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**ATHABASCA CHIPEWYAN FIRST NATION  
INDUSTRY RELATIONS CORPORATION**

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January 24, 2011

Morris Seiferling  
Stewardship Commissioner  
Land Use Secretariat  
Alberta Sustainable Resource Development  
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Centre West Building  
Edmonton, AB T5K 2G8

P: 780-644-7978  
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[Via email: [morris.seiferling@gov.ab.ca](mailto:morris.seiferling@gov.ab.ca)]

Dear Morris,

**Re: Co-management and the Lower Athabasca Regional Plan Discussion Paper**

I wish to thank-you, once again, for meeting with ACFN Leadership, Elders and Community in Ft. Chipewyan last week. Leadership was very encouraged by your request for additional details on how ACFN conceptualizes co-management occurring in the Lower Athabasca Region. ACFN has prepared a discussion paper that elaborates on ACFN's objectives regarding co-management in the context of LARP and provides a conceptual outline for how a co-management body could work. This discussion paper is attached. We would appreciate a response to this discussion paper from you as soon as possible. We would be more than happy to meet to discuss our ideas further, or to provide any clarification you may need, should you have questions. We look forward to discussing this concept with you further.

Yours Truly,

A handwritten signature in black ink, appearing to be 'LK' with a flourish, positioned to the right of the text 'Yours Truly,'.

Lisa King  
Director

[encl.]

cc: ACFN Chief and Council  
ACFN Elders Council  
Peter Watson, Deputy Minister of Energy  
Jim Ellis, Deputy Minister of Environment  
Dave Bartesko, Commissioner, Land Use Secretariat  
Robert Freedman, Janes Freedman Kyle LLP



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## **CO-MANAGEMENT AND THE LOWER ATHABASCA REGION PLAN**

### **Discussion Paper**

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**Submitted by the Athabasca Chipewyan First Nation**

**Submitted to the Land Use Secretariat**

**January 24, 2011**

cc: ACFN Chief and Council  
ACFN Elders Council  
Peter Watson, Deputy Minister of Energy  
Jim Ellis, Deputy Minister of Environment  
Dave Bartesko, Commissioner, Land Use Secretariat  
Robert Freedman, Janes Freedman Kyle LLP

## INTRODUCTION

In the Advice provided to the Government of Alberta regarding the Lower Athabasca Land Use Plan (LARP) on 22 November 2010, the Athabasca Chipewyan First Nation (ACFN) noted that:

Definition and implementation of LARP designations must proceed in step with negotiation and implementation of meaningful and reliable consultation and accommodation frameworks, including co-management mechanisms with First Nations in areas critical for the past, present and future practice of their rights. This would include:

**Establishing co-management boards, or other cooperative land and resource management arrangements, guided by the principles of shared decision-making and joint stewardship for lands and resources of critical importance to the continued practice of rights.**

The purpose of this discussion paper is to provide some further elaboration on ACFN's objectives with respect to co-management in the context of the LARP, and a conceptual outline for how such a body could work in the context of the Land Use Framework.

## RATIONALE

A critical issue for ACFN is ensuring that their rights are sustained now and for future generations. ACFN believes that reconciliation of Treaty and aboriginal rights with Provincial authority includes providing a much greater say for ACFN in matters where decisions have the potential to adversely affect and/or infringe ACFN's rights under Treaty No. 8.

In a number of submissions made to the Province through regulatory processes and planning processes like (Phase 2, LARP) ACFN has raised two principal concerns: (1) that the Province (and, as the context requires, Canada) are not meaningfully consulting with them on various decisions which have the potential to directly and cumulatively adversely affect and infringe their constitutionally-protected rights; and (2) that decision-making and consultation have not properly accounted for potential adverse impacts on ACFN rights, culture, social environment, economic and related impacts.

The Government of Alberta now has an opportunity to create, in partnership with ACFN and other interested First Nations, a model land use planning and decision-making framework that can achieve the principles of nation-to-nation relationships, protection of constitutionally-protected rights, and contributing to socioeconomic and cultural sustainability.

In the context of the finalization of the LARP and the creation of a regional plan for the northeast region of the province of Alberta, ACFN is proposing that co-management arrangements reflect a sharing of power and responsibility between the Province and First

Nations on land use matters in accordance with the degree of importance of the area or activity under consideration to ACFN in respect of their ability to exercise their Treaty and aboriginal rights now and into the future. At the high end of this spectrum, ACFN would expect that co-management arrangements provide for full participation in decision-making, and at the low end, that it would ensure that consultation and accommodation is effectively achieved.

Through co-management, ACFN anticipates that land use decisions will align more closely with our values and worldview, and reflect the traditional ecological knowledge that we have about the land. It will provide us a means of exercising more control over our future, and it will provide both ACFN and government with a more comprehensive and rational basis for addressing current and potential land use conflicts than the current project- or permit-based consultations. What we are looking for and offering to Alberta is a model which achieves greater certainty for decision makers.

## **PROPOSED STRUCTURE**

We propose a co-management body comprised of an equal number of representatives of:

- Government departments with authority for land and resource use decision-making,
- First Nations (ACFN and other First Nations with traditional land use in the region)

The co-management body would operate by consensus, with provision for majority and minority reports in the event that consensus recommendations cannot be reached.

The co-management body would be established by legislation, which would include provisions for funding appropriations and a 5-year review process.

## **KEY RESPONSIBILITIES**

The co-management body would:

- make recommendations to government and to participating First Nations on land use, policy and regulatory matters within the Lower Athabasca Planning Area, including:
  - o land use zones and priorities for use;
  - o regional air and water quality thresholds and management frameworks, including cumulative effects;
  - o natural resource management plans, including forest management, watershed and waterway management plans; and,

- authorizations for resource extraction, infrastructure, recreation, tourism, and community use.
- consider input from municipalities, multi-stakeholder bodies, non-government organizations and the public on land use matters; and,
- review, monitor and report against established objectives, indicators and thresholds.

## **ACFN LAND USE ZONES AND CO-MANAGEMENT CONSIDERATIONS**

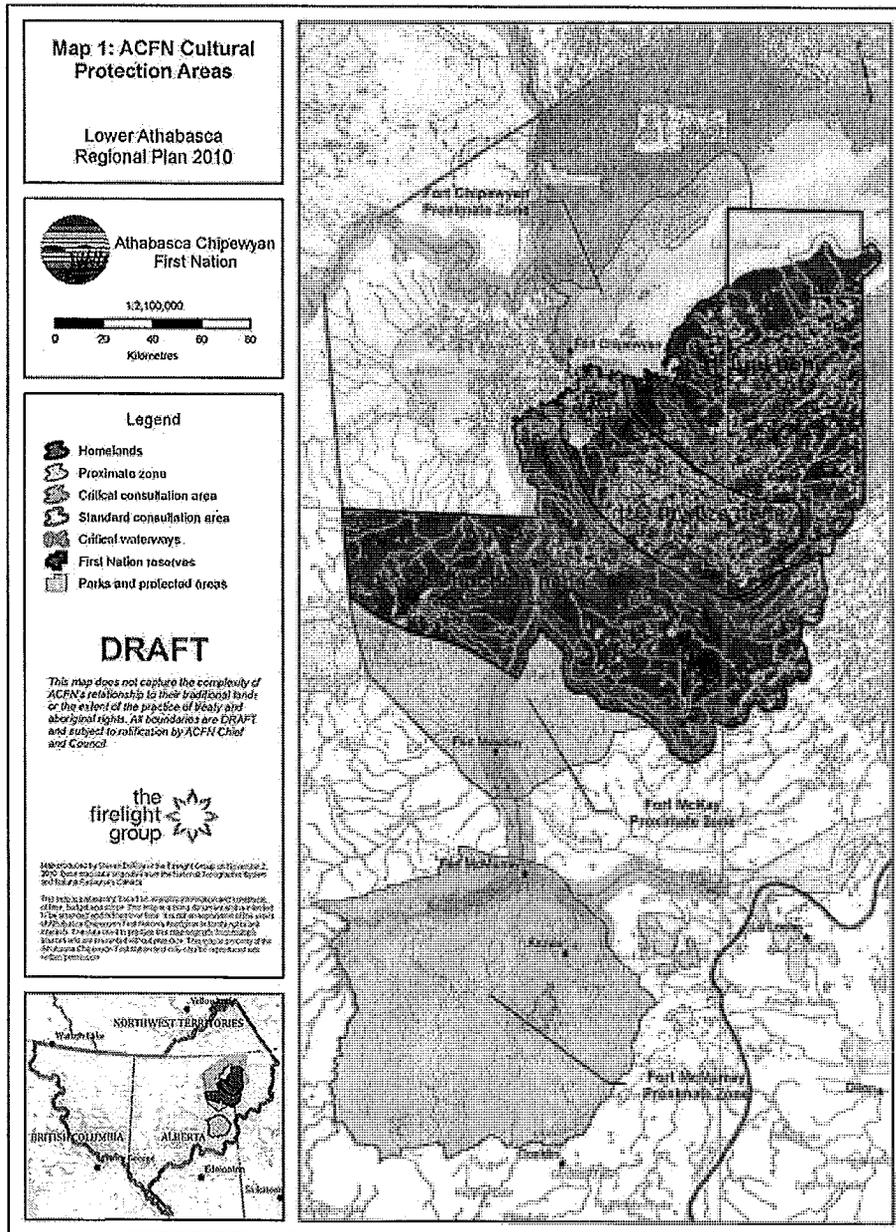
In Section 4 of our November 22 submission on the LARP, we identified and described several areas of importance to ACFN according to three Cultural Protection Categories: 1) Homeland Zones, 2) Proximate Zones, and 3) Critical Waterway Zones. These zones (see Map 1) also correspond to the level of engagement ACFN would wish to have with the Province in each area through a co-management body.

### ***Homeland Zones: Shared Decision-Making***

The Homeland Zones we have defined around Old Fort, Jackfish Lake, and Poplar Point are considered to be of critical importance to the past, present and future exercise of ACFN rights. As such, ACFN would consider these areas to be an integral sub-region and central focus for shared land-use decision-making. Sub-regional planning, policy and regulatory approvals in respect of these areas would be undertaken in accordance with the recommendations of the co-management body. In order to achieve this result, members of the co-management body would work together to design a set of criteria that would guide land use planning and decision making within this zone.

### ***Proximate Zones and Critical Waterways: Special Management Provisions***

These areas are of ongoing importance to ACFN members as well as other Albertans for a variety of purposes. Consultations with ACFN on the management of land use activities and the cumulative effects of development is required in order to ensure that treaty rights are not infringed or eroded. ACFN believes that this can be accomplished in part by establishing thresholds for resource use and parameters for monitoring programs. Such thresholds and parameters would be established by the co-management body as guidance for regulators and developers in order to maintain the integrity of air, land and water within these areas and to minimize the impacts on treaty rights. To be clear, the co-management body would work together toward the development of a consultation framework or protocol that would set out the factors to be taken into account by decision makers.



## KEY CONSIDERATIONS

The role of the co-management body in respect to land use, policy and regulatory matters must be established under legislation.

Provision must be made in legislation to ensure that government will implement consensus recommendations made by the co-management body concerning the ACFN Homeland Areas in the absence of significant and compelling reasons to the contrary. Where there is no consensus, provisions for resolving the issue by agreement between ACFN and the Minister should be provided.

Thresholds and management frameworks recommended by the co-management body outside of ACFN Homeland Areas must be meaningfully considered in granting regulatory approvals or establishing policies for land use.

Provisions for public and multi-stakeholder body submissions to the co-management board must be provided.

## **HOW THE MODEL MIGHT WORK – A BRIEF EXPLANATION**

Based on the foregoing, it is ACFN's submission that a co-management model must effectively accomplish two things: (1) clarity in terms of the kinds of activities that Alberta can authorize throughout the LARP area and (2) clarity in terms of the process by which those activities can be authorized.

In order for this model to work, ACFN is of the view that:

- certain areas of LARP, likely within parts of the Richardson Backcountry, must be preserved for exercise of ACFN's constitutionally-protected rights now and for the future – this would involve a high degree of input by the co-management body into decision making, based on mutually agreed-upon decision-making criteria – any decisions made by Crown officials would have to follow a prescribed set of factors and it would be the exception, rather than the rule, whereby those decisions contradicted the input and advice of the co-management body – exercise of constitutionally-protected rights would have constitutional priority in this area
- certain areas of the LARP would be open for certain limited kinds of development or non-First Nation use outside of the areas above – the co-management body would agree to a set of decision-making or consultation criteria to guide decisions in this area
- another part of the LARP would be open for most kinds of development, provided that ACFN is given notice prior to decisions being made, and provided that ACFN has, if they wish, some input into decision making where one or more decisions has the potential to infringe their rights or where one or more decisions (individually or cumulatively) has the potential to adversely affect ACFN exercise of constitutionally-protected rights in either in the Richardson Backcountry or certain of the areas of limited use in the previous bullet – the idea here would be that development or conflicting non-ACFN use would be the rule, rather than the exception

The three or more “zones” would be informed by various information including current and future requirements of ACFN to exercise their constitutionally-protected rights (see, for example, TLRUMP proposal), economic and other considerations for growth of the Alberta economy, and the current and future anticipated impacts of development and other uses on ACFN’s constitutionally-protected rights. The ultimate goal would be to preserve certain areas for future ACFN use that are free from conflicting uses, while ensuring an orderly process for development of other areas.

## **NEXT STEPS**

ACFN is proposing the establishment of a co-management body and the recognition of ACFN Cultural Areas as part of the implementation of the Lower Athabasca Land Use Plan. ACFN recognizes that other First Nations also have priority areas within the LARP planning area, and would welcome the engagement of other First Nations in these discussions.

As we are proposing that the co-management body be established under provincial legislation, **we see the next step to be the appointment by the Crown on behalf of the province of Alberta a representative to begin negotiations on the specific mechanisms for establishment of a co-management body with ACFN and other interested First Nations.**

ACFN sees these negotiations as being funded by Alberta, with a specific mutually agreed work plan, time lines and budget. The negotiators would, among other things:

- define the three or more use zones based on the above discussions – setting out the kinds of use that can be carried out in each zone;
- define the criteria for decision making in each zone, including negotiation of a detailed consultation protocol related to decision making in each zone;
- work out the legislative mechanism(s) by which the co-management approach would be implemented; and,
- ensure that, at least in the first two zones described above, little or no industrial or other activity is permitted which would adversely affect or infringe ACFN’s constitutionally-protected rights until the co-management approach is completed and enshrined in provincial legislation.

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August 11, 2013

Toronto

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Our Matter No: 1141870

Montréal

**SENT BY ELECTRONIC MAIL**

Ottawa

Alberta Energy Regulator  
Suite 1000, 250- 5th Street SW  
Calgary, Alberta T2P 0R4

New York

Attention: Mirtyll Alboiu  
Application Coordinator

Dear Ms. Alboiu:

**Re: TECK RESOURCES LIMITED (“Teck”)  
APPLICATIONS 1749543, 1749567, 1749568, 1749569, 1749570, 1749572,  
1749605, 1749607, 1749620, 1751999, 1752756, 1763318, 1763325, 1763326 and  
1763327 (“Applications”)  
2012/2013 WINTER COREHOLE PROGRAM (“Program”)  
TECK REPLY SUBMISSIONS**

We are in receipt of the written submissions and evidence of the Athabasca Chipewyan First Nation (“ACFN”), the Mikisew Cree First Nation (“MCFN”) and the Fort Chipewyan Métis Local 125 (“FCM”). Please find attached the following evidence submitted on behalf of Teck in response to these submissions:

1. Technical memorandum regarding Program specifics, prepared by Victoria Yehl of Teck (Attachment 1).
2. Technical memorandum regarding water use and quality, prepared by Ian Mackenzie of Teck (Attachment 2).
3. Technical memorandum regarding wood bison and other wildlife, prepared by Martin Jalkotzy of Golder Associates Ltd. and Linda Halsey of Stantec Inc. (Attachment 3).
4. Technical memorandum regarding reclamation for the Program, prepared by Victoria Yehl of Teck and Murray Hubscher of Boreal Land Services Ltd. (Attachment 4).
5. Technical memorandum regarding Program consultation and effects on traditional land use, prepared by Janais Turuk of Teck (Attachment 5).

# OSLER

Curriculum vitae for each of the witnesses that Teck intends to present at the hearing are enclosed as Attachment 6.

In addition, we wish to specifically address the issues raised by MCFN as to the scope of the upcoming hearing, scheduled to commence on August 19, 2013.

## **Scope of the Hearing**

With respect to the scope of the hearing, Teck takes issue with the following submissions of MCFN:

1. the environmental impacts of all operations preparatory or incidental to drilling the wells for which Teck is seeking licences should be considered by the Alberta Energy Regulator (“AER”);
2. the effects of the Frontier Project should be taken into consideration in deciding whether to grant the well licences for the Program; and
3. the cumulative effects associated with winter drilling programs and other industrial operations in this area should be taken into account in considering the Applications.

For the reasons that follow, Teck submits that the above requests ask the AER to consider matters that are outside the AER’s jurisdiction and/or are not within the scope of this hearing. Therefore, these matters should not be taken into account by the AER in considering the Applications.

