

**High Conservation Value Forests (HCVF) within the
Alberta-Pacific Forest Management Agreement Area: A
Summary Report**



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Executive Summary

Identification and management of High Conservation Value Forests (HCVF) is an important component of certification according to the standards of the Forest Stewardship Council (FSC). This summary document synthesizes existing data to identify environmental HCVF within the Al-Pac Forest Management Agreement (FMA) area.

The Forest Stewardship Council (FSC) introduced the concept of High Conservation Value Forests (HCVFs) in 1999. HCVFs possess one or more of the following attributes:

- a. Forest areas containing globally, regionally, or nationally significant:
 - Concentrations of biodiversity values (e.g., endemism, endangered species, refugia); and/or
 - Large landscape level forests, contained within, or containing the management unit, where viable populations of most, if not all, naturally occurring species exist in natural patterns of distribution and abundance.
- b. Forest areas that are in or contain rare, threatened or endangered ecosystems;
- c. Forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control); and
- d. Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health) and/or critical to local communities' traditional cultural identity (e.g. areas of cultural, economic or religious significance identified in cooperation with such local communities).

Environmental HCVF within the Al-Pac FMA area include woodland caribou habitat, bird colonies and concentration sites, existing protected areas, large landscape level forests, old merchantable forests and Environmentally Significant Areas (ESAs). Proposed management strategies to maintain the attributes of HCVF within the Al-Pac FMA are presented.

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Introduction

In 2003, Kevin Timoney of Treeline Ecological Research was engaged by WWF Canada and Alberta-Pacific Forest Industries Inc. (Al-Pac) to assess high conservation value forest and non-forest ecosystems in the Alberta portion of the Mid-Continental Canadian Boreal Forests. The purpose of this report is to summarize and refine the HCVF attributes identified by Timoney (2003) and to provide a final map of HCVF attributes within the FMA area that will be managed by Al-Pac in accordance with the rigorous standards of the Forest Stewardship Council (FSC). HCVF identification is a new and evolving discipline, and as such, there is no 'right' way to perform an HCVF assessment. Few clear thresholds exist for values that will trigger HCVF designation. HCVF designation is important, because it mandates for a precautionary approach for management of values, and requires a high level of monitoring to ensure the maintenance of identified conservation values.

Final identification of HCVF values differs in some instances from those identified by Timoney (2003). Generally there are four reasons for these differences:

1. Changes to the FSC Framework and questions
2. Change in scope of assessment – this summary considers the FMA area only
3. Lack of spatial data required to meaningfully identify habitat as HCVF
4. Decisions about focal species and judgements on definitions of 'critical' or 'outstanding' values.

Readers concerned about potential differences between this summary document and the map products produced by Timoney (2003) should consult both reports. Where differences occur in identification of HCVF values, these are discussed.

Management of some potential HCVF values is extremely challenging if spatial information about the location of these values is lacking. Where lack of spatial data made it difficult to spatially identify HCVF values, this is noted in the report. An HCVF assessment can also be a useful tool for identifying data gaps that can be addressed in future assessments.

Description of the Study Area

The Al-Pac FMA is within Ecoregion 92 (Mid-Continental Canadian Forest, Ricketts et al. 1999). Timoney (2003) provided an overview of HCVF attributes for the entire ecoregion, with greatest emphasis on the Al-Pac FMA area.

The Al-Pac FMA covers an area of approximately 5.8 million hectares. East to west it spans approximately 300 kilometres from the Saskatchewan border as far west as Lesser Slave Lake. South to north, the FMA area extends from the agricultural area around Athabasca and Lac La Biche to the Birch Mountains, a distance of about 340 kilometres (Al-Pac 1999). Mesic sites are associated with Orthic and Dark Grey Luvisolic soils. Wetter sites range from Gleyed Grey Luvisols to Gleysols, reflecting the presence of

water at or near the surface for a portion of the year. Xeric or subxeric sites are often Eutric Brunisols associated with coarse parent material such as outwash or sand dunes (Al-Pac 1999). Approximately 3.4 million hectares of the FMA area (58%) consist of fens, bogs, treed peatlands and other habitat types that are considered non-productive from a forestry perspective (Al-Pac 2000). Within the FMA perimeter are a number of large exclusion areas, that are not available for Al-Pac harvest. These ‘doughnut holes’ are characterized by non-productive lands. This summary refers to the gross landbase found within the perimeter of the Al-Pac FMA (an area of approximately 6.8 million hectares), and those areas immediately adjacent to the FMA boundary.

In addition to Al-Pac operations, other important land uses within and adjacent to the FMA area include coniferous forestry operations; oil and gas exploration, development and transportation; oilsands mining; peat mining; recreational and traditional hunting; guiding and outfitting; trapping; recreational and commercial fishing; boating; gathering and infrastructure development (Al-Pac 2000).

Methods

HCVF presence was assessed using the questions identified in Appendix 4: High Conservation Value Forest National Framework of the FSC National Boreal Standard (FSC 2003). For the purpose of this assessment only environmental HCVF values were considered; therefore questions 12-19 are not addressed in this summary.

1. Does the forest contain species at risk or potential habitat of species at risk as listed by international, national or provincial authorities?
2. Does the forest contain a globally, nationally or regionally significant concentrations of endemic species?
3. Does the forest include critical habitat containing globally, nationally or regionally significant seasonal concentrations of species (one or several species. e.g. concentrations of wildlife in breeding sites, wintering sites, migrations sites, migrational routes or corridors)?
4. Does the forest contain critical habitat for regionally significant species (e.g. species representative of habitat types naturally occurring in the management unit, focal species, species declining regionally)?
5. Does the forest support concentrations of species at the edge of their natural ranges or outlier populations
6. Does the forest lie within, adjacent to, or contain a conservation area:
 - a) designated by an international authority
 - b) legally designated or proposed for protection by relevant federal/provincial body
 - c) identified in regional land use plans or conservation plans
7. Does the forest constitute or form part of a globally, nationally or regionally significant forest landscape that includes populations of most native species and sufficient habitat such that there is a high likelihood of long-term species persistence?
8. Does the forest contain naturally rare ecosystem types?

9. Are there ecosystem types within the forest or ecoregion that have significantly declined?
10. Are large landscape-level forests (i.e. large unfragmented forests) rare or absent in the ecoregion?
11. Are there nationally/regionally significant diverse or unique forest ecosystems?
12. Does the forest provide a significant source of drinking water?
13. Are there forests that provide a significant ecological service in mediating flooding and/or drought, controlling stream flow regulation and water quality?
14. Are there forests critical to erosion control?
15. Are there forests that provide a critical barrier to destructive fire (in areas where fire is not a common natural agent of disturbance)?
16. Are there forest landscapes (or regional landscapes) that have a critical impact on agriculture and fisheries?
17. Are there local communities? (This should include both people living inside the forest area and those living adjacent to it, as well as any group that regularly visits the forest).
18. Is the traditional cultural identity of the local community particularly tied to a specific forest area?
19. Is there a significant overlap of values (ecological and/or cultural) that individually did not meet HCV thresholds, but collectively constitute HCVs?

The assessment used data presented in Timoney (2003), and other published literature to review the presence of environmental HCVF attributes with the Al-Pac FMA area. Results are presented in the question format of the HCVF Framework (FSC 2003).

Results

1. Does the forest contain species at risk or potential habitat of species at risk as listed by international, national or provincial authorities?

This appears to be the most challenging HCVF question. Data are largely unavailable for the majority of species in the region, including invertebrates, fungi, bacteria, cyanobacteria, algae and protists (Timoney 2003). Even for relatively well known species, there is a paucity of data relating to distributions and population trends.

Timoney (2003) identified 17 priority focal species that reside within Ecoregion 92 (Table 1). Some synthesis of this data is required for Al-Pac management purposes, since not all these organisms reside within the Al-Pac FMA area. Presence of a species at risk does not necessarily indicate that the forest is HCVF. Other factors that should be considered include whether the species in question has susceptibility to forestry operations and whether the species is representative of habitat types occurring in the management unit (FSC 2003). Timoney (2003) recommended that the following 4 species be used as “coarse-filter” species for management: Woodland Caribou, Wolverine, Black-Backed Woodpecker and American White Pelican. Table 1 reviews the focal species identified by Timoney (2003) and provides rationale for their use as HCVF within the Al-Pac FMA area.

