, 1:100yr flood events, and channel migrations; including islands and permanent water bodies such as oxbows, beaver ponds, sloughs, etc. The zone extends 100m wider than the landform break between uplands and the fluvial hillslopes dropping into a major watercourse (Figure 1).

Type I (Frozen Access –): The purpose of Type I access is to allow for frozen ground access only. Type I routes will have a target ROW width of 8 m wide with variable allowance for terrain conditions. Road width will be minimized, wherever possible, by sharing space with pipeline rights-of-way, seismic lines and through the use of vehicle pullouts. Grading, ground, and surface vegetation disturbance shall be minimized.

Type II (Equivalent to Frozen Access -): The purpose of Type II access routes is to extend the winter drilling season and/or emulate frozen ground (Type I) style access when frost conditions are not adequate or not present. Type II access will minimize ground disturbance under non-frozen ground conditions, and will mimic frozen ground access. Innovation is encouraged in the achievement of this objective; however, compromising established environmental standards is not acceptable in the development of Type II access. Ground disturbance, surface vegetation disturbance, grade development, ROW clearing and surface improvements will be minimal. Type II can be constructed and used year round and should be constructed to withstand rain events. During unfavorable ground conditions, cessation of use or mitigation measures may be required in some cases. Type II routes will have a target ROW width of 10 m wide with variable allowance for terrain conditions. Road width will be minimized, wherever possible, by sharing space with pipeline rights-of-way, seismic lines and through the use of vehicle pullouts. Type II access may not be feasible for all terrain conditions. A combination of padding, geo-textile, matting, road culverts or corduroy may be required for nonfrozen ground conditions. Type II roads will generally be wider on hills, narrower on straight a ways. Gravel may be used in site-specific situations for safety, but its use is expected to be minimal. **Type III (Low-grade Access)**: The purpose of Type III access routes is to allow all-season access. Type III can be constructed and used year round. Low-grade access is defined as dry weather trail only with minimum or no grade. Low-grade access may be viewed as the residual trail left over from the construction of winter access. Should a portion of any low-grade access become impassable in the summer due to wet conditions, drainage problems, or rutting etc., ASRD will be approached for permission to make site specific improvements to the problematic area i.e. matting, padding, culverts etc. Some of the access improvements (e.g. matting in wet areas) which may be required to support well servicing work (e.g. wire line) could be considered as temporary only and possibly removed after the activity is over. Type III routes will have a target ROW width of 15 m wide with variable allowance for terrain conditions. Right of way width should be the minimum required to allow travel, while addressing environmental concerns. Type III roads will typically follow contours of the landscape more closely than do all-weather access roads. Drainage control and borrow material may be required on a site-specific basis. Cuts and fills will be minimized, wherever possible. Road edges will be feathered back, and vegetation will be allowed to re-establish along Type III roadways. Surface disturbance should be minimized (emulate Type II road) on the first 400 m of a Type III road, extending from an all-weather road. Site-specific factors can be reviewed in the application of this condition. When planning Type III access routes, consideration should be given to input from other resource users who have interests in the area.

Type IV (All Weather Access -): The purpose of Type IV access routes is to allow for all weather access. May or may not follow the criteria outlined in Section 1.0 for central access corridors. Type IV routes will have a target ROW width of 20 m wide with variable allowance for terrain conditions, as required for grades, back slopes, borrow areas, pullouts, etc. Cuts and fills may be required. Right of way width should be the minimum required to allow travel, while addressing environmental concerns. When planning Type IV routes, consideration should be given to input from other resource users who have interests in the area. Road requirements for oil and gas companies are typically less stringent than those of other resource industries.