### **1. The Surface Activities Preparatory or Incidental to the Program are Outside the Scope of this Hearing**

The regulatory regime in Alberta that applies to oil sands exploration activities is divided: Alberta Environment and Sustainable Resource Development (“ESRD”) is responsible for matters under the *Public Lands Act*, the *Environmental Protection and Enhancement Act* (“EPEA”), and the *Water Act*, whereas the AER is responsible for matters under the *Oil and Gas Conservation Act* (“OGCA”). Although this regime will change once the entire *Responsible Energy Development Act* (“REDA”) comes into force (at which time the AER will assume responsibility for the implementation of each of the above Acts), regulation of the Program is divided between the AER and ESRD.

As demonstrated by the materials filed by Teck with the AER on July 11, 2013, the surface activities associated with the Program – which MCFN characterizes as the activities “preparatory and incidental” to the drilling of the proposed wells – have already been reviewed, consulted on, and *approved* by ESRD. While Teck also requires well licences from the AER (which will permit Teck to drill into and evaluate the McMurray

Formation) prior to commencing the Program, Teck submits that the AER's review of the Applications should not reconsider the same issues that have already been decided by ESRD. This is particularly true in this case, as the same issues raised by ACFN, MCFN and FCM in the present proceeding were previously raised to and considered by ESRD, the regulator with jurisdiction to consider these issues under the *Public Lands Act*, *EPEA*, and *Water Act*. This is evident from the consultation adequacy determinations made by ESRD with respect to ACFN and MCFN on November 28, 2012 (see ESRD letters appended hereto as Attachment 7).

In support of its position regarding the scope of the hearing, MCFN relies on sections 11 and 94 of the OGCA as well as the overall framework of the REDA and, in particular, subsection 2(1) of that Act.<sup>1</sup> We note at the outset that a significant portion of the REDA – that which specifically deals with the AER's mandate as it relates to environmental matters – has not yet come into force. In particular, paragraph 2(1)(b) of the REDA, on which MCFN relies (and which is the subject of the portions of the Government of Alberta's "*Enhancing Assurance*" document that MCFN relies on), has not yet come into force. Neither have paragraphs 2(2)(b), (c), (d), (h) or (i). The Province has specifically chosen to withhold proclamation of these provisions, despite declaring other provisions of the REDA into force effective June 17, 2013. As a result, until these provisions come into force, the AER *does not* have the power to regulate:

- the disposition and management of public lands or any matters arising under the *Public Lands Act*;
- the protection of the environment or any matters arising under the *EPEA*, including remediation and reclamation of wells and other operations in respect of energy resource activities;
- the monitoring of energy resource activity site conditions and the effects of energy resource activities on the environment; or
- the conservation and management of water, including the wise allocation and use of water or any matters arising under the *Water Act*.

These are matters which presently fall under the jurisdiction of ESRD, not the AER.

Furthermore, we disagree with MCFN's interpretations of sections 11 and 94 of the OGCA. The restriction on conducting activities "preparatory or incidental" to drilling wells prior to obtaining licences in s. 11 of the OGCA is included as a practical prevention measure that avoids having operators alter the surface of the land without first obtaining subsurface approval from the AER. This provision in no way purports to grant

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<sup>1</sup> MCFN Submission dated August 1, 2013, at paras 8, 10, 11.

# OSLER

the AER the power to *assess* surface impacts or to include the broad scope of impacts alleged by MCFN in its well licence decision-making process. In fact, well licences granted by the AER typically state that surface access or use is *not* authorized by the licence. Similarly, the application form for well licences from the AER focuses on information regarding the proposed well locations, depths, types, and purposes and the target formation type, name, rights and owner. These application forms do not require the applicant to submit information regarding environmental or other surface impacts. Therefore, there is nothing in s. 11 of the OGCA to suggest that the AER should consider environmental impacts that have already been assessed by ESRD.

With respect to section 94 of the OGCA, this provision states that “[e]xcept where otherwise provided, the Regulator has exclusive jurisdiction to examine, inquire into, hear and determine all matters and questions arising under this Act” (emphasis added). Again, there is nothing in this provision to suggest that the AER should consider environmental impacts that have already been assessed by ESRD. The *Public Lands Act*, EPEA, *Water Act* and associated regulations give ESRD (not the AER) express powers to consider, assess, and grant applications for land and water use such that the examination, inquiry, hearing and determining of matters associated with “incidental and preparatory” activities have been “otherwise provided” for the purposes of s. 94 of the OGCA. Similarly, given ESRD’s expertise and legislated responsibility for granting the necessary surface dispositions associated with the Program, it is also clear that this section cannot operate to give the AER *exclusive jurisdiction* to assess environmental and other surface impacts. Such a result would be absurd, which fundamental rules of statutory interpretation state should be avoided.<sup>2</sup> Finally, we submit that the matters of concern raised by MCFN do not “arise under” the OGCA, since the OGCA merely allows the wells for the Program to extend into a resource-bearing formation. Again, all of the surface activities required for the Program are regulated by ESRD under the *Public Lands Act*, the EPEA, and the *Water Act*. This further supports the view that s. 94 of the OGCA does not apply in these circumstances to broaden the jurisdiction of the AER.

In summary, although MCFN states that the AER must expand the scope of the hearing to effectively protect the environment,<sup>3</sup> it is not the AER’s responsibility to protect the environment. That is the responsibility of ESRD, who has already thoroughly reviewed and approved all surface impacts associated with the Program. The AER recently confirmed that issues involving the designation of protected areas, land use policy and regulation and access management on Crown lands are the jurisdiction of ESRD.<sup>4</sup> Teck submits that the AER should respect the legislative division of responsibilities between

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<sup>2</sup> Ruth Sullivan, *Sullivan on the Construction of Statutes* 5<sup>th</sup> ed (Markham ON: Lexis Nexis Canada, 2008) at 300, 317-18.

<sup>3</sup> See, eg, MCFN Submission dated August 1, 2013, at para 12.

<sup>4</sup> ABAER Decision 2013-014 re. Dover Operating Corp. at paras 111-12.

ESRD and the AER and should not reconsider issues that have already been decided by ESRD, as this would result in regulatory inefficiencies and duplication, and would undermine ESRD's jurisdiction to manage these issues.

## **2. The Effects of the Frontier Project are Outside the Scope of this Hearing**

MCFN asks the AER to consider the “direct link between the Winter Work Program and Teck’s proposed Frontier Oil Sands Mine.”<sup>5</sup> It is unclear what conclusions MCFN is urging the AER to draw based on the fact that the Program is to be conducted to support the collection of information required for the Frontier Project to proceed. Teck does not dispute that the Program would not be conducted if it was not seeking approval for an oil sands development scheme in the same area, but consideration of the environmental effects of the Frontier Project in this proceeding would be premature and inefficient. Both provincial and federal laws require a full environmental impact assessment for the Frontier Project, which is currently the subject of a separate in-depth review and public hearing process. In addition, the environmental effects of the Frontier Project are of a completely different type and scope as compared to those associated with the Program. In Teck’s view, considering the effects of the Frontier Project in this hearing would not provide the Regulator with any useful information in considering whether to approve the Applications, would confuse the issues, and would result in considerable inefficiencies since the effects of the Frontier Project will be thoroughly assessed in a separate review process. Therefore, Teck submits that the effects of the proposed Frontier Project should be outside the scope of this hearing.

## **3. Cumulative Effects are Outside the Scope of this Hearing**

Both MCFN and ACFN allege that the cumulative impacts of development in the Lower Athabasca Region should be considered in reviewing the Applications. While Teck acknowledges that cumulative impacts in the region are an important issue, this is a matter of policy to be addressed by government, such as through the Lower Athabasca Regional Plan (“LARP”, appended hereto as Attachment 8) which was finalized in 2012 and is binding on the AER.<sup>6</sup> The AER recently confirmed in Decision 2013-014 (regarding the Dover Commercial Project) that “LARP is the most appropriate mechanism for identifying and addressing the regional cumulative effects of resource development activities” and that the AER “must act in accordance with LARP as it exists today.”<sup>7</sup> As was the case for the Dover Commercial Project, Teck’s Program is located in an area designated for oil sands exploration and development under LARP.

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<sup>5</sup> MCFN Submission dated August 1, 2013, at para 15(e).

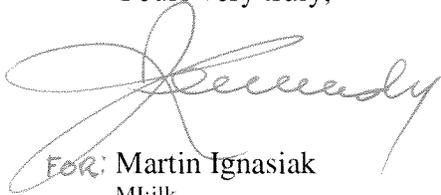
<sup>6</sup> REDA, s. 20.

<sup>7</sup> ABAER Decision 2013-014 re. Dover Operating Corp. at paras 43-44.

# OSLER

Moreover, requiring consideration of cumulative impacts for every winter corehole program in the province would be extremely inefficient and would not assist the AER in determining whether or not to issue well licences for specific corehole programs. Corehole programs are short-term, low impacting activities with certain reclamation horizons. Therefore, Teck submits that assessment and consideration of cumulative impacts of development in the Lower Athabasca Region should be outside the scope of this hearing.

Yours very truly,



FOR: Martin Ignasiak  
MI:jlk

Encl.

c: I. Mackenzie, Teck  
J. Stewardson, AER  
G. Perkins, AER  
K. Cameron, AER  
C. Bertolin, Sunrope Consulting  
J. Biem, Woodward & Co. Lawyers LLP  
M. Gustafson, Janes Freedman Kyle Law Corporation



# **Dover Operating Corp.**

**Application for a Bitumen Recovery Scheme  
Athabasca Oil Sands Area**

**August 6, 2013**

**ALBERTA ENERGY REGULATOR**

Decision 2013 ABAER 014: Dover Operating Corp., Application for a Bitumen Recovery Scheme,  
Athabasca Oil Sands Area

August 6, 2013

Published by

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[44] In addition to considering social, economic, and environmental factors and the public interest in making its determination on the subject application, the AER must also act in accordance with LARP as it exists today. The Panel heard evidence that Fort McKay had requested a protected buffer area around its reserves during development of LARP. The Panel notes that such an area was not included in LARP, reflecting the province's overall land-use intent for the lands where the Project is located. The Panel notes that proper application of LARP is based on regional limits, not project-specific effects. It is expected that as subregional plans and management frameworks continue to be developed they will influence project-specific land use decisions.

[45] The Panel accepts Dover's submission that the Project is located in an area that is designated for oil sands development under LARP, and that developing its subsurface rights under the terms of its leases issued by the province of Alberta is not contrary to LARP.

[46] The Panel notes that Dover's Project is not in, and does not overlap, any of the conservation areas to be established under LARP, and that development of oil sands resources is permitted in the Project area. The Panel finds that Dover's application is compliant with LARP.

## **RESOURCE RECOVERY**

### **Evidence**

[47] The main geological target horizon in the Project area is the Upper McMurray bitumen-bearing sand, which extends over the Project area and exhibits on average 33 per cent porosity and 72 per cent bitumen saturation. The bitumen net pay varies from 7 to 27 metres (m). The thickest sands are associated with structural lows, while the thin sands are associated with structural highs. Future delineation drilling will improve the geological interpretation for the Project area for net pay distribution and reservoir characterization.

[48] The bitumen-bearing sands in the northern part of the Project area occur at depths of about 360 m and are relatively clean with low clay content (less than 3 per cent). The net pay varies from 15 to 20 m. No gas caps were identified in the initial development area.

[49] The bitumen-bearing sands in the southern area of the Project area occur at depths of about 270 m and appear to have higher clay content. The net pay thickness varies from 15 to 27 m. A depleted gas cap, up to 5 m thick, is overlying the bitumen in parts of the Project area.

[50] Based on a 50 per cent recovery factor, the Project would recover 654 million m<sup>3</sup> (4.1 billion barrels) of bitumen over its projected 65-year life. The northern part of the Project area, Townships 95 and 96, would recover 222 million m<sup>3</sup> (1.4 billion barrels).

[51] Dover proposed to begin development, which would include commissioning of the DNP, in the northern parts of the Project area. Dover argued that the northern area of its leases has the highest reservoir quality in terms of bitumen saturation, net pay, porosity, and permeability, and has lower clay content. The reservoir occurs at an average depth of 360 m, which allows for higher operating pressures and higher initial production rates than in other parts of the Dover lease area. The absence of any significant depleted gas zones is also beneficial for SAGD development in this area.

## JACKPINE MINE EXPANSION PROJECT JOINT REVIEW PANEL

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Calgary, Alberta

**SHELL CANADA ENERGY**  
**APPLICATION TO AMEND APPROVAL 9756**  
**JACKPINE MINE EXPANSION PROJECT**  
**FORT MCMURRAY AREA**

**2013 ABAER 011**  
**AER Application No. 1554388**  
**CEAA Reference No. 59540**

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### SUMMARY AND DECISION

[1] Shell Canada Energy (Shell) applied to the Energy Resources Conservation Board (ERCB) for an amendment to the Jackpine Mine—Phase 1 (Phase 1) Approval 9756 to increase bitumen production. The Jackpine Mine Expansion Project (the Project), located about 70 kilometres north of Fort McMurray, would include additional mining areas and associated processing facilities, utilities, and infrastructure and would increase bitumen production by 15 900 cubic metres per day. Shell submitted an environmental impact assessment (EIA) report to Alberta Environment and Sustainable Resource Development<sup>1</sup>, the Canadian Environmental Assessment Agency (CEAA), and the ERCB. The EIA forms part of the application to the ERCB.

[2] The *Oil Sands Conservation Act (OSCA)*, the *Environmental Protection and Enhancement Act*, and the *Water Act* require provincial approvals for the Project. The *Public Lands Act*, the *Municipal Government Act*, and the *Historical Resources Act* require ancillary approvals. The *Fisheries Act* and the *Navigable Waters Protection Act* require federal approvals.

[3] The federal Minister of the Environment and the Chairman of the ERCB entered into the *Agreement to Establish a Joint Review Panel for the Jackpine Mine Expansion Project* (the Agreement) on September 20, 2011. They established the Joint Review Panel (the Panel) under it and appointed Mr. J. D. Dilay, P. Eng. as the Panel chair, and Mr. A. Bolton and Mr. L. Cooke as Panel members. Under the Agreement, the Panel must conduct its review in a manner that discharges the responsibilities of the ERCB under the *Energy Resources Conservation Act (ERCA)* and the *OSCA* and discharges the requirements of the *Canadian Environmental Assessment Act, 2012 (CEAA, 2012)* and the terms of reference attached as an appendix to the Agreement.

[4] In July 2012, *CEAA, 2012* came into force and repealed the *Canadian Environmental Assessment Act*. The Panel's assessment continued under the process established in section 126 of the *CEAA, 2012* as if it had been referred to a review panel under section 38 of the *CEAA, 2012*. The Minister and Chairman signed an amendment to the Agreement on August 3, 2012, to account for the *CEAA, 2012* changes. The amended Agreement states that the Panel's report shall set out the rationale, conclusions, and recommendations of the Panel, relating to the environmental assessment of the Project, including any mitigation measures and follow-up program, and a summary of comments received from the public, including Aboriginal persons and groups. The report must also identify those conclusions and mitigation measures that relate to the environmental effects to be taken into account under section 5 of the *CEAA, 2012*.

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<sup>1</sup> Alberta Environment and Alberta Sustainable Resource Development were combined in 2012 to form Alberta Environment and Sustainable Resource Development

[5] The Panel conducted a hearing that began in Fort McMurray, Alberta on October 23, 2012, and concluded in Edmonton, Alberta on November 21, 2012.

[6] On June 17, 2013, the *Responsible Energy Development Act (REDA)* came into force in Alberta. The *REDA* repealed the *ERCA* (which established the ERCB) and created the Alberta Energy Regulator (AER). In accordance with the terms of the *REDA*, the AER assumed all of the ERCB's powers, duties, and functions under Alberta's energy resource enactments, which include the *OSCA*. Under the terms of the *REDA* and its *Transition Regulation*, the AER assumed the position of the ERCB under the Agreement, and it completed the ERCB's responsibilities under the Agreement. Throughout this transition from the ERCB to the AER, the authority of the Panel members continued without interruption in accordance with the *Transition Regulation*.

[7] Section 3 of the *ERCA* required the Panel to consider whether the Project was in the public interest when the Panel conducted the hearing. The Panel has therefore included findings about the public interest in this report to indicate how it considered the public interest when it conducted the hearing. The Panel is also aware of its responsibilities under section 15 of the *REDA* and section 3 of the *REDA General Regulation* and is satisfied that throughout this proceeding and in this decision report it has considered the factors that are identified in those provisions. This includes a consideration of the social and economic effects of the Project and of the effects of the Project on the environment.