Table 1. Focal species within Ecoregion 92 identified by Timoney (2003) and rationale for decision on HCVF designation for the Al-Pac FMA area. Scale refers to listings by global, national or provincial authorities.

Species	Scale	HCVF designation
Peregrine Falcon	Global	No – No locations reported within the Al-Pac FMA area (Rowell and Stepnisky 1997)
Whooping Crane	Global	No – No nest locations within the FMA area. Sporadic use of wetlands areas during migration has been reported (White 2001)
Woodland Caribou	National	Yes – Detailed habitat data and demonstrated susceptibility to human activities (Dzus 2001)
Grizzly Bear	National (Special concern)	No - Kansas (2002) identifies the extreme western portion of the Al-Pac FMA area as potential grizzly habitat. Sporadic reports from elsewhere in the FMA area. Recommend more information is required before HCVF designation can be considered.
Wolverine	Global	No - Extremely rare in FMA area (Petersen 1997). Limited information about habitat requirements. Recommend more information is required before HCVF designation can be considered.
Wood Bison	Global	No – No locations reported within the Al-Pac FMA area (Mitchell and Gates 2002)
Northern long-eared bat	Provincial	No – listed provincially as “Sensitive” only (www.wildspecies.ca – accessed on November 1, 2003)
Taiga Vole		No – Status is ‘undetermined’ in Alberta (www.wildspecies.ca - accessed on November 1, 2003) and no known occurrences in Alberta since early 1900s (Pattie and Fisher 1999)
Black-Backed Woodpecker	Provincial	No – listed provincially as “Sensitive” only (www.wildspecies.ca – accessed on November 1, 2003)
American White Pelican	Provincial	No – listed provincially as “Sensitive” only (www.wildspecies.ca – accessed on November 1, 2003)
Northern Leopard Frog	National (Special concern)	No – No locations reported within the Al-Pac FMA area (ASRD 2003)

Species	Scale	HCVF designation
Sprague's Pipit	Global	No – Endemic to Canadian prairies and northern plains in the USA (Prescott 1997).
Short Jaw Cisco	National	No – only one confirmed population in Alberta and it is north of the Al-Pac FMA area (Steinhilber 2002).
Western Toad	Global	No – not at risk in Alberta (Sensitive). IUCN Red List (Endangered). Not considered a focal species for forest management.
Loggerhead Shrike	National	No – not a focal species for forest management since distribution is correlated with grasslands (Prescott and Bjorge 1999).
Short-eared Owl	National	No – primary limiting factor appears to be loss of marshland habitat to agriculture and urbanization (Clayton 2000).
Pygmy Whitefish	Provincial	No – No locations reported within the Al-Pac FMA area (MacKay 2000).

Woodland Caribou are listed as a threatened species in Alberta, and nationally by COSEWIC. Woodland caribou are declining in Alberta, and this decline appears to correlate with human activities within their ranges. Detailed information regarding caribou distribution, population trends and habitat requirements has been assembled. Therefore, Woodland Caribou habitat is identified as High Conservation Value Forest within the Al-Pac FMA.

Wolverines were once found across Alberta, but are now restricted to the northern half of the province and along the mountains and foothills (Petersen 1997). Wolverine distribution and abundance is poorly documented within the Al-Pac FMA area. Timoney (2003) recommended that management strategies should include the maintenance of remote areas with a high diversity of habitats. Significant snow-tracking survey efforts throughout the FMA area (over 1,600 km from 2001 – 2004) have identified wolverine tracks on only 3 occasions (Dr. Erin Bayne, personal communication). Until wolverine abundance and habitat can be determined within the Al-Pac FMA area, an appropriate precautionary approach is to maintain a wide diversity of habitats through the 'coarse filter' approach and to maintain the attributes of large landscape level forests within the FMA area.

Black-backed Woodpecker and American White Pelican are not a species at risk identified by international, national and provincial authorities. Both species are considered "sensitive" in Alberta. Protection of breeding and concentration sites for American White Pelican is addressed in Question 3. Black-backed woodpecker are strongly associated with recently burned forest, and management plans should contain provisions to maintain this unique habitat type. However, designation of Black-backed Woodpecker habitat as HCVF does not appear warranted.

Identified HCVFs – Woodland Caribou Zones. It is recommended that Al-Pac continues to support ongoing monitoring to better determine the distribution and abundance of wolverine and grizzly bear within the Al-Pac FMA area to determine if critical habitat for these species exists and can be identified. Woodland Caribou Zones are identified on Map 1.

2. Does the forest contain a globally, nationally or regionally significant concentrations of endemic species?

Timoney (2003) identified no significant concentrations of endemic species within the Al-Pac FMA area.

Identified HCVFS - None

3. Does the forest include critical habitat containing globally, nationally or regionally significant seasonal concentrations of species (one or several species. e.g. concentrations of wildlife in breeding sites, wintering sites, migration sites, migrational routes or corridors)?

No Important Bird Areas (IBAs) are located within the FMA area. Pelican Lake is an Important Bird Area within the large ‘doughnut hole’ deletion area. Timoney (2003) identified 14 bird colonies within the FMA area. There are two Trumpeter Swan breeding lakes identified within the FMA area. A number of Environmentally Significant Areas (ESAs) are important bird staging areas within the FMA area. These are addressed separately in Question 11.

Identified HCVFs – Trumpeter Swan Lakes, Bird Colonies, Pelican Lake Important Bird Area. These HCVFs are identified on Map 2.

4. Does the forest contain critical habitat for regionally significant species (e.g species representative of habitat types naturally occurring in the management unit, focal species, species declining regionally)?

There is limited information available about potential declines in regionally significant species. Declines in most species identified by Timoney (2003) (Cougar, American Bittern, Black Tern, Short-eared Owl, Sprague’s Pipit, Northern Leopard Frog, Canadian Toad and Western Toad) do not appear to be as a result of forest management. Woodland Caribou are declining in Alberta, and there is significant evidence to suggest that industrial activities within caribou ranges are partially responsible for these declines (Dzus 2001).

Identified HCVFs – Woodland Caribou Zones (Woodland Caribou habitat). Woodland Caribou Zones are identified on Map 1.

5. Does the forest support concentrations of species at the edge of their natural ranges or outlier populations?

Timoney (2003) identified eighteen focal species and community types that could be considered vulnerable due to range edge considerations. These included Loggerhead Shrike, Short-eared Owl, Sprague's Pipit, Pygmy Whitefish, Western Toad, Logperch and White Spruce/Lichen communities. Timoney (2003) noted that in many cases data about the status of these species are lacking. Those species which are extremely rare or at risk due to population declines are generally either not considered as boreal species or not considered threatened by forestry operations e.g Loggerhead Shrike, Sprague's Pipit, Western Toad.

Identified HCVEs – None

6. Does the forest lie within, adjacent to, or contain a conservation area:

a) designated by an international authority

The AI-Pac FMA does not contain, nor is it adjacent to any conservation areas designated by an international authority. The northern boundary of the AI-Pac FMA area is approximately 40 km south of Wood Buffalo National Park, a UNESCO World Heritage Site. Timoney (2003) identified approximately 15 International Biological Programme sites within the AI-Pac FMA. Although these are not conservation areas *per se*, these are being investigated by Ducks Unlimited as a component of the Boreal Conservation Project¹.

b) legally designated or proposed for protection by relevant federal/provincial body

The FMA area contains a number of legislatively protected conservation areas including Grand Rapids Wildland Park, Gipsy Lake Wildland Park, Stony Mountain Wildland Park, Whitemud Falls Wildland Park and Ecological Reserve and Crow Lake Provincial Park and Ecological Reserve. The total land area of these protected areas is 63,099 ha (approximately 1.1% of the FMA area). In addition to these larger sites, there are numerous smaller recreation and natural areas within the FMA area. In April 2004, the Clearwater and Christina Rivers were designated as Heritage Rivers under the Canadian Heritage Rivers Program. The Clearwater and Christina Rivers are also identified as Environmentally Significant Areas (Question 11).

Adjacent to the FMA area are other protected areas including Birch Mountains Wildland Park, La Biche River Wildland Park, Lakeland Provincial Park and Provincial Recreation Area and Clearwater Wilderness Provincial Park (Saskatchewan). Special Places 2000, the Government of Alberta protected areas strategy, is considered complete by the Provincial Government, and no additional sites have been proposed by the government within the AI-Pac FMA area since the completion of this program.