## Decision

[8] Having regard for its responsibilities under the *REDA*, *ERCA*, *OSCA*, and *CEAA, 2012*, the Panel has carefully considered all of the evidence pertaining to Shell's application. The Panel notes that the Project is in an area that is nearly surrounded by other oil sands mines and in which the government of Alberta has identified bitumen extraction as a priority use. The Panel further notes that Shell's application is for an expansion of an existing oil sands mine project. The Project would provide significant economic benefits for the region, Alberta, and Canada. Although the Panel finds that there would be significant adverse project effects on certain wildlife and vegetation, under its authority as the AER, the Panel considers these effects to be justified and that the Project is in the public interest. The Panel has decided to approve AER Application No. 1554388 and to amend AER Approval 9756, subject to the conditions in appendix 5. The Panel expects Shell to adhere to all of the commitments it made to the extent that those commitments do not conflict with the terms of its AER approval, any other approval or licence affecting the Project, or any law, regulation, or similar requirement that Shell is bound to observe.

[9] The Panel finds that the Project would likely have significant adverse environmental effects on wetlands, traditional plant potential areas, wetland-reliant species at risk, migratory birds that are wetland-reliant or species at risk, and biodiversity. There is also a lack of proposed mitigation measures that have been proven to be effective. The Panel also concludes that the Project, in combination with other existing, approved, and planned projects, would likely have significant adverse cumulative environmental effects on wetlands; traditional plant potential areas; old-growth forests; wetland-reliant species at risk and migratory birds; old-growth forest-reliant species at risk and migratory birds; caribou; biodiversity; and Aboriginal traditional land use (TLU), rights, and culture. Further, there is a lack of proposed mitigation measures that have

proven to be effective with respect to identified significant adverse cumulative environmental effects.

[10] The Panel understands that the provincial and federal governments will need to make separate decisions about the Project, taking into account the Panel's report. The Panel acknowledges that Shell is planning to reclaim the Project footprint to equivalent land capability. The Panel believes that reclamation is useful but that it will not mitigate all of the significant effects because some habitat types cannot be reclaimed (e.g., peatlands), and reclamation will not occur or be complete for many years.

[11] Minimizing adverse effects may be difficult or impractical in a large mine because it generally requires sterilizing bitumen resources, or it may impose constraints that affect the ability to operate the mine in a safe, efficient, and economical manner. However, the Panel is concerned about the lack of mitigation that has proven to be effective for the loss of these habitats and believes that without additional mitigation, significant adverse effects will occur.

[12] The Panel believes that conservation offsets are one of the few available mitigation measures that could be used to mitigate these effects. The Panel is also of the view that offsets used to help mitigate project effects would also help mitigate cumulative effects. However, Shell did not propose or support the use of conservation offsets, and none of the other participants in the hearing provided any evidence on the possible location of such offsets that would allow the Panel to assess the potential for the offsets to further mitigate the effects of the Project. The Panel therefore recommends that before other provincial and federal approvals are issued, the governments of Canada and Alberta cooperatively consider the need for conservation offsets to address some of the likely significant adverse effects of the Project. The Panel also recommends that if the governments of Canada and Alberta identify offsets as necessary, the selection and implementation of conservation offsets should consider the effects of the offsets on existing Aboriginal TLU and consider the need to maintain areas for traditional use by Aboriginal peoples, including areas containing traditional plants and other culturally important resources.

[13] With regard to the prediction of significant cumulative effects for several key indicator resources and species at risk, the Panel has determined that the Project itself only contributes incrementally to some of these effects and that most of these effects result from projects and disturbances that either currently exist or have already been approved. The Panel took a conservative and precautionary approach when making these determinations and recognizes that any determination of significant adverse cumulative effects includes some degree of uncertainty.

[14] The Panel also believes that the *Lower Athabasca Regional Plan (LARP)*, although still a work in progress, is an appropriate mechanism for identifying and managing regional cumulative effects, including the proposed biodiversity management framework and new Alberta wetlands policy (both in development). The *LARP* is an excellent and important framework for beginning to introduce a more integrated regional approach, and the Panel strongly encourages Alberta to continue to implement this regional plan. It is critical that the frameworks, plans, and thresholds identified in the *LARP* be put in place as quickly as possible. Future project reviews will benefit greatly from the completion of this regional approach.

[15] The Panel also notes that the governments of Canada and Alberta have established the *Joint Canada-Alberta Implementation Plan for Oil Sands Monitoring* in order to ensure

environmentally responsible development of the oil sands resource, and this initiative will help promote a better understanding of cumulative effects in the Lower Athabasca region.

[16] The Panel has made 88 recommendations to the federal and provincial governments (appendix 6). The Panel believes that these recommendations are important for the successful implementation of the Project and for the future development of the oil sands area. The Panel also sets out 22 conditions for Shell (appendix 5).

### **Summary of Key Findings**

[17] While some uncertainties continue at the project level, particularly with groundwater modelling, bitumen recovery, tailings management, and reclamation, Shell stated that it will continue to use an adaptive management strategy and will work with regulators to address the uncertainties and site-specific issues associated with the mining and processing of oil sands in its lease areas.

[18] The Panel has concluded that the Project would provide significant economic benefits for the region, the province, and Canada. The Project is an expansion of an existing project and is in an area where the government of Alberta has identified bitumen extraction as a priority use. Shell stated that the Project will result in the recovery of about 325 million cubic metres of dry bitumen over its approximately 40-year life. The municipal, provincial, and federal governments will all receive significant financial benefits as a result of the Project. The Project will provide major and long-term economic opportunities to individuals in Alberta and throughout Canada, and will generate a large number of construction and operational jobs.

[19] The Panel finds that diversion of the Muskeg River is in the public interest, considering that approximately 23 to 65 million cubic metres of resource would be sterilized if the river is not diverted, and considering the low level of predicted environmental effects on water quality and quantity in the lower reaches of the river. The upper reaches of the Muskeg River to be diverted have low fisheries habitat value, and the evidence indicated only limited Aboriginal use of the area. The Panel recognizes that the relevant provincial agencies were not at the hearing to address questions about why the Project is not included in the *Muskeg River Interim Management Framework for Water Quantity and Quality*. The Panel believes that there will be significant and unacceptable sterilization of bitumen if the diversion does not occur.

[20] The Panel recognizes that Shell's proposal to eliminate mature fine tailings (MFT) from the Project's end pit lakes (EPLs) will improve current tailings management practices and could reduce potential toxicity in receiving water bodies and potential fish tainting risks. The Panel agrees with the adaptive management concept and concludes that with the implementation of Shell's proposed mitigation measures and commitments and with the Panel's conditions, expectations, and recommendations, significant adverse environmental effects are unlikely to result from the use of MFT-free EPLs. However, the Panel requires that Shell report on alternatives to treating EPLs passively and provide a comprehensive economic and technical assessment of feasible active water treatment options to ensure that EPLs will meet water quality release criteria at closure.

[21] Although the Panel has concluded that the Project is in the public interest, project and cumulative effects for key environmental parameters and socioeconomic impacts in the region have weighed heavily in the Panel's assessment. In approving this Project, the Panel has set new

approval conditions for mining operations, resource conservation, tailings management, groundwater, EPLs, and reclamation. For a summary of the new conditions, refer to appendix 5. The Panel has also made recommendations, summarized in appendix 6, to the federal and provincial governments.

### **Environmental Effects**

[22] The Panel has concerns with some of the methods used by Shell to assess effects on terrestrial resources and Aboriginal TLU, rights, and culture. These concerns are that the local study area (LSA) consists of only the Project and existing Phase 1 footprints, that there is a lack of ecological context, and that the large size of the regional study area (RSA) adopted by Shell causes a “dilution effect.” The Panel also found it difficult to assess the significance of effects because of the coarse-scale Landsat imagery Shell used to estimate land cover type, because of the lack of use of thresholds to determine significance, and because of Shell’s consequent reliance on professional judgement.

[23] The Panel concludes that it could not rely on Shell’s assessment of the significance of project and cumulative effects on terrestrial resources. The Panel reviewed the evidence using a 20 per cent loss threshold and considered other factors relating to the reliability of Shell’s determination of the significance of effects.

[24] The Panel concludes that the Project would have significant adverse environmental project effects on wetlands, traditional plant potential areas, wetland-reliant species at risk, migratory birds that are wetland-reliant or species at risk, and biodiversity. The Panel also concludes that the Project, in combination with past, present, and reasonably foreseeable future projects, would likely result in significant adverse cumulative effects on wetlands; old-growth forests; traditional plant potential areas; wetland-reliant species at risk and migratory birds; old-growth forest-reliant species at risk and migratory birds; caribou; biodiversity; and Aboriginal TLU, rights, and culture.

[25] The Panel understands that a large loss (over 10 000 hectares) of wetlands would result from the Project, noting in particular that 85 per cent of those wetlands are peatlands that cannot be reclaimed. The Panel further understands that wetlands provide important habitat for many migratory birds and species at risk. Based on the evidence presented, the Panel could not conclude that the remaining wetlands in the RSA would be sufficient to alleviate the effects of wetland habitat loss in the LSA. The Panel concludes that the Project would have high-magnitude, long-term, and likely irreversible effects on wetlands that are in an area nearly surrounded by, and thus affected by, other existing and approved oil sands mines. The Panel has determined that due to the adverse effects on wetlands in the LSA, species that rely on these habitats would be significantly affected. The Panel finds the effects on species reliant on wetlands to be high in magnitude, regional in scope, long-term, and potentially irreversible. The Panel also finds that significant cumulative effects on wetlands and wetland dependent species are likely in the RSA.

[26] The Panel finds that there would be high-magnitude, long-term, but possibly reversible cumulative effects on old-growth forest in the far future (2165). The Panel believes that Shell’s estimation of remaining old-growth in the RSA is, at best, uncertain, and thus using the precautionary approach the Panel concludes that there would be significant cumulative effects. The Panel also believes that reclamation will not sufficiently mitigate the effects on species at

risk and migratory birds that rely on old-growth forest because of the substantial amount of time needed to re-establish habitat. The Panel has also determined that there would be significant adverse cumulative effects on species that rely on old-growth forests.

[27] The Panel finds that most of the high and moderate traditional plant potential in the LSA will be lost during the construction and operation phases and that after closure and reclamation the high and moderate traditional plant potential will decrease in the LSA by 7 and 52 per cent, respectively. Given that most of the Project area will not support traditional plants for several generations, the Panel also considers the effects to be long-term. The Panel notes that some traditional plants may never re-establish because they occur on wetlands that cannot be reclaimed. The Panel also notes that although Shell's planting prescription for achieving the desired post-reclamation range of ecosite phases includes some traditional plants, Shell largely relies on natural ingress and that there is limited opportunity to place topsoil and subsoil directly. For these reasons, the Panel finds that there would be significant adverse project effects on traditional plant potential areas. The Panel also concludes that the Project would have significant adverse cumulative effects on traditional plant potential in the RSA because of the significant levels of disturbance predicted for areas of high and moderate traditional plant potential, the long time lag between disturbance and reclamation, and the uncertainty associated with wetlands reclamation.

[28] The Panel notes that a substantial amount of habitat for migratory birds that are wetland or old-growth forest dependent will be lost entirely or lost for an extended period. The Panel finds the project effects on wetland and old-growth forest-reliant migratory birds to be moderate in magnitude, regional in extent, long-term, and potentially irreversible given that some habitat types cannot be reclaimed. The Panel concludes that these effects would be significant. The Panel further concludes that there would be significant cumulative effects on wetland and old-growth forest-reliant migratory birds, mainly as a result of the effects on habitat loss of past, present, and future projects in combination with the Project.

[29] The Panel notes that caribou, a species at risk that appears to be declining to extirpation in some herds, are traditionally and culturally important to Aboriginal people. The Panel finds that there has been and would continue to be significant adverse cumulative effects on caribou largely due to the catastrophic loss of caribou habitat from the preindustrial case (PIC) to the application case. The Panel concluded that Project effects would likely result primarily from a potential increase in predation on caribou in adjacent areas due to the increasing loss of habitat for caribou predators (e.g., wolves) within the Project LSA.

[30] The Panel has assessed the effects on biodiversity at the species, ecosystem, and landscape levels. The Panel believes that there appears to be a high potential for significant loss of biodiversity based on overall wildlife habitat loss, unproven methods for reclamation of peatlands and old-growth forest, and the long time lag between disturbance and reclamation. The Panel finds a high-magnitude, long-term, potentially irreversible effect on biodiversity at the LSA scale and concludes that it is a significant effect. The Panel also finds that there would be significant adverse cumulative effects on biodiversity in the RSA.

[31] The Panel is concerned about the lack of mitigation measures proposed for loss of wildlife habitat in the LSA that have been shown to be effective, particularly for wetland and old-growth habitat used by species at risk and migratory birds. The Panel believes that without

additional mitigation, there will be significant adverse effects on species abundance and diversity. The Panel believes that these adverse project effects, if not adequately mitigated, will contribute to adverse effects on biodiversity as well. Given the predicted declines in biodiversity in the RSA, the degree of error associated with Shell's estimates, the loss of habitat for species at risk, the uncertainty associated with habitat reclamation, and the lack of mitigation shown to be effective, the Panel finds a significant adverse effect on biodiversity in the RSA as a result of the cumulative effects of the application case and the planned development case (PDC) compared with the PIC. Despite uncertainty around appropriate thresholds to be used, the Panel believes that cumulative effects on wildlife observed in both the application case and PDC in the Project area have exceeded or are approaching some of the proposed thresholds, resulting in significant adverse effects on biodiversity. Although the Panel recognizes that *LARP* and other regulations and policies of the government of Alberta do not currently mandate the use of conservation offsets in the oil sands region, given that there are few options available for avoiding or minimizing the adverse effects of large surface mines, the Panel believes that the use of conservation offsets may be necessary.

[32] The Panel recognizes that numerous issues and challenges are related to the regional environmental effects of oil sands development. It is clear that critical issues about oil sands development are increasingly not project specific, and successful management of these issues is often not the sole responsibility of an applicant or proponent. As has been the case with other recent decisions on mineable oil sands development, many of the concerns and issues related to this proposal have to do with the pace of development of the mineable oil sands and the capacity of the regional environment to absorb these developments without creating effects that result in further development not being in the public interest. The Panel believes that a more integrated and comprehensive approach is required to adequately address cumulative effects of mineable oil sands development. While the *LARP* is an essential first step, its value will be fully realized only when all of its frameworks and thresholds are in place and being applied. The Panel encourages the government of Alberta to continue the processes associated with implementation of the *LARP* on an urgent basis.

### **Effects on Aboriginal Traditional Land Use, Rights, and Culture**

[33] The Panel finds that the Project will result in the loss of lands and some resources used for TLU activities and that this will affect some Aboriginal people who use the Project area. The Panel finds that the mitigation measures proposed by Shell are not sufficient to fully mitigate these effects. The Panel believes, however, that project effects alone are unlikely to destroy or fundamentally alter the ability of the Aboriginal groups to practise TLU activities or to exercise their rights. The Panel therefore finds that project effects, while adverse, are not likely to be significant.

[34] In contrast, the Panel finds that project effects, in combination with the effects of other existing, approved, and planned developments and other disturbances in the region surrounding the Project are likely to result in significant adverse cumulative effects on Aboriginal TLU, rights, and culture. The Panel finds that significant areas have already been or will be lost for the purposes of TLU as a result of existing, approved, and planned activities. The Panel also finds that natural disturbances and other resources important for the practise of Aboriginal TLU, rights, and culture such as wetlands, old-growth forests, traditional plant potential areas, migratory birds, and wildlife species, such as caribou, have been or will be subject to significant

adverse cumulative effects. The Panel recognizes that disturbed areas will eventually be reclaimed, but this will not occur for many years, some types of habitat cannot be reclaimed, the landscape will be significantly altered, and some species loss may be irreversible. The long-term and possibly irreversible nature of these effects has significant implications for the sustainability of traditional ecological knowledge, TLU practices, Aboriginal and treaty rights, and culture.

[35] The Panel believes that determining the significance of project and cumulative effects on TLU and on Aboriginal and treaty rights and culture is a complex exercise that cannot be done simply by looking at the availability of the required resources and access to them. A thorough and proper assessment requires an understanding and integration of a host of issues, including effects on the availability of and access to the resources important to Aboriginal people and the combined effects of noise, odours, barriers to access, perceived contamination of resources, socioeconomic effects, cultural practices, and other factors that influence the choices of people about whether to engage in TLU activities. In addition, the number and variety of projects and activities occurring in the oil sands region, the multiplicity of TLU, rights, and cultural practices associated with the various Aboriginal groups, and a lack of consensus on the appropriate methodology and thresholds for determining when significant adverse effects on Aboriginal TLU, rights, and culture might be occurring make it challenging for individual project proponents, as well as panels such as this one, to complete these assessments. The Panel agrees with Shell and the Aboriginal groups participating in this review that completing cumulative effects assessments on a regional basis, rather than on a project-by-project basis, would be more effective and would reduce the potential for individual project cumulative effects assessments to produce inconsistent results.