¹ The Boreal Conservation Project (BCP) is an agreement between DU and AI-Pac to develop a watershed-based conservation plan for the AI-Pac FMA area. The BCP is based upon the development of partnerships between industry, ENGOs, local aboriginal communities and governments to develop an adaptive framework for long-term land use decisions in the project area.

c) identified in regional land use plans or conservation plans

Regional land use plans and conservation plans generally do not identify conservation areas within the FMA, with the exception of existing legislatively protected areas. Areas of interest to local conservation organizations are generally consistent with the areas identified as large landscape level forests (Question 7) or Alberta Environmentally Significant Areas (Question 11).

Identified HCVEs - All legislatively protected areas within and immediately adjacent to the FMA area. Existing protected areas are identified on Map 3.

7. Does the forest constitute or form part of a globally, nationally or regionally significant forest landscape that includes populations of most native species and sufficient habitat such that there is a high likelihood of long-term species persistence?

“Intact” forest areas that are completely free of human developments are relatively uncommon in the AI-Pac FMA area. According to Global Forest Watch analyses, approximately 561,000 ha of the AI-Pac FMA area is considered intact (Global Forest Watch 2003). This represents approximately 8% of the AI-Pac FMA area.

Thresholds proposed by FSC Canada define globally significant intact forest as forested blocks larger than 500,000 ha in size that are free of permanent infrastructure. Nationally significant intact forests are defined as forested blocks between 200,000 ha and 500,000 ha in size that are free of permanent infrastructure. Regionally significant intact forests are defined as forest blocks between 50,000 ha and 200,000 ha in size that are free of permanent infrastructure. Permanent infrastructure for the FMA area was defined as wellsites and roads under licence of occupation (LOC). According to this analysis, the AI-Pac FMA area contains eight intact forest blocks larger than 50,000 ha, two intact forest blocks larger than 200,000 ha and one intact forest block larger than 500,000 ha (Timoney 2003). Detailed information is lacking, but it appears intact forest in the northern and eastern portions of the FMA area is contiguous with intact forest in Saskatchewan and the Birch Mountains.

Timoney (2003) noted that this analysis produces a rather ‘optimistic’ view of intactness, since many of the intact forest patches are dissected by seismic lines. Since the question asks if the landscape includes sufficient habitat to maintain a high likelihood of species persistence, an arbitrary decision needs to be made regarding the density of seismic infrastructure that will influence species persistence. There is limited information about the long term effects of seismic lines on species persistence in the boreal forest. However, comprehensive work on woodland caribou in Alberta indicates that every boreal range in Alberta with a linear density $> 2\text{km}/\text{km}^2$ is in decline. In the absence of more empirical data, for the purpose of this analysis, any intact forest blocks identified by Timoney (2003), which contain $\leq 2\text{km}/\text{km}^2$ of seismic lines (reported at a Township level) are identified as High Conservation Value Forest. Using this threshold of intactness,

1,696,000 ha of large landscape level forest is identified within the FMA area perimeter. This represents 24% of the study area.

Identified HCVEs – Large landscape level forests include all forests identified as ‘intact’ by Global Forest Watch (2003) and all intact forests identified by Timoney (2003) with linear densities of less than or equal to 2 km/km². Large landscape level forests are identified on Map 4.

8. *Does the forest contain naturally rare ecosystem types?*

Timoney (2003) spatially identifies two interior patterned saline marshes and La Saline Natural Area as rare ecosystem types within the Al-Pac FMA. Rare ecosystem types are also addressed under the Environmentally Significant Areas program. These sites are addressed in Question 11. Timoney (2003) identifies 22 other rare community types reported in boreal Alberta (Table 12, pp. 143), but cautions that location data for rare communities and ecosystems is often unavailable.

Identified HCVEs – La Saline Natural Area and two interior patterned saline marshes (location as yet undetermined). La Saline Natural Area is identified on Map 3.

9. *Are there ecosystem types within the forest or ecoregion that have significantly declined?*

Timoney (2003) provides a compelling argument that at a provincial level, old merchantable forest types have declined significantly in Alberta in recent decades. Anderson (2003) suggests that the proportion of deciduous, mixedwood or white spruce stands in the Al-Pac FMA that are old is higher than the long term average. Timoney (2003) also notes that the proportion of old forest within intact forest blocks is similar to the proportion of old forest within the ‘not intact’ landscape.

Al-Pac Timber Supply Analyses (which do not include the future effects of fire, oil and gas activity, nor the recruitment of new forests in burned areas, or regeneration after oil and gas activity) indicate that under a business as usual approach, old forest will become more abundant on the landscape over the next 50-60 years, before beginning to decline below the long term mean old forest condition. This trend of initially increasing proportions old forest is due to a large aging cohort of 60-80 year old forest stands, initiated by large fires in the early part of the 20th century.

A less optimistic analysis, which uses different assumptions and includes modeled reductions in old forest due to the effects of wildfire and other industrial activity has also been conducted for the FMA area (Schneider et al. 2003). This analysis also indicates that under a business as usual approach, the proportion of hardwood forest in old condition will increase over the next 40 years, before declining rapidly. This analysis indicates that old white spruce forest will follow a different trajectory, and is predicted to not exist outside reserves in a little over 20 years.

Given that conventional forestry practices tend to target older forest stands first, and since under conventional sustained yield forest management practices there is no requirement to maintain forests that are older than the optimal rotation age, it is appropriate to designate old, merchantable forest types as High Conservation Value Forest.

Identified HCVEs – old forest types targeted for harvest by FMA area Forest Companies (deciduous, white spruce, mixedwood and pine). Old merchantable forests (excluding black spruce are identified on Map 5.

10. Are large landscape-level forests (i.e large unfragmented forests) rare or absent in the ecoregion?

Although large portions of the FMA area have been subjected to some degree of industrial activity, ranging from forestry operations to seismic exploration and oil and gas development, large landscape-level forests still exist across portions of the FMA and large portions of the ecoregion (see question 7).

Identified HCVEs - None

11. Are there nationally/regionally significant diverse or unique forest ecosystems?

In 1990, a study was commissioned by Alberta Forestry Lands and Wildlife to identify significant natural features in the eastern portion of Alberta's boreal forest. The 74,162 km² study area is largely congruent with the Al-Pac FMA area. Potential sites within the study area were evaluated for their environmental significance using eight criteria:

- Performs a vital environmental, ecological or hydrological function
- Contains rare or unique geological or physiographic features
- Contains significant, rare or endangered plant or animal species
- Are unique habitats with limited representation in the region, such as old growth forests or are a small remnant of once large habitats that have virtually disappeared
- Contains an unusual diversity of plant and/or animal communities due to a variety of geomorphological features and microclimatic effects
- Contains large and relatively undisturbed habitats and provide sheltered habitats for species which are intolerant of human disturbance
- Provides an important linking function and permit the movement of wildlife over considerable distances, including migration corridors and migratory stopover points
- Contain plants, animals or landforms which are unusual or are of regional, provincial, national or international significance

(Westworth and Associates 1990)

It is useful to note that there is a high degree of overlap between the HCVE Toolkit questions that are appended to the FSC National Boreal Standard (FSC 2003) and the

Westworth and Associates (1990) report. Westworth and Associates (1990) used the following categories to assess the environmental significance of each site:

- **Regional Significance:** Natural landscapes or features that are of limited distribution or the best examples of a feature in the region.
- **Provincial Significance:** Natural landscapes or features which are of limited distribution at a provincial level or are the best examples of a feature in Alberta.
- **National Significance:** Natural landscapes or features which are of limited distribution or are the best examples of a feature in Canada.
- **International Significance:** Natural landscapes or features that are unique in the world.

The Al-Pac FMA area contains no International Environmentally Significant Areas (ESA). The Al-Pac FMA area contains 4 National ESA – the Clearwater River and 3 reaches of the Athabasca River. The Al-Pac FMA area contains 31 Provincial ESA. National and Provincial ESA are considered High Conservation Value Forest for the purpose of this analysis. “Regionally Significant” in the Westworth and Associates study refers to 3 administrative regions within the FMA area (Slave Lake, Athabasca and Lac La Biche Forest Regions). Since HCVF designation requires that sites should be critical or outstanding, Regional ESA are not considered for HCVF designation.