[36] It is apparent to the Panel that the mitigations being proposed by individual project proponents are not effective at avoiding significant adverse cumulative effects on TLU in the Project region. The Panel acknowledges that the intent of the *LARP* is to take more of a cumulative-effects-based approach to managing environmental effects in the Lower Athabasca Region, but notes that the *LARP* does not specifically address TLU issues. Instead, the *LARP* provides for continued consultation and engagement with Aboriginal peoples to help inform land and natural resource planning in the region. Several of the Aboriginal groups expressed concern that the *LARP* does not address their concerns and does nothing to ensure ongoing traditional use of the land or to protect their Aboriginal or treaty rights. The absence of a management framework and associated thresholds for TLU makes it very difficult for Aboriginal groups, industry, and panels such as this one to evaluate the impact of individual projects on TLU. The Panel believes that to inform land use planning and allow better assessment of both project and cumulative effects on Aboriginal TLU, rights, and culture, a TLU management framework should be developed for the Lower Athabasca Region. The Panel recommends that Alberta develop and implement a TLU management framework for the Lower Athabasca region as a component of the *LARP*. The Panel recommends that the government of Alberta develop this framework with the involvement of all of the Aboriginal peoples who practise their rights in the oil sands region and who are affected by industrial development.

[37] All of the Aboriginal groups that participated in the hearing raised concerns about the adequacy of consultation by Canada and Alberta, particularly with respect to the management of cumulative effects in the oil sands region and the impact of these effects on their Aboriginal and treaty rights. In its submissions to the Panel on the questions of constitutional law, Canada and Alberta both advised the Panel that Crown consultation with Aboriginal groups was not complete

and that the Panel's report would inform the Crown's subsequent decisions about Aboriginal consultation. The Panel notes that it has determined that the Project may affect Aboriginal TLU, rights, and culture and that the cumulative effects of existing, approved, and planned development on Aboriginal TLU, rights, and culture are likely to be significant. The Panel recommends that Canada and Alberta each consider the Panel's findings in this report when it assesses the adequacy of Crown consultation that has occurred to date in relation to the Project, and when it considers what further consultation may be needed or desirable in order to complete their respective consultation obligations to affected Aboriginal groups.

### **Section 5 of *CEAA, 2012***

[38] Conclusions, mitigation measures, and recommendations related to section 5(1) of the *CEAA, 2012* in this report can be found in the following sections: No Net Loss Plan; Effects of Tailings Ponds on Migratory Birds; Diversion of the Muskeg River; Effects on Wetlands; Effects on Old-growth Forests; Effects on Traditional Plant Potential Areas; Effects on Wildlife and Their Habitat; Human Health; Physical and Cultural Heritage Resources; Capacity of Renewable Resources; and Effects on Aboriginal Traditional Land Use, Rights, and Culture. These sections provide the Panel's findings on

- the effects on fish and fish habitat, and migratory birds; and
- with respect to Aboriginal peoples, the effects in Canada of any change to the environment in health and socioeconomic conditions, physical and cultural heritage, or the current use of lands and resources for traditional purposes, and to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance.

[39] Conclusions, mitigation measures, and recommendations related to section 5(2) of the *CEAA, 2012* in this report can be found in the following sections: No Net Loss Plan; Water Withdrawal from the Athabasca River; and Diversion of the Muskeg River. These sections provide the Panel's findings on the effects that may be caused to the environment and are directly linked or are necessarily incidental to a federal authority's exercise of a power or performance of a duty or function that would permit the carrying out of the project. For this Project, the federal regulatory approvals that may be issued are those required by the Department of Fisheries and Oceans and Transport Canada.

# **Report of the Joint Review Panel**

## **Shell Canada Energy Jackpine Mine Expansion Project**

**Application to Amend Approval 9756  
Fort McMurray Area**

**July 9, 2013**

**Joint Review Panel Established by the Federal Minister of the  
Environment and the Energy Resources Conservation Board**

**REPORT OF THE JOINT REVIEW PANEL ESTABLISHED BY  
THE FEDERAL MINISTER OF THE ENVIRONMENT AND THE  
ENERGY RESOURCES CONSERVATION BOARD**

Decision 2013 ABAER 011: Shell Canada Energy, Jackpine Mine Expansion Project, Application  
to Amend Approval 9756, Fort McMurray Area

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[5] The Panel conducted a hearing that began in Fort McMurray, Alberta on October 23, 2012, and concluded in Edmonton, Alberta on November 21, 2012.

[6] On June 17, 2013, the *Responsible Energy Development Act (REDA)* came into force in Alberta. The *REDA* repealed the *ERCA* (which established the ERCB) and created the Alberta Energy Regulator (AER). In accordance with the terms of the *REDA*, the AER assumed all of the ERCB's powers, duties, and functions under Alberta's energy resource enactments, which include the *OSCA*. Under the terms of the *REDA* and its *Transition Regulation*, the AER assumed the position of the ERCB under the Agreement, and it completed the ERCB's responsibilities under the Agreement. Throughout this transition from the ERCB to the AER, the authority of the Panel members continued without interruption in accordance with the *Transition Regulation*.

[7] Section 3 of the *ERCA* required the Panel to consider whether the Project was in the public interest when the Panel conducted the hearing. The Panel has therefore included findings about the public interest in this report to indicate how it considered the public interest when it conducted the hearing. The Panel is also aware of its responsibilities under section 15 of the *REDA* and section 3 of the *REDA General Regulation* and is satisfied that throughout this proceeding and in this decision report it has considered the factors that are identified in those provisions. This includes a consideration of the social and economic effects of the Project and of the effects of the Project on the environment.

## Decision

[8] Having regard for its responsibilities under the *REDA*, *ERCA*, *OSCA*, and *CEAA, 2012*, the Panel has carefully considered all of the evidence pertaining to Shell's application. The Panel notes that the Project is in an area that is nearly surrounded by other oil sands mines and in which the government of Alberta has identified bitumen extraction as a priority use. The Panel further notes that Shell's application is for an expansion of an existing oil sands mine project. The Project would provide significant economic benefits for the region, Alberta, and Canada. Although the Panel finds that there would be significant adverse project effects on certain wildlife and vegetation, under its authority as the AER, the Panel considers these effects to be justified and that the Project is in the public interest. The Panel has decided to approve AER Application No. 1554388 and to amend AER Approval 9756, subject to the conditions in appendix 5. The Panel expects Shell to adhere to all of the commitments it made to the extent that those commitments do not conflict with the terms of its AER approval, any other approval or licence affecting the Project, or any law, regulation, or similar requirement that Shell is bound to observe.

[9] The Panel finds that the Project would likely have significant adverse environmental effects on wetlands, traditional plant potential areas, wetland-reliant species at risk, migratory birds that are wetland-reliant or species at risk, and biodiversity. There is also a lack of proposed mitigation measures that have been proven to be effective. The Panel also concludes that the Project, in combination with other existing, approved, and planned projects, would likely have significant adverse cumulative environmental effects on wetlands; traditional plant potential areas; old-growth forests; wetland-reliant species at risk and migratory birds; old-growth forest-reliant species at risk and migratory birds; caribou; biodiversity; and Aboriginal traditional land use (TLU), rights, and culture. Further, there is a lack of proposed mitigation measures that have

proven to be effective with respect to identified significant adverse cumulative environmental effects.

[10] The Panel understands that the provincial and federal governments will need to make separate decisions about the Project, taking into account the Panel's report. The Panel acknowledges that Shell is planning to reclaim the Project footprint to equivalent land capability. The Panel believes that reclamation is useful but that it will not mitigate all of the significant effects because some habitat types cannot be reclaimed (e.g., peatlands), and reclamation will not occur or be complete for many years.

[11] Minimizing adverse effects may be difficult or impractical in a large mine because it generally requires sterilizing bitumen resources, or it may impose constraints that affect the ability to operate the mine in a safe, efficient, and economical manner. However, the Panel is concerned about the lack of mitigation that has proven to be effective for the loss of these habitats and believes that without additional mitigation, significant adverse effects will occur.

[12] The Panel believes that conservation offsets are one of the few available mitigation measures that could be used to mitigate these effects. The Panel is also of the view that offsets used to help mitigate project effects would also help mitigate cumulative effects. However, Shell did not propose or support the use of conservation offsets, and none of the other participants in the hearing provided any evidence on the possible location of such offsets that would allow the Panel to assess the potential for the offsets to further mitigate the effects of the Project. The Panel therefore recommends that before other provincial and federal approvals are issued, the governments of Canada and Alberta cooperatively consider the need for conservation offsets to address some of the likely significant adverse effects of the Project. The Panel also recommends that if the governments of Canada and Alberta identify offsets as necessary, the selection and implementation of conservation offsets should consider the effects of the offsets on existing Aboriginal TLU and consider the need to maintain areas for traditional use by Aboriginal peoples, including areas containing traditional plants and other culturally important resources.

[13] With regard to the prediction of significant cumulative effects for several key indicator resources and species at risk, the Panel has determined that the Project itself only contributes incrementally to some of these effects and that most of these effects result from projects and disturbances that either currently exist or have already been approved. The Panel took a conservative and precautionary approach when making these determinations and recognizes that any determination of significant adverse cumulative effects includes some degree of uncertainty.

[14] The Panel also believes that the *Lower Athabasca Regional Plan (LARP)*, although still a work in progress, is an appropriate mechanism for identifying and managing regional cumulative effects, including the proposed biodiversity management framework and new Alberta wetlands policy (both in development). The *LARP* is an excellent and important framework for beginning to introduce a more integrated regional approach, and the Panel strongly encourages Alberta to continue to implement this regional plan. It is critical that the frameworks, plans, and thresholds identified in the *LARP* be put in place as quickly as possible. Future project reviews will benefit greatly from the completion of this regional approach.

[15] The Panel also notes that the governments of Canada and Alberta have established the *Joint Canada-Alberta Implementation Plan for Oil Sands Monitoring* in order to ensure

environmentally responsible development of the oil sands resource, and this initiative will help promote a better understanding of cumulative effects in the Lower Athabasca region.

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### Summary of Key Findings

[17] While some uncertainties continue at the project level, particularly with groundwater modelling, bitumen recovery, tailings management, and reclamation, Shell stated that it will continue to use an adaptive management strategy and will work with regulators to address the uncertainties and site-specific issues associated with the mining and processing of oil sands in its lease areas.

[18] The Panel has concluded that the Project would provide significant economic benefits for the region, the province, and Canada. The Project is an expansion of an existing project and is in an area where the government of Alberta has identified bitumen extraction as a priority use. Shell stated that the Project will result in the recovery of about 325 million cubic metres of dry bitumen over its approximately 40-year life. The municipal, provincial, and federal governments will all receive significant financial benefits as a result of the Project. The Project will provide major and long-term economic opportunities to individuals in Alberta and throughout Canada, and will generate a large number of construction and operational jobs.

[19] The Panel finds that diversion of the Muskeg River is in the public interest, considering that approximately 23 to 65 million cubic metres of resource would be sterilized if the river is not diverted, and considering the low level of predicted environmental effects on water quality and quantity in the lower reaches of the river. The upper reaches of the Muskeg River to be diverted have low fisheries habitat value, and the evidence indicated only limited Aboriginal use of the area. The Panel recognizes that the relevant provincial agencies were not at the hearing to address questions about why the Project is not included in the *Muskeg River Interim Management Framework for Water Quantity and Quality*. The Panel believes that there will be significant and unacceptable sterilization of bitumen if the diversion does not occur.

[20] The Panel recognizes that Shell's proposal to eliminate mature fine tailings (MFT) from the Project's end pit lakes (EPLs) will improve current tailings management practices and could reduce potential toxicity in receiving water bodies and potential fish tainting risks. The Panel agrees with the adaptive management concept and concludes that with the implementation of Shell's proposed mitigation measures and commitments and with the Panel's conditions, expectations, and recommendations, significant adverse environmental effects are unlikely to result from the use of MFT-free EPLs. However, the Panel requires that Shell report on alternatives to treating EPLs passively and provide a comprehensive economic and technical assessment of feasible active water treatment options to ensure that EPLs will meet water quality release criteria at closure.

[21] Although the Panel has concluded that the Project is in the public interest, project and cumulative effects for key environmental parameters and socioeconomic impacts in the region have weighed heavily in the Panel's assessment. In approving this Project, the Panel has set new

- The magnitude will be **moderate**—given that thousands of hectares of habitat available to migratory birds will be cleared.
- The geographic extent is **regional**—given that populations of migratory birds extend beyond the boundary of the LSA and their population limits extend beyond the LSA.
- The duration is **long-term**—given that the timeframe for much migratory bird habitat (wetlands and old-growth) to return to its former biodiversity and function is more than 80 years and that peatland restoration is still not demonstrated for oil sands projects. In addition, the ability for migratory birds to recover in the LSA after closure will be highly linked to the health of populations in the RSA, and current evidence suggests some substantial declines several migratory birds in the oil sands region.
- The effects are potentially **irreversible**—given that there is no evidence that peatlands can be successfully reclaimed, and peatlands constitute 85 per cent of wetland habitat lost in the LSA which acts as habitat for migratory birds. In addition, the time lag to restoration of old-growth forests (which provides nesting habitat for boreal birds), is well beyond 80 years. There is also no evidence in the oil sands region that old-growth forest can be restored to its former complexity and biodiversity. Furthermore, some of the species at risk may decline to the point where they can no longer re-establish in the LSA.
- The ecology of the oil sands region where the Project is taking place has already been adversely affected by human activities. The Project footprint is immediately adjacent to other existing and approved oil sands mines.

[935] Given this analysis and the lack of proposed mitigation measures shown to be effective, the potential inability to reclaim certain habitats to base case conditions, the decline of many migratory bird species in the oil sands region, and effects on migratory birds that are species at risk described herein, the Panel finds significant adverse project effects on some migratory birds, particularly wetland-reliant wildlife species and species at risk.

[936] The Panel recommends that before other provincial and federal approvals are issued, the Governments of Canada and Alberta cooperatively consider the need for conservation offsets to address some of the likely significant adverse effects of the Project, including effects on some migratory birds.

## **Cumulative Effects**

### *Evidence*

[937] Shell predicted that changes in the land cover of the RSA from PIC to application case and the PDC would have a moderate to high adverse environmental consequence on the abundance of wetland-dependent species, namely horned grebe, olive-sided flycatcher, rusty blackbird, and yellow rail. Shell stated that the resilience of populations of these species in the RSA has not been compromised and that high-suitability habitat remains for these species in the RSA.

[938] Shell chose the black-throated green warbler as a KIR that was representative of old-growth forest birds. The black-throated green warbler is used by CEMA's Sustainable Ecosystems Working Group as an environmental indicator for the bird community. Shell

migratory birds that are wetland-reliant or species at risk. The Panel believes that without additional mitigation, significant adverse effects on species abundance and diversity will occur. The Panel believes that these adverse project effects will contribute to adverse effects on biodiversity as well. Although the Panel recognizes that *LARP* and other regulations and policies of the Government of Alberta do not currently mandate the use of conservation offsets in the oil sands region, given that few options are available for avoiding or minimizing the adverse effects of large surface mines, the Panel believes that conservation offsets may need to be considered.

[996] The Panel has already recommended that before any other provincial and federal approvals are issued, the Governments of Canada and Alberta cooperatively consider the need for conservation offsets. When considering the need for conservation offsets, the Panel recommends the Governments of Canada and Alberta also consider the need to preserve the suite of species and ecosystems in the region and to maintain local and regional biodiversity. The Governments of Canada and Alberta should also consider the need to preserve unique environments and species such as those found in the lenticular fen.

[997] The Panel recommends that ESRD ensure that, in addition to using commercially available vegetation, Shell initially be required to plant more species and implement measures such as seed collection, direct seeding, and planting stock from cuttings or seed, instead of relying more heavily on the natural ingress of species to return biodiversity to reclaimed landscapes.

[998] The Panel notes that Shell will be subject to the *LARP* biodiversity management framework when it is released. The Panel recommends to ESRD that Shell be required to develop a biodiversity monitoring program and report progress and program results as part of its closure and reclamation annual report. In order to protect biodiversity, the Panel expects Shell to modify its mitigation strategies based on the findings of the program.

[999] The Panel recommends that the Government of Alberta work toward timely completion of the *LARP* biodiversity management framework, including a reporting and monitoring structure to ensure that relevant parties such as Shell are in compliance.