Table 2 Provincial Environmentally Significant Areas (ESA) within the Al-Pac FMA area. Current condition of identified conservation values has not been assessed

Provincial ESA	Identified Conservation Significance (from Sweetgrass Consultants 1997)
Birch Lake	Important White Pelican nesting area
Birch Mountains Diversity Area	One of the most diverse intact major hill systems in the Boreal Forest of Alberta Provincially significant California Gull Colony High landform diversity (one of the best examples of glacial flutings in Alberta)
Calling Lake	An important commercial fishery in the Boreal Forest of Alberta
Crow Lake Diversity Area	Excellent representation of Central Mixedwood
Egg Lake Algar Lake Diversity Area	One of the most diverse and relatively intact Boreal Forest landscapes in Alberta
Ells River	One of the best examples of incised oxbows and meanders in Alberta
Eymundson Sinkholes	Significant sinkhole area, a rare feature in Alberta
Firebag River	Firebag and tributaries are provincially significant Arctic Grayling habitat

Provincial ESA	Identified Conservation Significance (from Sweetgrass Consultants 1997)
Godin Lake Gordon Lake	Provincially significant duck staging habitat One of the most important waterfowl breeding, moulting and staging areas in the mixedwood of Alberta
Gipsy Lake	Provincially significant American White Pelican non-breeding habitat
Grist Lake	One of the most productive fisheries in the boreal forest of Alberta
Heart Lake	One of a handful of commercial fisheries in the Boreal Forest of Alberta
High Hill River	One of the most diverse valleys in the Central Mixedwood Boreal Forest of Alberta
La Saline Springs Natural Area	A unique saline spring system in the boreal forest of Alberta
Lakeland Diversity Area	One of the most diverse upland lake complexes in the Central Mixedwood Boreal Forest of Alberta
Lower Christina River	One of the most diverse and intact river valleys in the Central Mixedwood of Alberta
McClelland Lake	Provincially significant staging duck habitat
McClelland Lake Fen	One of the largest patterned fens in Alberta
McClelland Lake Sinkholes	Significant sinkhole area, a rare feature in Alberta
Parallel Creek Peatland	One of the most diverse and extensive wetland complexes in the Mixedwood Boreal Forest of Alberta
Peerless/Graham Lake Watershed	Excellent representative of the Boreal Highlands An important commercial fishery in the boreal forest
Pelican Lake	Important White Pelican nesting area Provincially Significant Great Blue Heron nesting habitat
Schultz's Bog Diversity Area	One of the most diverse wetland complexes in the Central Mixedwood
Trout River Delta	One of the most diverse areas in the Central Mixedwood in Alberta
Upper Wabasca River	One of the most diverse river valleys in the Boreal Forest of Alberta
Weaver Lake	Provincially Significant staging duck habitat
Winefred Lake	Trophy fish lake
Winefred/Grist Lake Watershed	Watershed for trophy fish lake

The area within the Al-Pac FMA area perimeter contains 1,748,980 ha of National and Provincial ESAs. A significant portion of the ESA area (> 36% of total ESA area) is located within FMA deletion areas and existing protected areas.

Westworth and Associates (1990) recommended that significant natural features identified in the report should receive some form of protection, noting that “the type and level of protection required may vary all the way from strict legal preservation to simply applying operating restrictions. Some of the sites can, with proper environmental protection, accommodate a range of other land uses, whereas other sites should be formally protected and set aside”. This is comparable to the management strategies described for HCVF. National and Provincial ESA are identified on Map 6. This sets a different threshold than Timoney (2003), which identified only National ESAs as HCVF.

Identified HCVFs – All National and Provincial ESA. National and Provincial ESAs are identified on Map 6.

Significant differences between Timoney (2003) and this Summary

After consultation with local and national environmental organizations, Timoney (2003) also identified all non-bog peatlands and mapped water bodies as HCVF. He noted “The scarcity of surface water, the importance of aquatic and riparian habitat, and of surface water to migratory waterfowl, and the threats to surface and groundwater posed by humans, render high conservation value to surface waters in the study area” (Timoney 2003). Although this approach highlights the importance of wetlands, it is likely inconsistent with the requirements for HCVF under the current definitions (FSC 2003). By mapping Provincial ESAs, many important aquatic and wetland features within the FMA area have been captured as HCVF. Al-Pac’s ongoing partnership with Ducks Unlimited Canada (The Boreal Conservation Plan) will identify and refine important wetland values within the Al-Pac FMA area. Further HCVF values associated with wetland habitats may be identified in the future.

Timoney (2003) also identified the Dry Mixedwood subregion of the boreal (with a 50 km wide buffer) as HCVF. The Dry Mixedwood has been significantly impacted by agriculture and settlement activities, with over 80% cleared (Timoney 2003). Presence of the Al-Pac FMA should preclude settlement and land conversion. Timoney (2003) also noted that conservation groups place a high conservation value on the southern boreal forest fringe and are committed to achieving better protection and management there.

Summary of HCVF Attributes within the Al-Pac FMA

1. Woodland Caribou Habitat Zones
2. None identified
3. Bird Colonies, Important Bird Areas (Pelican Lake), ESAs based on species concentrations
4. Woodland Caribou Habitat Zones
5. None identified
6. Protected Areas in and adjacent to the Al-Pac FMA area
7. Global Forest Watch Intact Forest coverage and Al-Pac Intact forest coverage with seismic densities $< 2 \text{ km/km}^2$

8. Rare Ecosystem Types
9. Old merchantable forest types
10. None identified
11. National and Provincial Environmentally Significant Areas

Proposed Management Strategies

Principle 9 of the National Boreal Standard states that “Management activities in High Conservation Value Forests shall maintain or enhance the attributes which define such forests. Decisions regarding the High Conservation Value Forests shall always be considered in the context of the precautionary approach” (FSC 2003). Management strategies appropriate for the maintenance of HCVF attributes can range from strict protection to maintaining existing practices.

Al-Pac’s management philosophy is based on the TRIAD approach. The TRIAD has three main land management categories - ecological benchmarks, multiple use ecosystem management and intensive management. Ecological management differs significantly from conventional sustained yield forestry, by designing harvest operations that more closely imitate natural disturbances such as wildfire. Maintaining landscape patterns, structure and age class distributions through innovative planning and operational practices represents the lowest risk strategy to the maintenance of biodiversity while allowing forestry activities. This ‘coarse-filter’ approach is complemented by ‘fine-filter’ management of special values, consistent with the requirements for management of HCVF. Ecological benchmarks are protected areas free of industrial activity that are used as reference areas to compare natural processes with harvested landscapes. Al-Pac has completed a gap analysis in association with WWF to determine gaps in representation for protected areas within the FMA area (Iacobelli et al. 2003). Al-Pac’s intensive management program occurs on private agricultural land.

The ‘coarse filter’ approach attempts to maintain landscape values by approximating natural disturbance patterns through harvest activities. The following draft strategies are proposed to complement this approach for HCVF within the Al-Pac FMA area:

Woodland Caribou Habitat

Follow current Boreal Caribou Committee (BCC) guidelines and East Side of the Athabasca River (ESAR) range planning process. Develop management strategies as prescribed by the Alberta Woodland Caribou Recovery Plan. The Boreal Caribou Committee Strategic Plan and Industrial Guidelines are available at: http://www3.gov.ab.ca/srd/land/lad/docs/Strategic_Plan_rwoods.pdf

Bird Colonies and Trumpeter Swan Lakes

Conform to existing Operating Ground Rules and Government requirements for the protection of bird colonies and trumpeter swan nests.

Existing Protected Areas

Review existing protected areas for potential to expansion in order to fill gaps in representation according to Analysis of Representation gap analysis results.

Large Landscape Level Forests

Review large-landscape forest areas for potential deferral sites in order to fill gaps in representation according to Analysis of Representation Gap Analysis Results. For intact forest areas already adequately or moderately represented in protected areas, develop aggregated harvest plans that minimize access requirements and will maintain core forest attributes of these forests in the future.

Old Merchantable Forests

Develop an old forest management strategy that maintains old forest amounts for all merchantable forest types within 25% of the long term mean old forest condition. Constrain timber supply analysis when required to maintain old forest proportions at these levels.