## **Cumulative Effects**

### **Evidence**

[1000] Shell stated that during construction and operations in the application case, at an ecosystem level, high-biodiversity potential areas would decrease by 78 223 ha (14 per cent of the resource within the RSA) compared with the PIC. Shell noted that in the base case, 65 128 ha of high-biodiversity habitat had already been lost (12 per cent of the resource). Given the loss of non-treed wetlands and treed fens that cannot be reclaimed, the decrease in high-biodiversity potential areas would be 71 884 ha (13 per cent) at closure compared with PIC. Likewise, moderate-biodiversity potential areas would decrease compared with the PIC by 129 179 ha (15 per cent of the resource within the RSA) during construction and operations. Shell noted that at base case, there was a loss of 119 534 ha of moderate-quality biodiversity potential compared with the PIC (14 per cent of resource). At closure there would be a net decrease in moderate-biodiversity potential areas of 14 per cent (121 297 ha). Shell indicated that the only moderate-ranked land cover class that would increase at closure relative to PIC is water. Only low-biodiversity potential areas would increase relative to the PIC (22 per cent), largely as a result of

**A NARRATIVE OF  
ENCROACHMENT EXPERIENCED BY  
ATHABASCA CHIPEWYAN FIRST NATION**

**PREPARED FOR:  
ATHABASCA CHIPEWYAN FIRST NATION  
INDUSTRY RELATIONS CORPORTION**

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**SEPTEMBER 28, 2012**

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## LIST OF ACRONYMS

ACFN	Athabasca Chipewyan First Nation
ACFN ESA	Athabasca Chipewyan First Nation Encroachment Study Area
CEMA	Cumulative Environmental Management Association
CRISP	Comprehensive Regional Infrastructure Sustainability Plan
DFO	Department of Fisheries and Oceans Canada
ERCB	Energy Resources Conservation Board
ESA	Encroachment Study Area
GoA	Government of Alberta
LARP	Lower Athabasca Integrated Regional Plan
MCFN	Mikisew Cree First Nation
RAMP	Regional Aquatics Monitoring Program
RMWB	Regional Municipality of Wood Buffalo

## EXECUTIVE SUMMARY

Northeastern Alberta, which forms an important component of Athabasca Chipewyan First Nation's traditional territory, has experienced a diversity of natural resources-based development and extraction. Over the past one hundred and twenty years or so, actions and development by government and activity by industry have progressively and cumulatively encroached on the landscapes and waterscapes that have long supported Athabasca Chipewyan First Nation's way of life and livelihood. Significant encroachment has occurred, is occurring and is planned in a large component of the natural and cultural landscape that contributes to the meaningful exercise and expression of Athabasca Chipewyan First Nation's Treaty and Aboriginal rights.

Within the geographic area examined in this report, past or existing encroachment includes, but is not limited to:

- alienation of Athabasca Chipewyan First Nation members from the Wood Buffalo National Park for some 80 years;
- uranium mining on Lake Athabasca during the 1950's and early 1960's, with clean-up of abandoned mines on-going;
- regulation of water levels and flows in the Peace-Athabasca Delta for hydroelectric generation purposes since the mid 1960's;
- an approximate 16-fold increase in the population of Fort McMurray since 1961 plus an estimated additional 23,325 workers living in remote accommodation camps or lodges;
- an un-quantified number of non-consumptive recreational users and sport hunters and fishers;
- a forest management agreement for timber extraction and at least seven pulp mills situated upstream on the Peace and Athabasca Rivers;
- five quarries in operation or pending;
- 10 oil sand mines and 12 in-situ projects in operation, with 3 more mines and 4 in-situ under construction (counts include different project phases);
- 9 approved oil sands mine projects and 11 in-situ projects approved but not yet under construction, and 8 more mine projects and 20 in-situ projects under regulatory review (counts include different project phases);
- a number of uranium and other mineral exploration projects;
- thousands of kilometers of pipelines, roads, access roads, cut lines, transmission lines and other linear features; and
- Athabasca River water allocations to municipal and industrial interests.

The broad purposes of this report are two-fold. First, the report provides a broad overview of the vast array of past, current and future developments and actions that have been and continue to be drivers on encroachment on the land and waterscape relied upon by Athabasca Chipewyan First Nation. This background provides the context for understanding and appreciating the nature of encroachment drivers and temporal and spatial nature of encroachment impacts. Second, it is against this backdrop that the report outlines how encroachment has and continues to directly and/or indirectly impact on the ability and opportunity of Athabasca Chipewyan First Nation Members to engage in the right and to enjoy the benefits of traditional use practices, including traditional skills and knowledge maintenance and learning. Having laid out the various ways in

which encroachment induces or causes displacement, abandonment and/or avoidance responses by Athabasca Chipewyan First Nation Members, the report then discusses some of the primary additional impacts on the social, cultural, economic, health and overall well-being.

The narrative of encroachment begins by chronicling the drivers of encroachment commencing in the early fur-trade era to the time when Athabasca Chipewyan First Nation signed Treaty #8. Encroachment during this early period included competition for natural resources that adversely affected food security and cash income, as well as government restrictions on harvesting. During the period from the early 1900's to the 1960's, encroachment included alienation of Athabasca Chipewyan from a critical part of the landscape through the creation of Wood Buffalo National Park, government management of trapping areas, and the beginnings of oil sands development. In the contemporary period, encroachment drivers have included population growth, industrial development including hydroelectric development, quarry and other mineral exploration and development, commercial forestry and timber product processing, oil sands developments, linear features, urban development, recreational and sport land use, government land and resource allocations and designations, changes in water quality and quantity, and finally, climate change.

How encroachment has directly impacted on Athabasca Chipewyan First Nation over time is organized and discussed in three primary themes or categories: displacement, abandonment or avoidance, and adaptation. Displacement refers to circumstances where the Nation's Members have been alienated by access prohibitions or restrictions on harvesting particular resources. It also includes circumstances where the productivity for traditional harvesting has been diminished to the extent that the area no longer holds utility. Avoidance and abandonment refers to cessation of use of a particular resource or geographic area due to concerns about the quantity or quality of available resources. Finally, adaptation refers to changes in actions or behaviours as a means of mitigating encroachment impacts. The discussion of impacts draws upon Athabasca Chipewyan First Nation Member evidence, research done by and for the First Nation, government, academic and professional literature, and the experience of the writer.

Secondary impacts associated with displacement, avoidance or abandonment, and adaptation are described in terms of economic, socio-cultural and physical and psychological health implications. This discussion on impacts to well-being is by no means exhaustive and draws heavily on Athabasca Chipewyan First Nation evidence and credible research concerning other First Nations.

Based upon the findings of the research, it is the writer's opinion that encroachment has had, and continues to directly and indirectly affect the ability of Athabasca Chipewyan First Nation Members to pursue and enjoy the rights associated with utilization of the landscape and waterscape for cultural, social, economic and health benefits. There is insufficient information and data to reliably comment on the state or vulnerability of the First Nations way of life or if the ability to pursue and enjoy the rights and benefits of traditional use and knowledge is at, near or beyond sustainability thresholds. Programs, such as effects and/or mitigation monitoring specifically focused on traditional use and knowledge that would contribute to understanding the situation, and form a basis for pro-active response, are lacking. The project-by-project environmental assessment regulatory review process and independent proponent driven mitigation efforts does not permit a comprehensive assessment of the impacts of existing,

proposed and planned development on Athabasca Chipewyan First Nation Rights, Values and Knowledge. It is recommended that a long-term and adequately funded follow-up program be instituted. Such a program should be designed, vetted, implemented, monitored and evaluated by Athabasca Chipewyan First Nation, with appropriate and acceptable input and resources from one or more levels of government, and industry.

## 1.0 INTRODUCTION

Athabasca Chipewyan First Nation (ACFN) has argued in numerous forums<sup>1</sup> that each new development in their Territory is reviewed in isolation of historic, ongoing and pending encroachments and impacts to Treaty rights and well-being (ACFN 2010a, 2010b). They argue that the project-by-project regulatory review and approval approach fails to comprehensively acknowledge and address that ACFN's rights and well-being have been adversely impacted by a series of governmental actions and third party industrial developments over the course of the past 120 years or so. Each new development project is assessed and approved by regulators without a comprehensive understanding that ACFN's rights have been compromised by a series of events, both historic and ongoing, and without adequate consideration of whether the remaining environment available to ACFN can support their rights and well-being now and in the future.

It is the writers experience and view that the regulatory environmental assessment and review process in Canada, including Alberta, to date, has been focused primarily on examination and consideration of physical and biophysical environmental effects. In the case of environmental reviews undertaken to date and those in progress that pertain to development within the area that ACFN members rely upon for their livelihood, it is the writers opinion that critical issues such as the utility of the remaining undisturbed landscape to support ACFN rights and interests, increased use of remaining undisturbed lands and waterways and animals, fish and plants associated with development-induced population growth, as well as the needs and rights to same by growing First Nation and other Aboriginal group populations, are not being adequately considered. Further, the long term operational and reclamation lifespan of oil sands development projects, typically extending 70 to 80 years and upward, have the potential to displace or alienate ACFN from portions of their Territory and/or adversely impact on Treaty rights and general well-being for multiple generations. Lastly, the current and long term effects of climate change in and of itself are not well understood, never mind the outcome of the interaction and combined cumulative effects of oil sands development and other land uses. Consequently, the cumulative and synergistic impacts on ACFN Treaty rights and well-being from natural environmental change and human-induced development are not being comprehensively considered.

The broad purpose of this report is to apprise the Joint Panel(s) charged with reviewing Shell Canada's Jackpine Mine Expansion and Pierre River Mine projects of the array of past, current and future encroachments into ACFN's Territory and how these encroachments have and may continue to directly and/or indirectly impact ACFN's social, cultural, economic, health and overall well-being.

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<sup>1</sup> For example: Athabasca Chipewyan First Nation. 2010a. Athabasca Chipewyan First Nation Advice to the Government of Alberta Regarding the Lower Athabasca Regional Plan. Provided to the Land Use Secretariat. November 22, 2010. Appendix A, Concerns with Alberta's Approach to Consultation; and ACFN 2010b. Letter to Sheila Risbud, Crown Consultation Coordinator, Canadian Environmental Assessment Agency, January 26, 2011, Subject: Draft Aboriginal Consultation Plan for the EA Process for the Proposed Shell JPME and PRM. Attached to letter signed by Janes Freeman Kyle Law Corporation, April 6, 2011, to Marie-France Therrien, Panel Manager. CEAA Registry document #75.

## **1.1 Qualifications of Writer**

The writer of this report, Ms. Patt Larcombe, received a Master's of Science degree in Geography in 1985 and has worked as a private consultant with Symbion Consultants since 1987 and as a partner of the firm since 1990. A copy of my curriculum vitae is included as Attachment 1 to this report.

During the past 25 years, I have worked primarily for Aboriginal and First Nations communities, directly or with Tribal or Nation entities or their legal counsel on projects involving the documentation of traditional land use and knowledge, traditional economies, including valuation of subsistence economies. This work has been conducted in the context of land claims forums and to establish baseline conditions to understand resource development impacts. I have conducted both retrospective and predictive social-cultural-economic impact assessments concerning large scale resource development projects for First Nations from Cree, Ojibway (Anishinaabeg), Dené, Innu, Tlingit and Tsilhqot'in cultural groups, as well as Metis regional organizations. I have assisted Aboriginal and First Nation clients in the review of proponent environmental applications as well as development of information requests, and made presentations and been cross-examined in public hearing processes.

I have worked extensively with Manitoba, Ontario, Quebec and Labrador communities on assessing impacts of, and developing mitigation options for existing and proposed hydroelectric projects. I have also worked with communities in British Columbia and Labrador to assess mine development effects on traditional use and knowledge, socio-cultural and socio-economic impacts, as well as developing long-term community-based socio-economic and traditional land use monitoring programs.

## **1.2 Objectives**

Specific objectives of this report include:

- Chronicling the nature of past, current and future activities and actions within a portion of ACFN's Territory that have contributed to direct and indirect changes and impacts to the environment;
- Describing and assessing the nature of impacts that encroachment has had, and likely will continue to have, on ACFN's traditional use, values, knowledge and overall well-being; and
- Identifying gaps in knowledge about impacts, and monitoring and mitigation with respect to encroachment and recommending actions to address both.

## **1.3 Methods**

The information provided in this report is based upon my review of published and unpublished documents created by or for ACFN, review of publically available government and industry documents, and academic and professional literature, and my knowledge and expertise developed over the past twenty-five years. During the course of this work, I did not personally interview ACFN Members, but have relied on interview transcripts provided by ACFN. Unless specifically cited, any opinions or conclusions made in this report are mine.

## **1.4 Organization of Report**

The balance of this report is organized into six sections. Section 2 discusses issues concerning terminology and clarifies the use of specific terms used in the report. This section also introduces the framework underlying the report.

A chronology of factors which have contributed to encroachment during the period from the late 1880's to the mid 1960's is provided in Section 3. Section 4 is a fact based overview of the major forms of encroachment that have occurred since the mid 1960's. This section starts with a discussion of historic, current and projected population growth, followed by subsections concerning different types of encroachment organized into two main categories labeled 'government resource allocations and/or designations' and 'industrial development'. The section concludes with a chronological and spatial summary of the various forms of encroachment factors or drivers.

Section 5 discusses the primary or first order responses or outcomes to encroachment in terms of how ACFN has dealt with or responded to physical, biophysical, access-related changes and impacts. This section deals with issues of displacement from and/or avoidance of land and waterscape areas, plant, animal, fish, water and other resources, and tangible and intangible cultural sites and places, associated with access restrictions, resource quantity and quality, and development and human population noise and disturbance.

Section 6 discusses secondary impacts or outcomes resulting from encroachment on ACFN's Treaty rights, values and knowledge, including all associated aspects of social, cultural, physical and psychological health, spiritual and economic well-being. Finally, Section 7 discusses identified information gaps and presents recommendations for addressing same.

## 2.0 TERMINOLOGY AND FRAMEWORK

### 2.1 Terminology

In order to put the narrative of encroachment presented in this report into context, it is necessary to first clarify what exactly is meant by ACFN Treaty rights and ACFN Territory. It is not within the scope of this report to discuss the legal particulars of either. However, the discussion of encroachment needs to be grounded historically and geographically from the perspective of what these two terms mean to ACFN. Second, words or phrases such as traditional use, traditional territory, and traditional knowledge have been broadly and variably applied across Canada by governments, industry, and academia, as well as by First Nations themselves. There is no common formal definition or general understanding of what these words or even concepts mean. Thus in order to address preconceived notions, misconceptions, and/or presuppositions, this section explains what is meant by particular words or phrases that are repeatedly used throughout this report.

#### 2.1.1 ACFN Treaty Rights

ACFN became a signatory of Treaty 8 on July 13, 1899. Notwithstanding the actual text of the treaty document, the Commissioners who were present during the negotiation and signing of the treaty reported;

*“We had to solemnly assure them [Athabasca Chipewyan First Nation and Mikisew Cree First Nation] that ... they would be as free to hunt and fish after the treaty as they would be if they never entered into it. We assured them that the treaty would not lead to any forced interference with their mode of life...”* (Laird, Ross and McKenna, Report of Commissioners for Treaty No. 8, 1899 in Russell, 1981).

In a submission to the Joint Panel convened to review the application for the Joslyn North Mine project, ACFN (2010c) described the foundation for and nature of Treaty rights as follows;

“ACFN constitutes an “Aboriginal people” within the meaning of Section 35 of the *Constitution Act, 1982* (U.K.), 1982, c. 11. ACFN is also a “band” under the *Indian Act*, with eight reserves set aside for the use and benefit of its members: Chipewyan No. 201 and 201A-201G inclusive. ACFN is a successor to an Aboriginal group that entered Treaty 8 (the “**Treaty**”) with the Crown at Fort Chipewyan in 1899. ACFN and its members continue to hold the rights guaranteed by the Treaty, as modified by the *Natural Resources Transfer Agreement, 1930* (enacted by the *Constitution Act, 1930* (U.K.) 20-21 George V, c. 26), including rights to hunt, trap and fish on all unoccupied Crown lands in the province and other lands to which they have rights of access (the “**Treaty Rights**”). This includes incidental rights essential to the meaningful exercise of Treaty Rights such as: rights of access; sufficient quality and quantity of

resources, including water resources to support the exercise of Treaty Rights; access to safe lands within which to practice rights; and rights to instruct younger generations on the land.” [emphasis included in original text].

The ACFN Elders Council, on July 8, 2010, articulated the rights of ACFN as follows;

### **ACFN Elders' Declaration on Rights to Land Use**

This is our Dené suliné territory, our Traditional Lands. We have occupied these lands for the last 10,000 years and maybe longer. Our traditions go on and we have the right to continue our traditional way of life. We agreed only to share our lands and we still consider these lands ours. Clearly we have been here longer than anybody. The Government must recognize that we still have the right to use these lands.

Our Rights to use the lands and water on Traditional Lands have never been extinguished. The Traditional Lands, and our rights to use of the lands, are central to our Dené culture, identity and well-being. They are essential to the well-being of our future generations and their ability to sustain our culture in a changing world.

The meaningful practice of our treaty rights depends on having sufficient lands and resources to exercise those rights. Sufficient refers to not only quantity but quality, including what is required to fulfill our cultural and spiritual needs.

Our parents and grandparents have told us that Treaty 8, signed by our Chief Laviolette in 1899, is an intergovernmental agreement that, in return for sharing our Traditional Lands, upholds our inherent Dené rights to land use and livelihood. In our experience, Alberta is not upholding their end of the treaty and is sacrificing our rights to industrial development. We have never been properly consulted and the Federal and Provincial Governments have never accommodated our rights or compensated us for infringements.

ACFN has had enough with having our land destroyed, no one is dealing with it; neither the Federal nor the Provincial Crown. Yet you come to us for approval of new projects. It is time for the Government to stop cheating us of our rights to land use and livelihood, culture and identity without proper consultation, mitigation and compensation.

As the Elders of our community, we demand that our ability to practice our constitutionally protected treaty rights and traditional uses is sustained within our Traditional Lands for future generations. We demand that our rights are protected in the LARP and any other initiatives proposed by the governments.

The lands from Firebag north, including Birch Mountain on the west side of river, must be protected. Richardson Backcountry is not to be given away – not to any government.

Everything we do here, we do to protect our rights to land use, livelihood and culture.

ACFN's recent (2010a) submission to the Government of Alberta (GoA) regarding the Lower Athabasca Regional Plan further clarifies their perspective regarding the future of Treaty 8 rights, including livelihood rights:

Treaty Rights of ACFN are understood to include, but are not limited to, hunting, fishing, trapping and gathering for sustenance and livelihood purposes. The full practice of these rights reasonably includes, and is not limited to, access to sufficient lands and resources in which the rights can be exercised. "Sufficient" refers not only to quantity but quality, and is evaluated from the perspective of what is required to fulfill not only subsistence requirements, but also cultural needs, of the First Nation now and into the future.

Determining what is "sufficient" encompasses a suite of interconnected tangible and intangible resources that underlie the meaningful practice of rights. These "resources" include, but are not limited to:

- Routes of access and transportation;
- Water quality and quantity;
- Healthy populations of game in preferred harvesting areas;
- Cultural and spiritual relationships with the land;
- Abundant berry crops in preferred harvesting areas;
- Traditional medicines in preferred harvesting areas;
- The experience of remoteness and solitude on the land;
- Feelings of safety and security;
- Lands and resources accessible within constraints of time and cost;
- Sociocultural institutions for sharing and reciprocity; and
- Spiritual sites.

### **2.1.2 ACFN Territory and Traditional Lands**

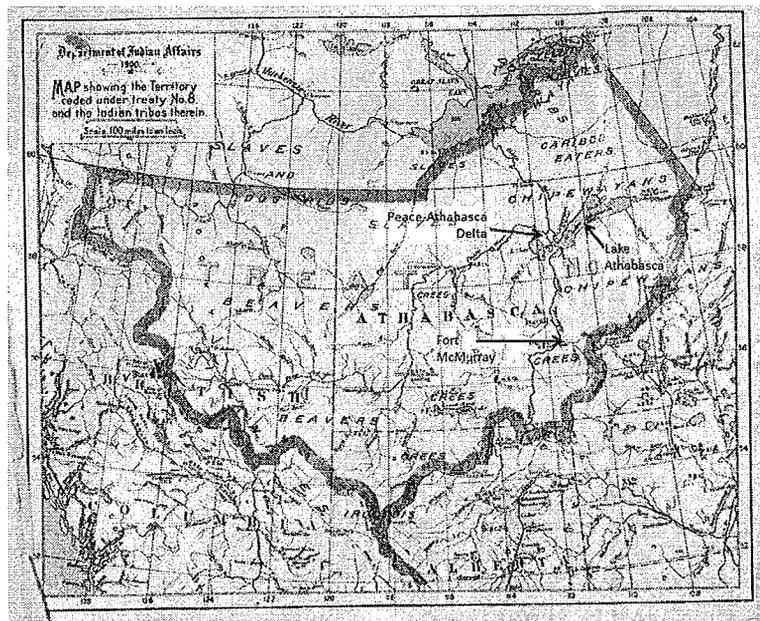
First Nations across Canada, governments, industry, academics and professionals working with and writing about First Nations and Aboriginal peoples have employed a diversity of titles or phrases to describe the geographical area that individual First Nations, or groupings of First Nations affiliated as Nations, historically relied upon and continue to rely upon to exercise their Treaty and Aboriginal rights. Nomenclature includes: traditional territory, traditional lands, traditional use area, Treaty area, homeland, etc. Some Nations have their own name for the geographic area they have historically and/or contemporarily rely upon for their economic, social, cultural and spiritual needs. For example, the Innu in Labrador refer to their 'traditional territory' as Nitassinan meaning 'our land'; the Tlicho refer to their traditional area as Mòwhì Gogha Dè Nîîtâèè (the area described by Chief Monfwi during the signing of Treaty 11 in 1921); and Manitoba Denesuliné refer to their territory as Dene Nene. Regardless of the nomenclature used, virtually all terminology used to define 'territory' refers to a geographic area

that First Nations have a long term connection with and relied upon to sustain their cultural, social, spiritual and economic way of life. However, in some cases the word ‘territory’ refers to a written land description or map such as contained in the published treaty documents and the term is used to describe the areal extent of Treaty rights, even though in contemporary times a First Nation may not be exercising their rights in the entire area.

The rationale for declaring, defining or describing ‘territories’ is also diverse. For example a First Nation or group of First Nations may be seeking a legal declaration of title and/or rights over a specified area, defining a geographical area for purposes of a comprehensive land claims agreement, a consultation protocol area, a joint management arrangement, or establishing an area of examination for purposes of environmental assessment. In some circumstances, a Territory is recognized by government and other Nations as being exclusive to a Nation, while in other cases a single Nation or group of Nations may have priority or right of first refusal to all or some resources, or in some circumstances all or a portion of a territory is shared by two or more Nations.

Treaty 8 dictates that ACFN’s Treaty rights extend throughout the geographic area described in the Treaty 8 document, shown in Figure 2-1. In today’s political geography, Treaty 8 covers the northern half of Alberta, the northeastern quarter of British Columbia, the northwestern corner of Saskatchewan, and the area south of Hay River and Great Slave Lake in the Northwest Territories.

FIGURE 2-1: Treaty 8 Map<sup>2</sup>



<sup>2</sup> <http://www.collectionscanada.gc.ca>. Map annotated by writer by adding “Fort McMurray, Peace-Athabasca Delta, and Lake Athabasca” and location arrows to orient reader to the map.

In their submission to the Joint Panel convened to review the Joslyn North Mine, ACFN (2010c) described its 'traditional lands' as follows;

“ACFN’s traditional territory radiates north, east, west and south from the Peace-Athabasca Delta, including the Lower Athabasca River and lands to the south of Lake Athabasca, extending to the lands around Fort McMurray and Fort McKay.”

Within the southern portion of the above noted 'traditional territory' there are areas that ACFN refers to as Homeland Zones, Proximate Zones, and Critical Waterway Zones. ACFN (2010a and 2011) defines 'Homeland Zones' as;

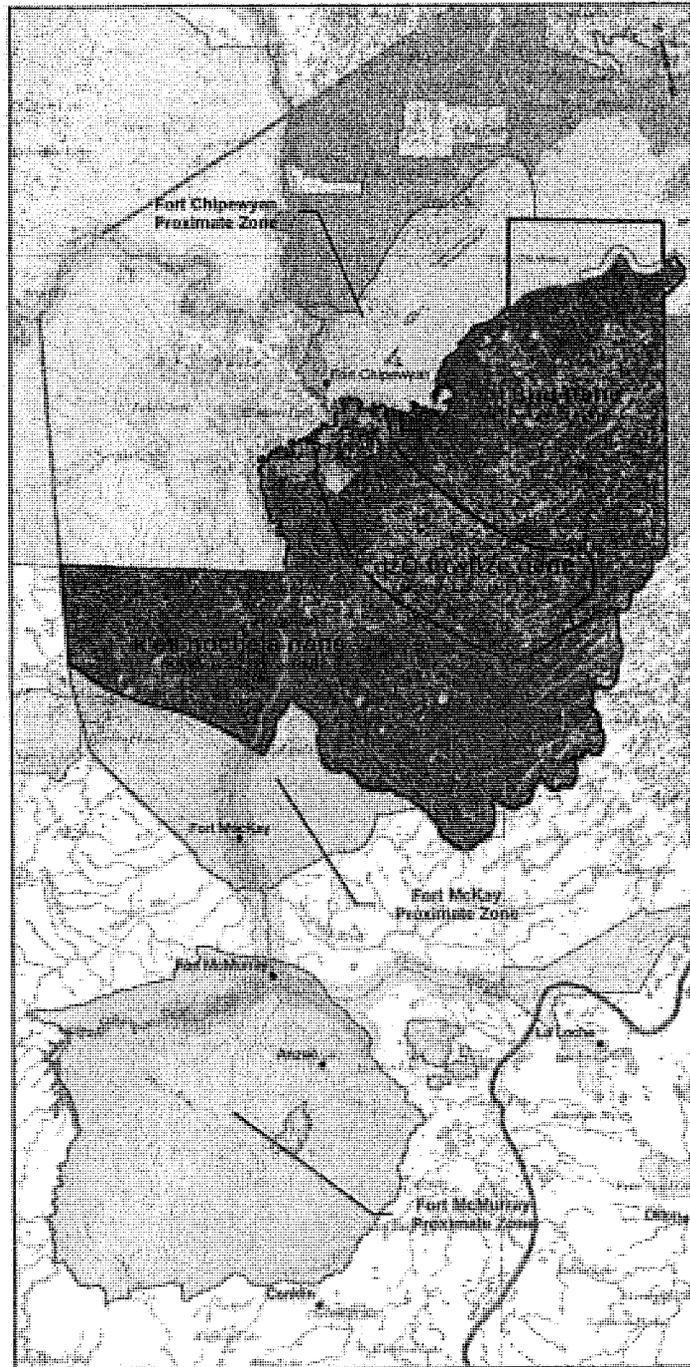
“areas of critical importance to past, present, and future practice of ACFN use and rights.” They are the places where ACFN “history, culture, and livelihood are most firmly rooted” – places where “there is not only a cultural connection, but also a familial and spiritual connection that is integral to one’s identity as ACFN and Dené sułine. ACFN members consider the homelands sacred as they are necessary to the rights, identity, and ultimately, the cultural survival of ACFN. ACFN members, above all else, wish to protect these lands as sanctuaries for their current use and that of future generations.”

Figure 2-2 illustrates the preliminarily identified locations of three Homeland Zones (shown in red): *t'βnu nene* (Old Fort Point Homeland); *dzŌ tuwβze nene* (Jackfish Lake Homeland); and *k'es hochela nene* (Poplar Point Homeland). ACFN reports they have additional work to do in defining these areas, both within Alberta and Saskatchewan.

*t'βnu nene* covers approximately 967,477 hectares of lands and waters in an area from the south shore of Lake Athabasca south to the Old Fort River drainage. This area is critical to ACFN members at large and particularly those families affiliated with the Old Fort settlement (IR Chipewyan 201A), and the N22 trapping block area of Saskatchewan.

*dzŌ tuwβze nene* includes the Athabasca River delta and Richardson Lake. Covering an area of approximately 463,435 hectares of lands and waters, this homeland area is critical to ACFN members at large, and particularly families affiliated with the Peace-Athabasca Delta (IR Chipewyan 201), Big Point (IR Chipewyan 201B), Jackfish Lake (Richardson Lake) and Jackfish Village areas (IR Chipewyan 201E).

FIGURE 2-2: ACFN Homeland, Proximate and Critical Waterway Zones<sup>3</sup>



<sup>3</sup> Portion of map from Athabasca Chipewyan First Nation Advice to Government of Alberta Regarding the Lower Athabasca Regional Plan. November 22, 2010. Draft Map.

*k'es hochela nene* covers approximately 1,292,290 hectares of lands and waters in an area west of the Athabasca River to the Birch Mountains and east of the Athabasca River into Saskatchewan. Again this area is critical to ACFN members at large and particularly families affiliated with the Poplar Point (IR Chipewyan 201G) and Point Brule (IR Chipewyan 201F) areas. The southern and western boundaries of this homeland are defined by wood bison range extending south and west from the area of Ronald Lakes, extending into the Birch Mountains. Bison from this area are relied upon heavily by ACFN members, and are especially critical to those families affiliated with the Poplar Point and Point Brule areas.

ACFN (2010a:14) highlights that each Homeland Zone differs from the other in terms of the ecological and landscape patterns and processes, including abundance of various resources that characterize it. While different ACFN families are associated with (i.e. occupy) each homeland area, all ACFN members may exercise their Treaty rights with any homeland for cultural, social, economic and/or spiritual purposes. No one Homeland Zone can “replace” another in terms of utility for sustaining ACFN use. All are required as part of a connected system.

ACFN (2010a:18) has also identified three ‘Proximate Zones’, defined as “areas relied upon for the practice of use and rights by an increasing number of ACFN members living in and around Fort Chipewyan, Fort MacKay, and Fort McMurray.” The lands and waters in these proximate zones are especially important for;

“ACFN members who cannot easily access the homeland zones. While not necessarily “prime” lands in terms of quantity and quality of resources, proximate zones are critical for providing ACFN members living away from the homelands, with accessible areas for harvesting resources and reconnecting with the land. For those members, the Proximate Zones are important not only based on where they live, but because financial, time and other constraints may prevent them from exercising their rights in the Homeland Zone on a regular basis.”

The three proximate zones are shown in pink colour on Figure 2-2 above and include areas around Fort Chipewyan, Fort McMurray, and Fort MacKay. According to ACFN (2011:32) interviews with ACFN members suggest that “use of the Fort Chipewyan and Fort McMurray proximate zones is increasing, while use of the Fort MacKay proximate zone is declining, mainly due to perceived industrial disturbance.”

In addition to the aforementioned homeland and proximate zones, ACFN (2010a) also has identified ‘Critical Waterway Zones’ which are zones within 5 km. of major streams and waterways of importance to ACFN for hunting, transportation, access zones and/or drinking water sources. These are shown in grey colour in Figure 2-2 and include the following waterways: Athabasca, Peace, Firebag, Maybelle, Old Fort, Richardson, and Clearwater rivers.

## **2.1.3 Terminology Used in this Report**

### **2.1.3.1 ACFN Encroachment Study Area**

In this report the term 'ACFN Encroachment Study Area' (ACFN ESA) is employed to avoid any legal or other conceptions about 'territory.' ACFN ESA refers to the geographic boundaries of investigation by the author and was chosen solely for confining the scope of the work. That is, while development activity or other land uses may have occurred or may be occurring or planned in other reaches of the landscape that ACFN has historically relied upon and/or contemporarily relies upon for the exercise of rights, such as other areas within or outside of the Treaty 8 area, such as north of the 60<sup>th</sup> parallel, British Columbia, eastern Saskatchewan, etc., these are not considered in this report. Depicted in Figure 2-3, the ACFN ESA largely includes the area described in ACFN's submission to the Joint Panel for the Joslyn North Mine (excepting some of the central eastern portion within Saskatchewan), and includes ACFN homeland, proximate and critical waterway zones.

The selection and use of the term ACFN ESA, Figures 2-1, 2-2 and 2-3, nor anything contained in this report should not be construed to waive, reduce, or otherwise constrain:

- The Treaty and Aboriginal rights of the ACFN;
- ACFN rights within, or outside of noted homeland, cultural protection, proximate, or critical waterway zones; and ACFN reserves the right to amend, refine, or add to these noted areas based on its understanding of associated needs, at any time; and/or
- ACFN rights within, or outside, regulatory processes. Nor should it be construed as to define, limit, or otherwise constrain the treaty or aboriginal use or rights of other First Nations or aboriginal peoples.



### **2.1.3.2 ACFN Rights, Values and Knowledge**

Many terms are used to describe the collective of rights, activities, values and knowledge of First Nation peoples. The nomenclature used to describe a suite of activities including harvesting, occupation (camps, overnight places, villages, cabins) and assembly locations (seasonal fishing sites, feast places, ceremonial sites), travel routes, teaching places, sacred and spiritual sites or places, and sometimes also toponyms<sup>4</sup> and archaeological places is most often referred to as traditional use, traditional land use, traditional use and occupation.

There is no common understanding or clear line between what is referred to as traditional use versus traditional knowledge and/or traditional ecological knowledge. The National Aboriginal Forestry Association has compiled a list of no less than 24 definitions for traditional knowledge reported or described by various First Nations, First Nation organizations, credible academics, governments, and consulting professionals.<sup>5</sup> The terms traditional knowledge, traditional ecological knowledge, indigenous knowledge, and so forth, have been applied to a body of cultural knowledge and/or a body of ecological knowledge. A commonality of definitions is that the knowledge is community held, inter-generationally transmitted, evolves over time and applies to a geographic area that the First Nation or Aboriginal group has been historically connected, although not necessarily continuously.

For purposes of this report, the author has chosen the phrase 'ACFN Rights, Values and Knowledge' as an all-inclusive term to convey the full range of possible definitions implied by traditional use, traditional knowledge, and traditional ecological knowledge. In the context of this report ACFN Rights, Values and Knowledge includes ACFN's:

- On-going opportunity to harvest preferred animal, fish, and plant species, water, and other resources important for medicinal, spiritual, sustenance, livelihood and cultural needs, in preferred locations, at preferred times, in preferred quantities and quality, and by preferred methods;
- On-going opportunity to engage in, preserve, and enhance cultural and/or spiritual practices, knowledge, teaching, and intergenerational transmission, including but not limited to language, oral history stories, legends, and songs; sharing and reciprocity norms; handicrafts and art; tangible and intangible cultural and spiritual properties, sites or places;
- On-going opportunity to transmit existing and continually learned: ecological practices, knowledge, and intergenerational transmission of learning and teaching methods;
- On-going opportunity to occupy the land in preferred locations, in preferred seasons, for preferred amounts of time, and in preferred types of overnight structures;

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<sup>4</sup> Toponyms means names of places. First Nations have (or had) indigenous language names for natural features such as lakes, rivers, mountains, geographic markers such river confluences, trail heads, portage routes, camp locations, historical locations such as sites of important battles or treaties, and spiritual places such as mountains, rapids, non-human sitings, etc.