Environmentally Significant Areas

Remove deciduous stands from below the breaks of the Athabasca and Clearwater River from Timber Supply Calculations. Sequence no Al-Pac cutblocks below the breaks of the Athabasca and Clearwater Rivers. Examine Provincial ESAs for potential deferral sites in order to fill gaps in representation according to Analysis of Representation Gap Analysis Results. For ESAs already adequately or moderately represented in protected areas, examine each site in detail to determine if special management practices are required to maintain identified HCVF values. Potential management strategies for these HCVFs are identified in Table 3.

Al-Pac is not the only industrial land user within the FMA. Other activities include coniferous forestry operations, conventional oil and gas development, oilsands development, peat mining, agricultural development and transport infrastructure. Al-Pac will work with its Public Advisory Group (the Forest Management Task Force), the Provincial Government and other industrial operators to develop strategies that maintain HCVF values.

Table 3. Proposed Management Strategies for Provincial Environmentally Significant Areas within the Al-Pac FMA area

Provincial ESA	Existing and Proposed Al-Pac Management Strategy
Birch Lake	Birch Lake is already protected within Gipsy Lake Wildland Park. Surrounding area has been identified as a potential candidate deferral area by Al-Pac and conservation organizations.
Birch Mountains Diversity Area	A significant portion of this ESA has been protected within Birch Mountains Wildland Park. No special management practices are proposed.
Calling Lake	A significant portion of this ESA is located in an FMA deletion area. No special management practices are proposed.
Crow Lake Diversity Area	A portion of this ESA has been protected within Crow Lake Ecological Reserve and Park. Areas outside the protected areas were salvaged logged in 2003. No special management practices are proposed for the remainder of the ESA.
Egg Lake Algar Lake Diversity Area	A significant portion of the ESA is located in an FMA deletion area. A small portion of the ESA has been identified as a potential candidate deferral area by Al-Pac and conservation organizations.
Ells River Eymundson Sinkholes	No special management strategies are proposed Deferral of harvest operations within the ESA is recommended.
Firebag River	A significant portion of the Firebag River is located outside the FMA area. No special management practices are proposed.
Godin Lake	Duck staging habitat protected by 100 m buffer around lake
Gordon Lake	Gordon Lake is already protected within Gipsy Lake Wildland Park. Surrounding area has been identified as a potential candidate deferral area by Al-Pac and conservation organizations.
Gipsy Lake	Gipsy Lake is already protected within Gipsy Lake Wildland Park. Surrounding area has been identified as a potential candidate deferral area by Al-Pac and conservation organizations.
Grist Lake	A significant portion of the ESA is located in an FMA deletion area. The remainder of the ESA has been identified as a potential candidate protected area by Al-Pac and conservation organizations.
Heart Lake High Hill River	No special management strategies are proposed. No special management strategies are proposed.

Provincial ESA	Existing and Proposed Al-Pac Management Strategy
La Saline Springs Natural Area	A significant portion of the ESA has been protected within La Saline Natural Area. No special management practices are proposed for the remainder of the ESA.
Lakeland Diversity Area	The vast majority of the ESA has been protected within Lakeland Provincial Park and Recreation Area. Al-Pac has deferred harvest in areas south and east of the Touchwood Lake Road as a potential contributions to Al-Pac's Ecological Benchmark strategy.
Lower Christina River	Portions of the Lower Christina River have been identified as a potential candidate deferral area by Al-Pac and conservation organizations.
McClelland Lake	Existing Al-Pac cutblocks occur south of McClelland Lake. Identified ESA is largely free of potentially harvestable area. No special management strategies are proposed.
McClelland Lake Fen	Existing Al-Pac cutblocks occur south of McClelland Fen. Identified ESA is largely free of potentially harvestable area. No special management strategies are proposed.
McClelland Lake Sinkholes	Identified ESA is largely free of potentially harvestable area. No special management strategies are proposed.
Parallel Creek Peatland	A significant portion of the ESA is located in an FMA deletion area. Special management practices for the protection of woodland caribou and their habitat are being developed in association with the BCC.
Peerless/Graham Lake Watershed	A significant portion of the ESA is located in an FMA deletion area. No special management practices are proposed.
Pelican Lake	This ESA is located in an FMA deletion area. No special management practices are proposed.
Schultz's Bog Diversity Area	A significant portion of the ESA is located in an FMA deletion area. Special management practices for the protection of woodland caribou and their habitat are being developed in association with the BCC.
Trout River Delta	A significant portion of the ESA is located in an FMA deletion area. The remainder of the ESA has been identified as a potential candidate protected area by Al-Pac and conservation organizations.
Upper Wabasca River	No special management strategies are proposed.

Provincial ESA	Existing and Proposed Al-Pac Management Strategy
Weaver Lake	Duck staging habitat protected by 100 m buffer around lake
Winefred Lake	A significant portion of the ESA is located in an FMA deletion area. The remainder of the ESA has been identified as a potential candidate protected area by Al-Pac and conservation organizations.
Winefred/Grist Lake Watershed	A portion of the ESA has been identified as a potential candidate deferral area by Al-Pac and conservation organizations.

Conclusions

The Al-Pac FMA area contains many High Conservation Value Forests and attributes. This summary report attempts to synthesize existing ecological data in order to identify HCVF that can be managed according to the criteria of the Forest Stewardship Council. HCVF within the Al-Pac FMA include woodland caribou habitat, bird colonies and concentration sites, existing protected areas, large landscape level forests, old merchantable forests and Environmentally Significant Areas (ESAs).

Identification of HCVF is a new and evolving discipline. This summary document considers only environmental HCVF attributes. Future work will address HCVF attributes in a social context. Identification of all potential HCVF attributes is challenging, since detailed information about portions of the Al-Pac FMA are lacking. This HCVF assessment should be considered as a work in progress, which will be refined as more information is available.

Implementation of management strategies to maintain HCVF values will require the support and cooperation of government agencies with management authority over public lands. HCVF strategies will be proposed and developed through Forest Management Plan (FMP) and Operational Ground Rule (OGR) discussions. Protection of some HCVF attributes will require cooperation with other land users including energy and forestry companies.

Acknowledgements

Kevin Timoney completed the initial report upon which this summary is based. This project was jointly funded by WWF Canada and Alberta-Pacific Forest Industries Inc. Kirk Andries, Steven Price and Tony Iacobelli contributed to the development of the terms of reference, and Tony Iacobelli provided many useful suggestions for the content of this summary. Matthew Smith provided excellent GIS support and cartography skills. This document benefited from review by Elston Dzus, Dave Cheyne, Don Pope, Mark Spafford, Kim Rymer, Keith Windeler and John Ellison.