<sup>5</sup> [http://nafaforestry.org/forest\\_home/documents/TKdefs-FH-19dec06.pdf](http://nafaforestry.org/forest_home/documents/TKdefs-FH-19dec06.pdf)

- On-going opportunity to access all of the above by preferred land and water routes, at preferred times of the year, and by preferred modes of transportation, within cost and time constraints that are practical and reasonable from the perspective of ACFN; and
- On-going opportunity to experience all of the above under conditions of remoteness, solitude, safety and security.

### **2.1.3.3 ACFN and ACFN Members**

In this report the use of ‘ACFN’ and ‘ACFN Members’ refers to past, living and future individuals, families, extended families and collective members of ACFN, regardless of age, gender or place of residence. It also refers to ACFN as a self-governing Nation, as a member of the Dené sùline peoples, and as Treaty 8 signatories.

### **2.1.3.4 Encroachment**

The title of this report is ‘A Narrative of Encroachment Experienced by Athabasca Chipewyan First Nation’ and not surprisingly the word ‘encroachment’ is used repeatedly in this report. The Oxford Dictionary defines ‘encroachment’ as “intrusion on a person’s territory, rights” and “a gradual advance beyond usual or acceptable limits.”<sup>6</sup> Merriam-Webster’s Dictionary defines ‘encroachment’ as “to enter by gradual steps or by stealth into the possessions or rights of another” and “to advance beyond the usual or proper limits.”<sup>7</sup>

In the context of this report the word encroachment refers to:

- (1) actions (e.g. government legislation and/or regulations, land use designations, allocations of land, water, animal, fish, plant, and minerals, oil and gas resources, policies of Indian Affairs such as the residential school system);
- (2) activities (e.g. removal of trees, disturbance of waterways, harvesting of animals, recreational use of lands and waters); and
- (3) development (e.g. urban land use, roads, oil sand mines, hydroelectric stations).

which have effected or have the potential to effect the quantity and/or quality of, and/or access to lands, waters, drinking water, air, animals, fish, plants, as well as cultural, spiritual, social and economic sites or places important and necessary for ACFN to exercise, enjoy and benefit from their Rights, Values and Knowledge now and in the future.

<sup>6</sup> <http://oxforddictionaries.com/definition/encroachment>

<sup>7</sup> <http://www.merriam-webster.com/dictionary/encroachment>

## 2.2 Spatial and Temporal Scope of this Report

Due to time and budget reasons, this report limits its examination of factors that have resulted in encroachment within the ACFN ESA portion of ACFN's Territory or traditional lands. In some cases the source of the encroachment is situated inside the ACFN ESA. In other cases the source of encroachment lay or lies outside the study area, but has resulted in changes to land, waters, and/or resources within the ACFN ESA and/or ACFN's view of the utility of those lands, waters and/or resources.

The timeline investigated in this report covers the era from the 1880's to present, but also includes discussion of pending potential encroachments such as announced oil sands projects, mineral exploration, and governmental plans.

## 2.3 Conceptual Framework

The narrative of this report is much like the act of peeling the layers off an onion. In order to appreciate the core impacts of encroachment on ACFN's Rights, Values and Knowledge, one has to 'peel off the layers.' Figure 2-4 illustrates the various layers that are reviewed in this report. The drivers or causes of encroachment are represented by the outermost layer. These drivers in turn change or effect the environment and conditions which support and give meaning to ACFN's Rights, Values and Knowledge. The next layer represents the primary responses by ACFN to direct and indirect encroachment driver-related environmental change, outcomes and/or impacts. Finally, the discussion addresses how the impacts of environmental change and how ACFN's responses to such change impact on the overall well-being of individuals, families and the community at large.

FIGURE 2-4: Basic Encroachment Narrative Framework

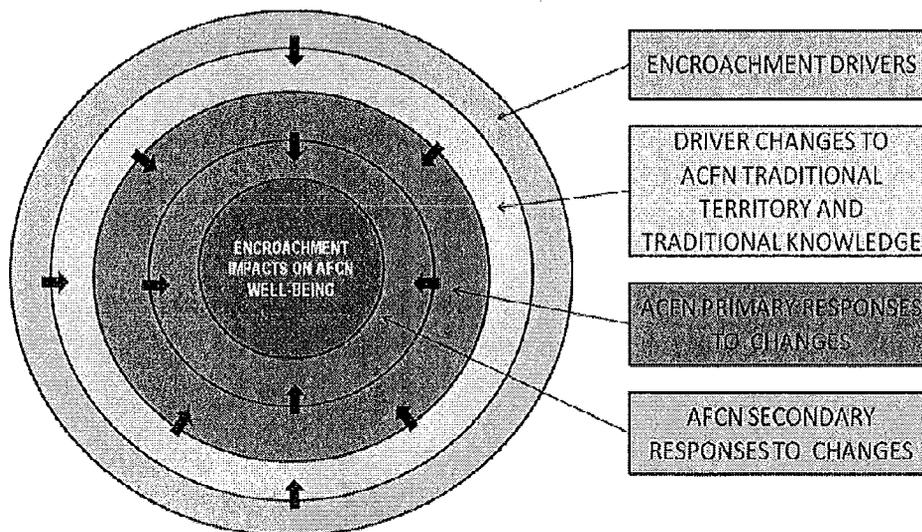


Figure 2-5 below depicts the various types of encroachment drivers which have occurred, are occurring and may occur in the ACFN ESA. The middle circle indicates the primary types of changes or influences that these drivers may have on the environment, including lands, waterways, and resources, and access to same, identified by ACFN as necessary for the full appreciation of their Rights, Values and Knowledge.

FIGURE 2-5: Drivers of Encroachment and Changes and/or Impacts in Environmental Conditions

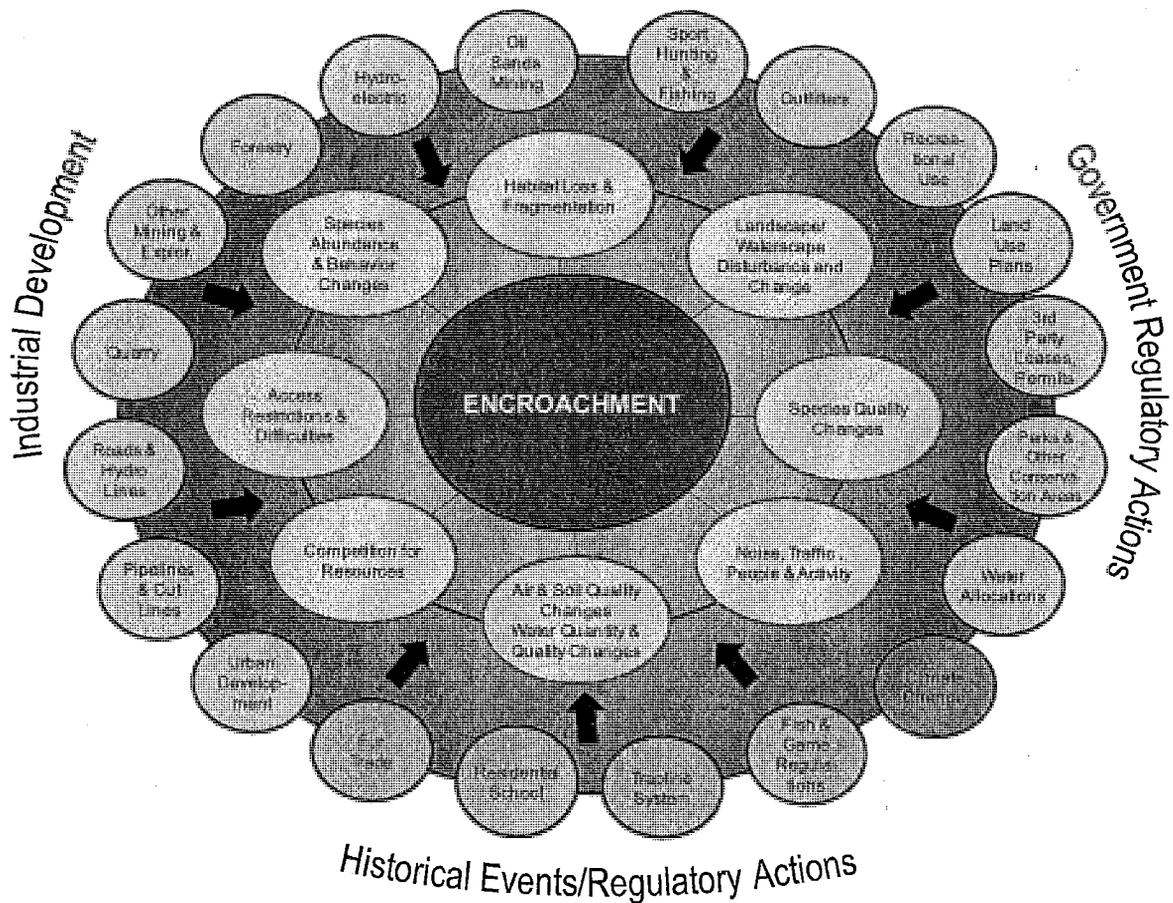
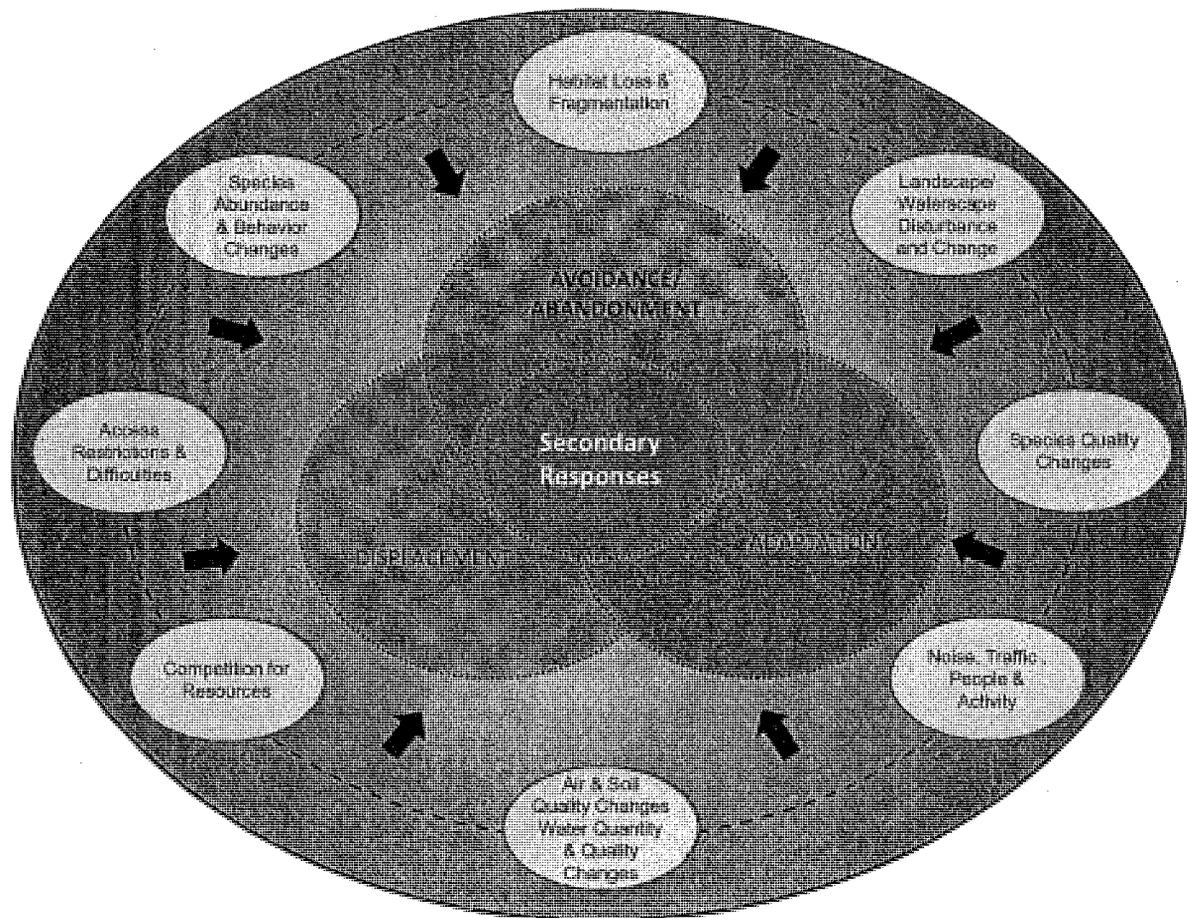


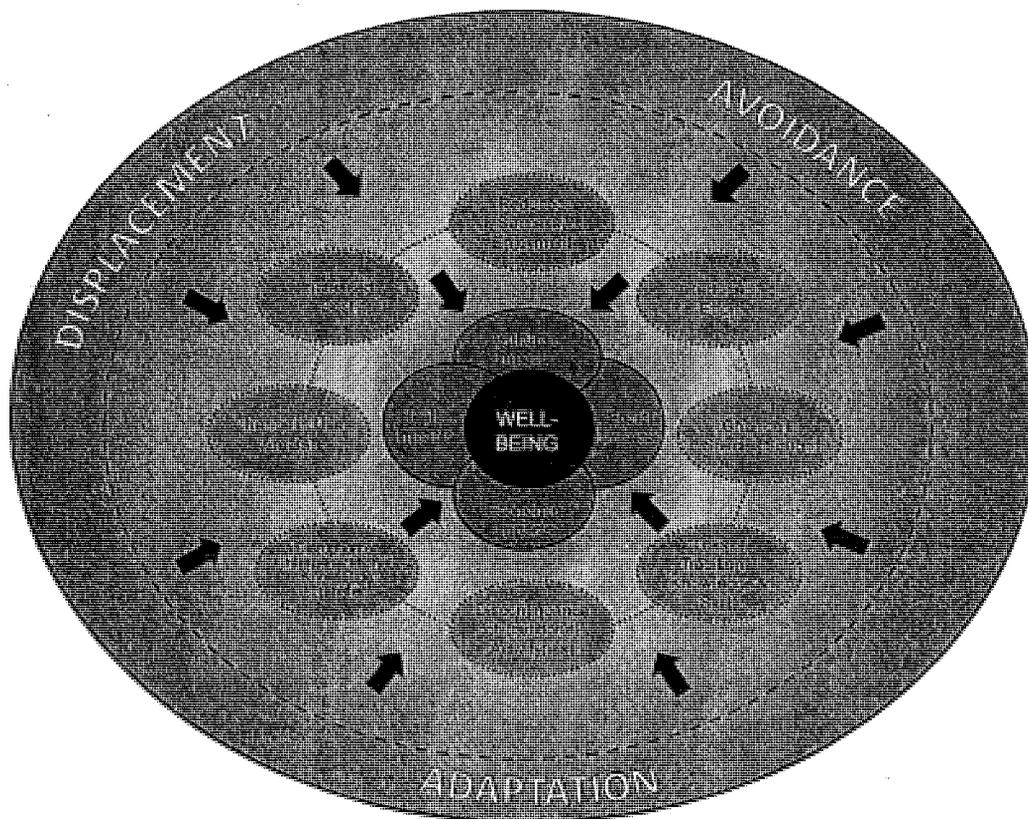
Figure 2-6 below depicts the various pathways that changes in the quality, quantity and accessibility of the environment and the potential primary or first order outcomes or responses of such influences. For example, a response to change in the quality of a resource (e.g. fish) could result in avoidance behavior (no fishing at all) or adaptation (change in species harvested or change in fishing location). Similarly, a response to displacement (e.g. loss of access) might be to adapt by using other areas more intensely, if that option is feasible, or the outcome might be loss of opportunity altogether.

FIGURE 2-6: Primary Outcomes or Responses to Encroachment



Finally, Figure 2-7 illustrates the linkages and pathways between the primary outcomes or responses and secondary impacts which get at the heart of ACFN overall well-being. Secondary impacts are highly inter-related. For example, outcomes of avoidance behavior can lead to loss of country food in the diet which can then lead to changes in physical health (less exercise, inferior nutrition), family economics (increased food costs), inter-generational learning and teaching relationships (e.g. parents and children or grandparents and grandchildren), etc.

FIGURE 2-7: Secondary Impacts on ACFN Well-Being



### **3.0 HISTORIC ENCROACHMENT DRIVERS**

The overview of encroachment factors presented in this Section of the report serves to highlight major events experienced by ACFN. It is not, and should not be considered an exhaustive treatment or analysis of ACFN's history. Rather, the purpose of this section is to acquaint the reader about some of the key impacts experienced by ACFN so that they may better appreciate the conditions and state of affairs of ACFN before larger scale development commenced in the ESA, which is the subject of Section 4 of this report.