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Personal Communications

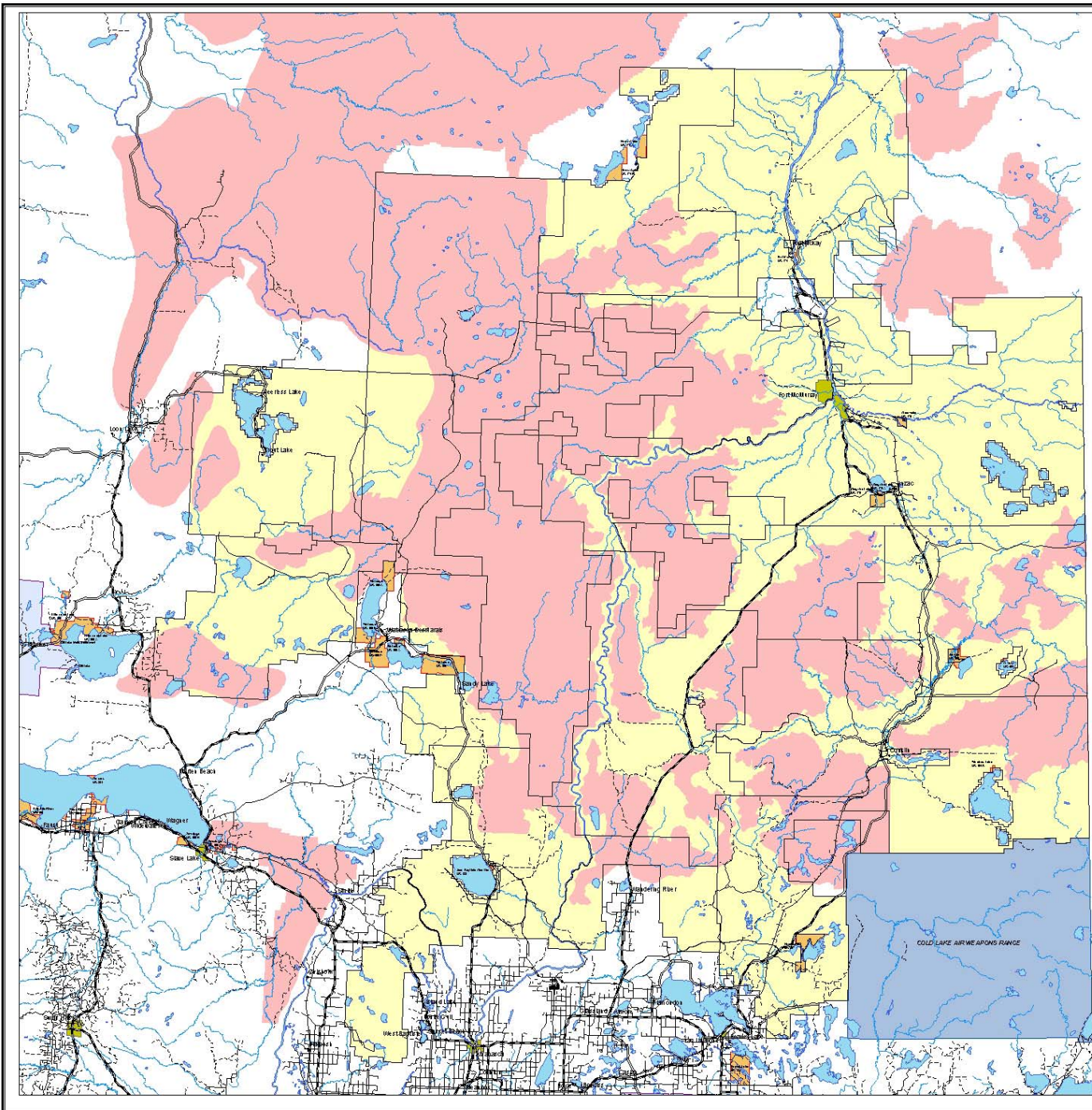
Dr. Erin Bayne, Integrated Landscape Management Program, University of Alberta.
Contacted on February 13, 2004.

Glossary

Endemism - Restriction of a plant or animal species to one or a few localities in its distribution. Endemic species are usually confined to geographic islands and are vulnerable to extinction.

Refugia - Usually remnants of an original ecosystem surviving in isolated or discrete areas. They are areas which have not undergone ecological change in environments that have undergone considerable change. They provide suitable habitat for species which may have once been distributed across an entire local environment or bioregion. It is a place that effectively protects species from the effects of severe environmental disruptions that, in the rest of their habitat range, lead to significant declines in biomass, mass death, or mass extinction.

Landscape Level Forests - Forests where viable populations of most (if not all) naturally occurring species exist in natural patterns of distribution or abundance. In the absence of detailed species information, lack of human development 'footprint' may be used as an analogue for natural conditions.



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Woodland Caribou Management Zones

(Map 1)

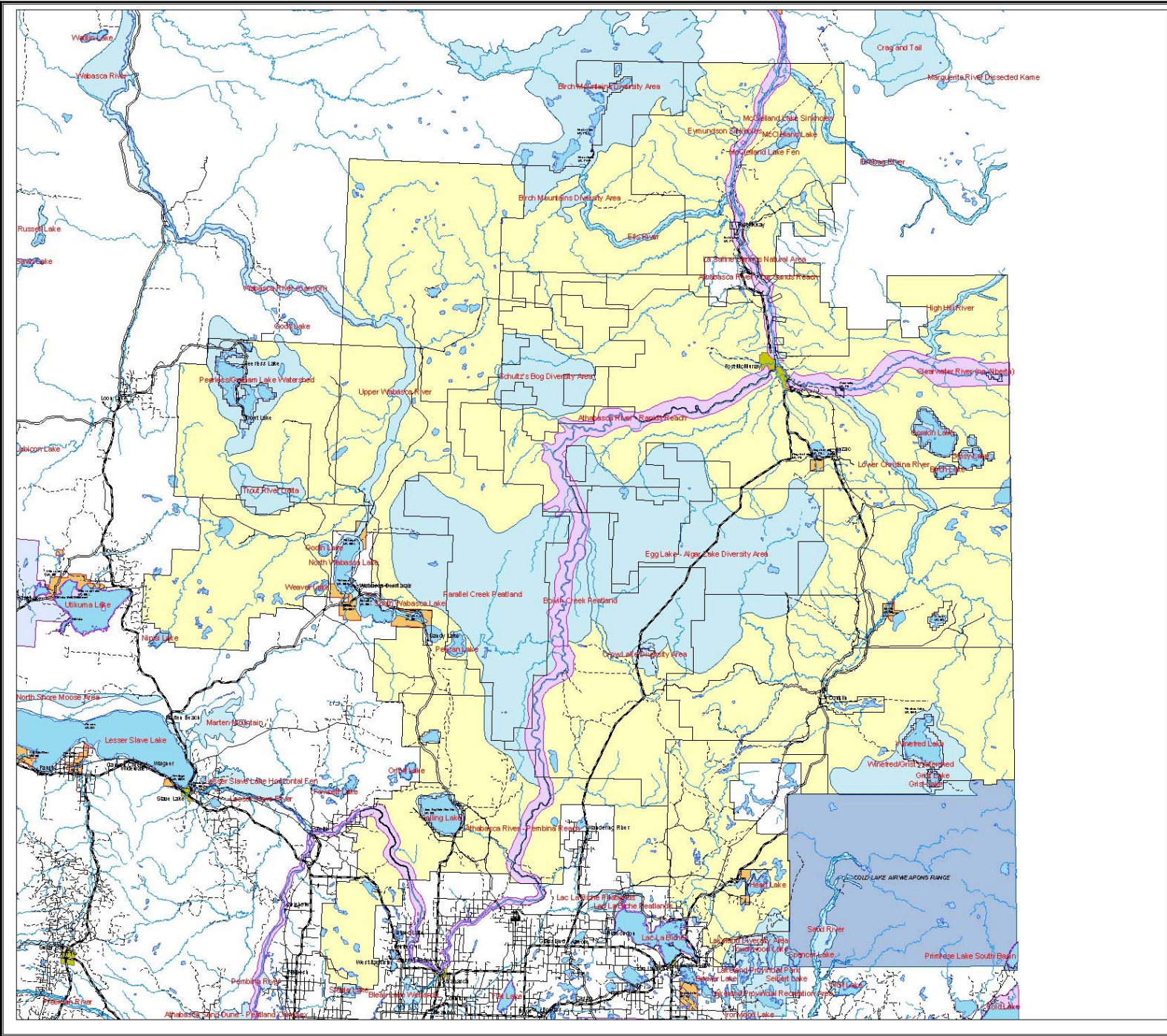
Legend

- Caribou Management Zones
- Metis Settlements
- Indian Reserve
- Military Reserves
- Village/Hamlet
- Cities, Towns and Urban Service Areas
- Paved Road
- Gravel Road
- Improved Road
- Unimproved Road
- Railway
- Alberta-Pacific Forest Management Units
- Alberta-Pacific Mill Site



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Meters

1:250,000 Base Map Purchased from
Spatial Data Warehouse (c)
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(Natural Resources Canada) (c) 1999



**National and Provincial
Environmental Significant
Areas (ESA)**

(Map 6)

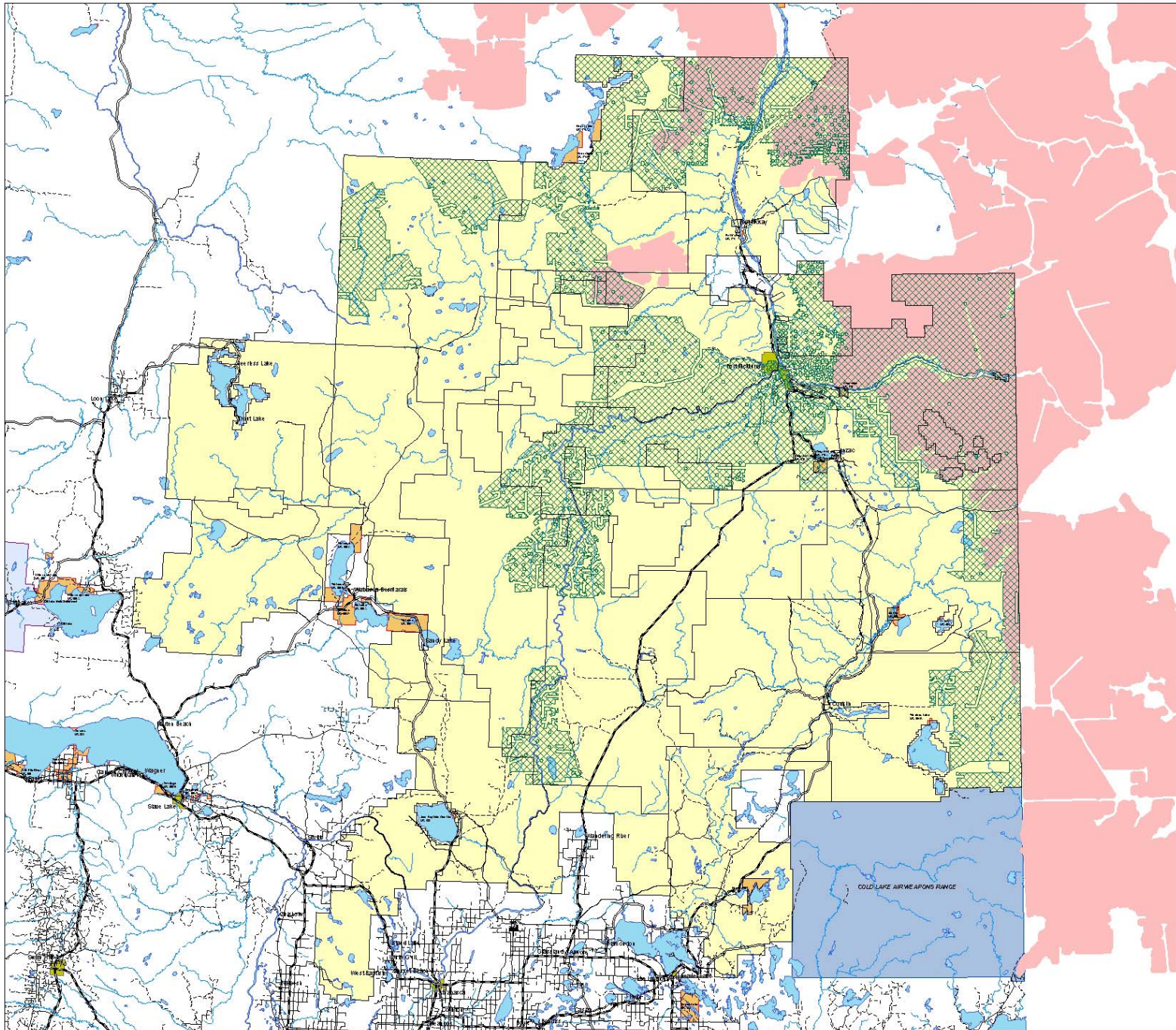
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-  National ESA
-  Provincial ESA
-  Metis Settlements
-  Indian Reserve
-  Military Reserves
-  Village/Hamlet
-  Cities, Towns and Urban Service Areas
-  Paved Road
-  Gravel Road
-  Improved Road
-  Unimproved Road
-  Railway
-  Alberta-Pacific Forest Management Units
-  Alberta-Pacific Mill Site



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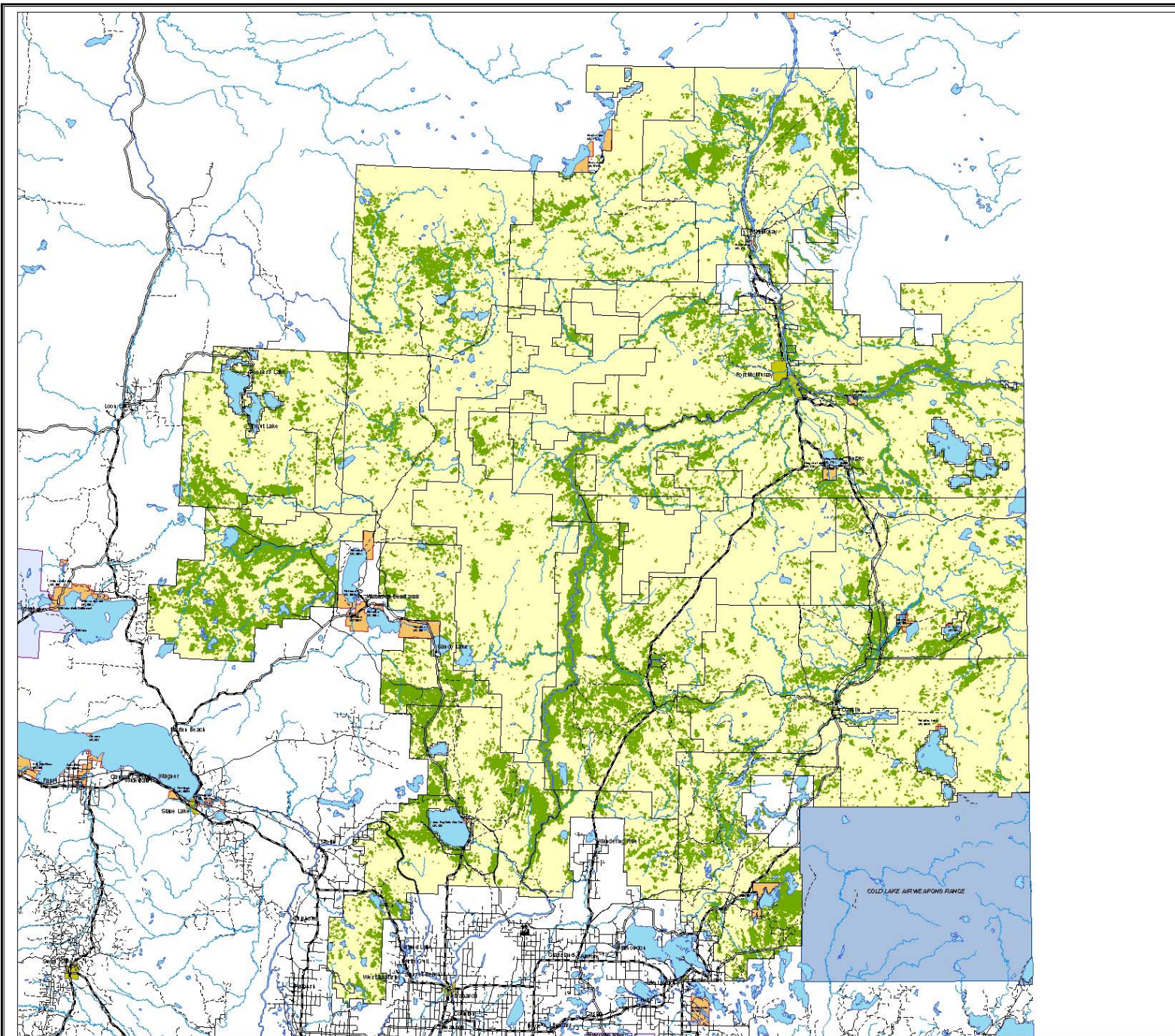
Global Forest Watch Intact Forests and Timoney (2003) Intact Forests with Seismic Densities less than 2 km/km2 (Map 4)

Legend

- Timoney (2003) Large Landscape Level Forests
- Global Forest Watch Intact Forests
- Metis Settlements
- Indian Reserve
- Military Reserves
- Village/Hamlet
- Cities, Towns and Urban Service Areas
- Paved Road
- Gravel Road
- Improved Road
- Unimproved Road
- Railway
- Alberta-Pacific Forest Management Units
- Alberta-Pacific Mill Site





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**Old merchantable forests
 excluding Black Spruce**

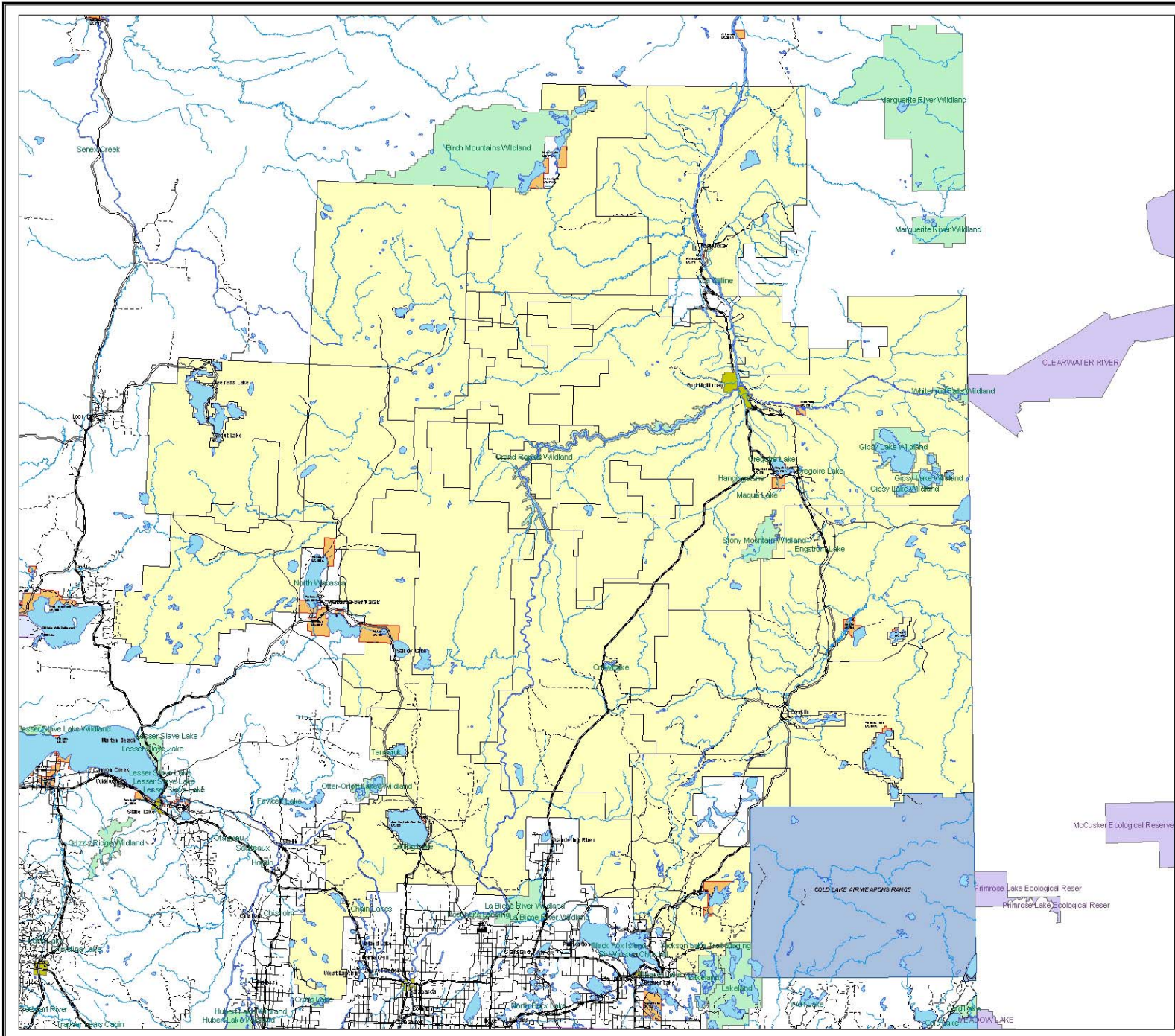
(Map 5)

Legend

-  Old Merchantable Forests Excluding Black Spruce
-  Metis Settlements
-  Indian Reserve
-  Military Reserves
-  Village/Hamlet
-  Cities, Towns and Urban Service Areas
-  Paved Road
-  Gravel Road
-  Improved Road
-  Unimproved Road
-  Railway
-  Alberta-Pacific Forest Management Units
-  Alberta-Pacific Mill Site



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**Protected Areas in
and adjacent to the
AI-Pac FMA**

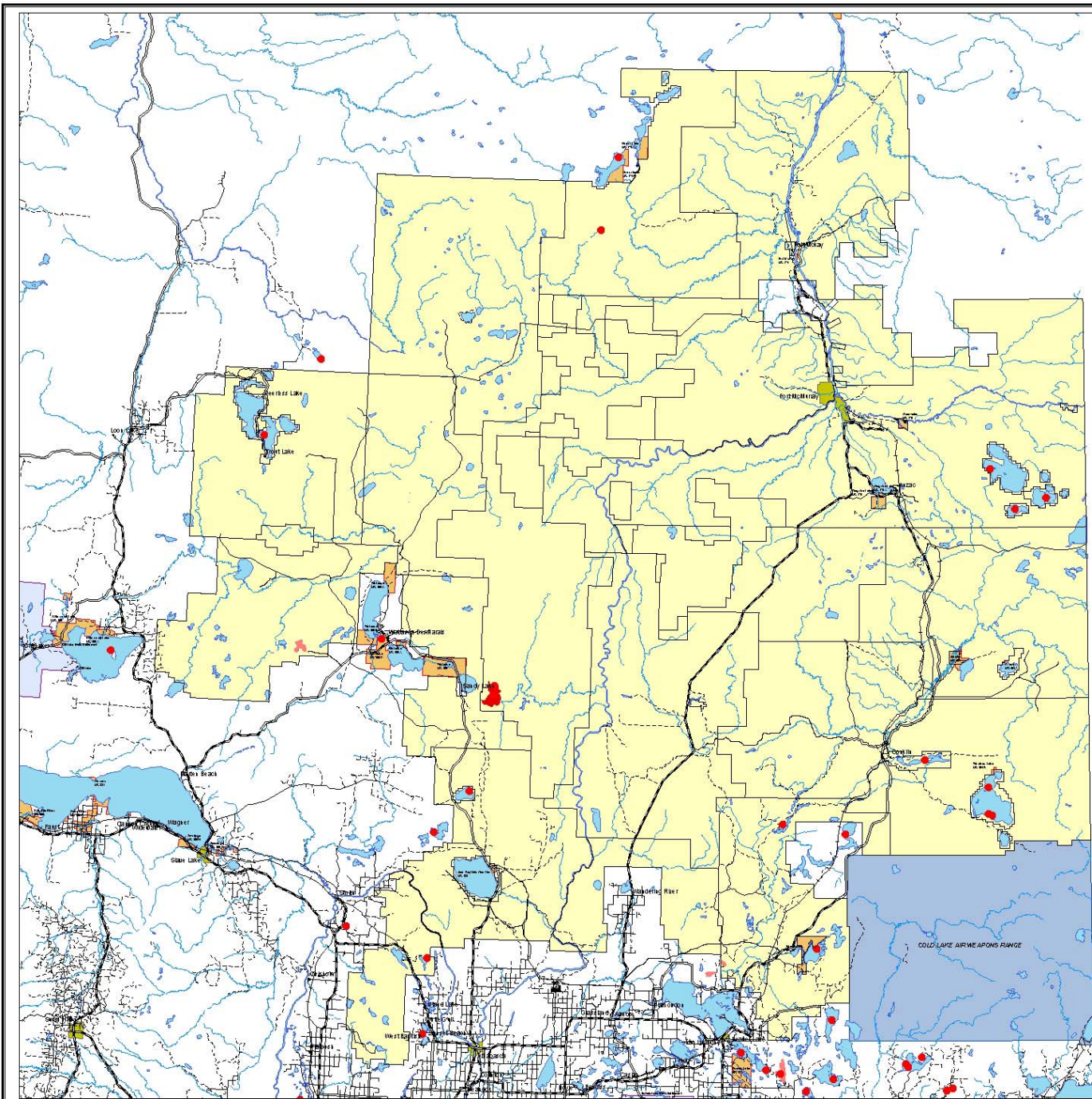
(Map 3)

Legend

- Alberta Protected Areas
- Saskatchewan Protected Areas
- Metis Settlements
- Indian Reserve
- Village/Hamlet
- Cities, Towns and Urban Service Areas
- Paved Road
- Gravel Road
- Improved Road
- Unimproved Road
- Railway
- Military Reserves
- Alberta-Pacific Forest Management Units
- Alberta-Pacific Mill Site



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Species Concentration Sites
(Map 2)

Legend

- Bird Colonies
- Pelican Lake IBA
- Trumpeter Swan Lakes
- Métis Settlements
- Indian Reserve
- Military Reserves
- Village/Hamlet
- Cities, Towns and Urban Service Areas
-  Paved Road
-  Gravel Road
-  Improved Road
-  Unimproved Road
-  Railway
- Alberta-Pacific Forest Management Units
-  Alberta-Pacific Mill Site



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