Discussed in the balance of this section of the report, encroachments included an influx of non-local people involved in the harvest or trade of furbearers; ravages of disease brought by newcomers; and competition by newcomers for food resources and the industry of the day, trapping. ACFN had signed a Treaty and within a few short years discovered the promise of non-interference with their livelihood rights was not being upheld. At the very time they were discussing means of protection of Treaty rights through the establishment of Reserves and preserves, the federal government, through the taking up of lands for the Wood Buffalo Park southern annex, alienated approximately half of ACFN members from a rich and productive segment of the landscape that supported their Rights, Values and Knowledge – a large portion of the Peace-Athabasca Delta. Even once Reserves were established, the critical furbearing area of Reserve 201, so important to the livelihood of most ACFN members, continued to be exploited by non-ACFN individuals. Finally, the decline of the fur market and government insistence that ACFN children attend the residential school in Fort Chipewyan eventually culminated in the termination of the long standing pattern of ACFN families living independently at permanent and seasonal cabins and camps.

### **3.1 Early Fur Trade Era to Treaty Signing in 1899**

The establishment of furtrade posts or forts on the west side of Lake Athabasca first occurred in 1778 with the arrival of Peter Pond of the Northwest Company. Over the course of the next several decades, various companies established and relocated forts on islands and on the main land of both the south and north sides of the lake. In 1821 with the amalgamation of the Hudson Bay Company and Northwest Company, the main furtrade post was situated near present day Fort Chipewyan. This post became the Hudson Bay Company's major administrative and supply centre for the Athabasca-Mackenzie area, and a major fur collection depot.<sup>8</sup>

With respect to the discussion of encroachment, the permanent establishment of fur traders would have impacted previous generations of ACFN in two ways: introduction of disease and competition for animals and fish for food sources.

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<sup>8</sup> In-depth discussions of the evolution of furtrade posts in the Fort Chipewyan have been documented by: Mathewson, P. 1974. *The Geographical Impact of Outsiders on the Community of Fort Chipewyan, Alberta*. Thesis. University of Alberta, Edmonton, Department of Geography; and McCormack, P. 1984. *How the (North) West Was Won: Development and Underdevelopment in the Fort Chipewyan Region*. PhD Thesis, University of Alberta. Both available at University of Alberta Libraries. Education and Research Archive. <https://era.library.ualberta.ca/public/view/item/uuid:d40c8124-d7ed-4002-8295-68f716f3c505>

Mathewson (1974) compiled a list of severe epidemics described in the journals of the Hudson Bay Company posts on Lake Athabasca at or near Fort Chipewyan. According to her research, the first recorded incident of high mortality amongst the First Nations people was a smallpox outbreak in 1780-1782. From 1803 to 1930, outbreaks of smallpox, measles, whooping cough, influenza, and scarlet fever causing severe illness and death are reported for 18 different years. The report for Holy Angels School in Fort Chipewyan for the year ending 1901 reported; "The Indians' state of health is very precarious. An epidemic having broken out in Athabaska, the children as well as the majority of Indians contracted the disease. Only one pupil died at the school, but many of those who, at their parents' request, left our school, hoping to recover from the sickness at home, died after a short time."<sup>9</sup> In his oral history evidence, William Courtoreille, an Elder reportedly relayed to researchers Coutu and Hoffman-Mercredi (2002:235); "It (smallpox) just about killed the whole settlement...There was a Chipewyan colony that lived at Lake Claire on the Birch River in the Wood Buffalo Park; they were just about wiped out; there is only a few left. There are the Cheezay's, the Ratfats, Shortmans, Vermillions and Piches. Five families that I know of that survived from there; the children are still alive. Another colony of Chipewyans on the N22 reserve also were affected and almost wiped out."

The actual numbers of ACFN members who perished from the various outbreaks is not known. These episodes of illness would have impacted the ability of ACFN members to secure food sources and trap furbearers for cash income, either by virtue of the loss of lead harvesters or due to the inability of the family to travel and harvest due to illness. On this subject, Mathewson (1974:42) wrote; "Whether or not the natives were killed outright by them [disease], the period of illness and weakness prevented them from hunting, trapping and fishing, and thus often proved equally fatal."

The second issue faced by ACFN members was increased competition for food. The Northern River Basins Study reported that a scarcity of animals important as food sources around Fort Chipewyan occurred in the years 1850, 1871, 1873, 1882 and 1889.<sup>10</sup> Mathewson (1974:42-43) also reported episodes of starvation amongst First Nations people residing in the Fort Chipewyan area occurred in the years 1828, 1849-50, 1852, 1860, and in 1877-78. Scarcity of animals in the Fort Chipewyan area may have been associated with natural cyclical patterns, but the historic record also indicates that a large congregation of people in addition to the Chipewyan and Cree were reliant upon the resources in the area for sustenance purposes.

Ferguson's (1993) research of Hudson Bay Company historic documents reveals that the Fort Chipewyan post hired local resident 'Fort Hunters' to hunt large animals to provision post residents as well as the fur brigade groups. She notes that in the 1820s the Hudson Bay Company Fort Wedderburn post near Fort Chipewyan sent hunters to Lake Claire for bison and that an estimated 300 animals were harvested from the area. By the late 1800's, the furtrade settlement of Fort Chipewyan had a substantial resident population in need of game and fish. Northwest Mounted Police inspector Jarvis reported the population at Fort Chipewyan in January of 1897 included 150 Hudson Bay Company employees and freemen, 11 individuals associated with the

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<sup>9</sup> The Indian Affairs Annual Report for the Year Ended June, 1901 (pg. 341, online navigation pg. 393).

<sup>10</sup> In Stuart Adam and Associates. 2003. Fort Chipewyan Way of Life Study. Prepared for ACFN. Pg. 51.

Roman Catholic mission, along with 42 lodges of 'Chipewyans and Crees.' Jarvis indicated that the Roman Catholic mission alone was consuming 22,000 fish between November and May each year, all of which were harvested from Lake Athabasca.<sup>11</sup> The combination of the resident First Nation population, post and mission employees and families would have required substantial quantities of animals and fish be harvested from the general area.

McCormack's (2010a:135-136) research on Fort Chipewyan provides a number of statistics concerning the quantities of animals and fish harvested to feed the community and/or fur trade posts. For example she reports;

"Cameron noted by 17 August 1908, the Loutit "boys" who hunted for the Hudson's Bay Company, had salted down 1,600 waveys [waterfowl species]"

"The most crucial food was fish, which fed people and sled dogs all winter. John Macoun (1882:139) reported that the post needed at least twenty-five thousand whitefish each winter."

Until the late 1800's, there were no government regulations that influenced ACFN harvesting practices. In 1896, the federal government enacted *An Act for the Preservation of Game in the Unorganized Portions of the Northwest Territories of Canada*, which applied to areas now known as the provinces of Manitoba, Saskatchewan and Alberta.<sup>12</sup> Section 4 of the Act prohibited the harvest of bison or buffalo until the first day of January, 1900.<sup>13</sup> As discussed below, this prohibition of buffalo hunting in parts of the ESA has continued to present day. The act was enforced on First Nations people, including those situated in northeastern Alberta. In 1897 a Chipewyan individual named Francois Byskie was charged for killing two buffalo near Lying Wood Mountain, a location somewhere in the vicinity of what is now Wood Buffalo National Park. At his trial in Fort Smith, Northwest Territories, he pleaded guilty to the charge but indicated he had harvested the animals because he was starving.<sup>14</sup> His sentence was \$10 or ten days imprisonment with hard labour, and the bison were confiscated. During the trial the police officer who had charged Byskie was reported to have said; "Indians about the place were curious to know whether the law could or would be carried out." The Northwest Mounted Police inspector who acted as the justice of the peace in the trial concluded that the trial would set an example to prevent any further illegal hunting of bison.<sup>15</sup>

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<sup>11</sup> As reported in Scace, R., Ramsay, C. Siegried, E, Klaiber, A, and Malasiuk, J. 2005. A Historical Profile of the Northeast Alberta Area's Mixed European-Indian Ancestry Community. Submitted to Research and Statistics Division and Aboriginal Law and Strategic Policy Group, Justice Canada. Discussion Draft, March 2005.

<sup>12</sup> In: Rene Fumoleau. 2004. *As Long as this Land Shall Last: A History of Treaty 8 and Treaty 11, 1870-1939*. University of Calgary Press, Calgary, Alberta. Pg. 43.

<sup>13</sup> In: Calliou, Brian Louis. 2000. *Losing the Game: Wildlife Conservation and the Regulation of First Nations Hunting in Alberta, 1880-1930*. Master's Thesis, University of Alberta, Faculty of Law.

<sup>14</sup> In: Rene Fumoleau. 2004. *As Long as this Land Shall Last: A History of Treaty 8 and Treaty 11, 1870-1939*. University of Calgary Press, Calgary, Alberta. Pg. 45.

<sup>15</sup> In: Sandlos, J. 2007. *Hunters at the margin: Native people and wildlife conservation in the Northwest Territories*. University of British Columbia Press.

On July 13, 1899, Chief Alexandre Laviolette and headmen Julien Ratfat and S. Heezell signed an adhesion to Treaty 8 at Fort Chipewyan on behalf of the Chipewyan Band [now ACFN].<sup>16</sup> Reports by the Treaty Commissioners and others who witnessed the discussions leading to the signing provide insight regarding just how concerned ACFN was with protecting their way of life.

“There was expressed at every point the fear that making of the treaty would be followed by the curtailment of the hunting and fishing privileges . . . We pointed out . . . that the same means of earning a livelihood would continue after the Treaty as existed before it, and that the Indians would be expected to make use of them. . . . Our chief difficulty was the apprehension that the hunting and fishing privileges were to be curtailed. . . . we had to solemnly assure them that only such laws as to hunting and fishing as were in the interest of Indians and were found necessary in order to protect the fish and fur bearing animals would be made, and they would be as free to hunt and fish after the treaty as they would be if they never entered into it.”<sup>17</sup>

Father Gabriel Breynat, a witness to the Treaty later wrote;

“Discussions were long enough but sincere; Crees and Chipewyans refused to be treated like Prairie Indians, and to be parked on reserves. . . . It was essential to them to retain complete freedom to move around.”<sup>18</sup>

At Fort Chipewyan, a Catholic missionary recorded the following concerning the discussions between the Chipewyans and Crees at Fort Chipewyan and the Treaty Commissioners;

“The Commissioner explained the Government’s views and the advantages it offered to the people. The Chief of the Crees spoke up and expressed the conditions on which he would accept the Government’s proposals: 1. Complete freedom to fish. 2. Complete freedom to hunt. 3. Complete freedom to trap. 4. As himself and his people are Catholics, he wants their children to be educated in Catholic schools. In his turn, the Chipewyan spokesman set the same conditions as the first speaker. The Commissioner acknowledged all the requests which both had voiced.”<sup>19</sup>

Initially, the ACFN people did not want Reserves surveyed. At the time of the Treaty negotiations, they indicated concern that they did not want to be treated like “prairie Indians” and

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<sup>16</sup> In: Indian Claims Commission. 1998. Athabasca Chipewyan First Nation Inquiry WAC Bennett Dam and Damage to Indian Reserve 201, March 1998:35. It is noted that the Treaty was also signed on the same day by representatives of the Cree. The Indian Claims Commission notes that “although the Cree Band and the Chipewyan Band were two distinct bands, they operated under one administration referred to as the Athabasca Cree Chipewyan Band until 1978.”

<sup>17</sup> *Treaty No. 8, Made June, 1899 and Adhesions, Reports, Etc.* (Ottawa: Queen’s Printer, 1966), 12. Cited in Indian Claims Commission (1998).

<sup>18</sup> Quoted in Rene Fumoleau. 1975. *As Long As This Land Shall Last*. McClelland and Stewart, Toronto. Pg. 77.

<sup>19</sup> Quoted in Rene Fumoleau. 1975. *As Long As This Land Shall Last*. McClelland and Stewart, Toronto. Pg. 78.

be parked on reserves. They indicated it was essential that they retain complete freedom to move around the land.<sup>20</sup> The Treaty Commissioners reported;

“...the selection and survey of reserves could wait until some future date, when they were required to protect a band’s land base: The Indians are given the option of taking reserves or land in severalty. As the extent of the country treated for made it impossible to define reserves or holdings, and as the Indians were not prepared to make selections, we confined ourselves to an undertaking to have reserves and holdings set apart in the future, and the Indians were satisfied with the promise that this would be done when required. There is no immediate necessity for the general laying out of reserves or the allotting of land. It will be quite time enough to do this as advancing settlement makes necessary the surveying of the land. It would have been impossible to have made a treaty if we had not assured them that there was no intention of confining them to reserves. We had to very clearly explain to them that the provision for reserves and allotments of land were made for their protection, and to secure to them in perpetuity a fair portion of land ceded, in the event of settlement advancing.”<sup>21</sup>

### 3.2 Post Treaty Era 1900-1960’s

Shortly after ACFN signed Treaty 8, Alberta became a province in 1905 and immediately introduced provincial game legislation. According to Russel (1981), ACFN members faced increasing restrictions on hunting and trapping as a result of closed seasons for beaver, and in some years a complete ban on beaver harvesting.<sup>22</sup> For example, in 1913 ACFN Chief Laviolette protested about being fined for killing a beaver out of season, arguing that this action was “altogether contrary to our agreement with the treaty Commissioners when we signed the Treaty at this place.”<sup>23</sup>

Numerous historians have documented the influx of non-local trappers into ACFN’s Territory beginning in the 1920’s citing a variety of reasons including rising fur prices, improved access to the Lake Athabasca area, and a depressed prairie economy.<sup>24</sup> Another reason cited for increased competition by outside trappers is linked to the creation of Wood Buffalo Park in 1922. Created by the Canadian government primarily for purposes of protecting woodland bison, the regulations for the park immediately restricted all hunting and trapping by “white” trappers, and

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<sup>20</sup> Rene Fumoleau. 2004. *As Long as this Land Shall Last: A History of Treaty 8 and Treaty 11, 1870-1939*. University of Calgary Press, Calgary, Alberta. Pg. 43. Bishop Breynat’s recollection of discussions during the Treaty negotiations at Fort Chipewyan.

<sup>21</sup> *Treaty No. 8, Made June, 1899 and Adhesions, Reports, Etc.* (Ottawa: Queen’s Printer, 1966), 8. Cited in Indian Claims Commission (1998).

<sup>22</sup> Russel, B. 1981. Report to the Chipewyan Band of Fort Chipewyan on Treaty Land Entitlement and Other Land Matters. Treaty and Aboriginal Rights Research of the Indian Association of Alberta. Pg. 9.

<sup>23</sup> In Russel, B. 1981. Report to the Chipewyan Band of Fort Chipewyan on Treaty Land Entitlement and Other Land Matters. Treaty and Aboriginal Rights Research of the Indian Association of Alberta. Pg. 9. Original citation Chief Laviolette to SGIA, 2 January 1913. Public Archives of Canada, RG 10:6732:420-2A.

<sup>24</sup> See for example; Rene Fumoleau (2004); McCormack, P. (1992).

excluded Metis hunters and trappers the following year.<sup>25</sup> Treaty 8 First Nation members retained the right to hunt and trap in the park, subject to the restriction on bison/buffalo hunting and seasonal restrictions on furbearer harvesting. Those precluded from the park area, moved south and east of the park border into areas where ACFN members and other Treaty 8 Nations resided and earned their livelihood.

In the same year Wood Buffalo Park was created, members of ACFN and Mikisew Cree First Nation (as they are known now) expressed their concern to the Indian Agent about the 'outsiders' hunting and trapping in their traditional territories. The Agent recommended to his superiors that a hunting preserve totaling approximately 4000 square miles be set aside for the exclusive use of the "Indians", stating it was his opinion the only "effective way to protect their interests would be to apply for a hunting and trapping Reserve in that district in which they have their homes and have always lived."<sup>26</sup> The original map outlining the boundary of this proposed 'preserve' is provided as Figure 3-1. Russel (1981) notes that "Since the economy and society of most of the North did not involve farming, Indian requests for land under Treaty Eight often took the form of demands for extensive hunting, fishing and trapping "preserves" (which would exclude non-Indian intruders) rather than the smaller agricultural "reserves" typical of the southern Treaties. Requests for both types of land were put forward by the Chipewyan Band of Fort Chipewyan throughout the 1920's"<sup>27</sup>

Requests by ACFN and the local Indian Agent for a hunting and trapping preserve continued over the course of several years. Discussions between the provincial and federal governments on the matter were protracted. Ultimately, negotiations failed because the Alberta government took the position in 1926 that any rights granted to the 'Indians' would also have to be granted to the 'white' men, and further, if exclusive hunting and trapping districts were agreed to, the First Nations would be waiving their Treaty rights to hunt and trap anywhere else in the province.<sup>28</sup> This position was reiterated by the provincial government again in 1927 and 1928.<sup>29</sup> Remarkably, these discussions were ongoing while the federal parks agency was planning to annex much of the area which had been identified for the hunting and trapping preserve.

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<sup>25</sup> McCormack, P. 1992. The Political Economy of Bison Management in Wood Buffalo National Park. Arctic, Volume 45, No. 4, December. Pg. 370.

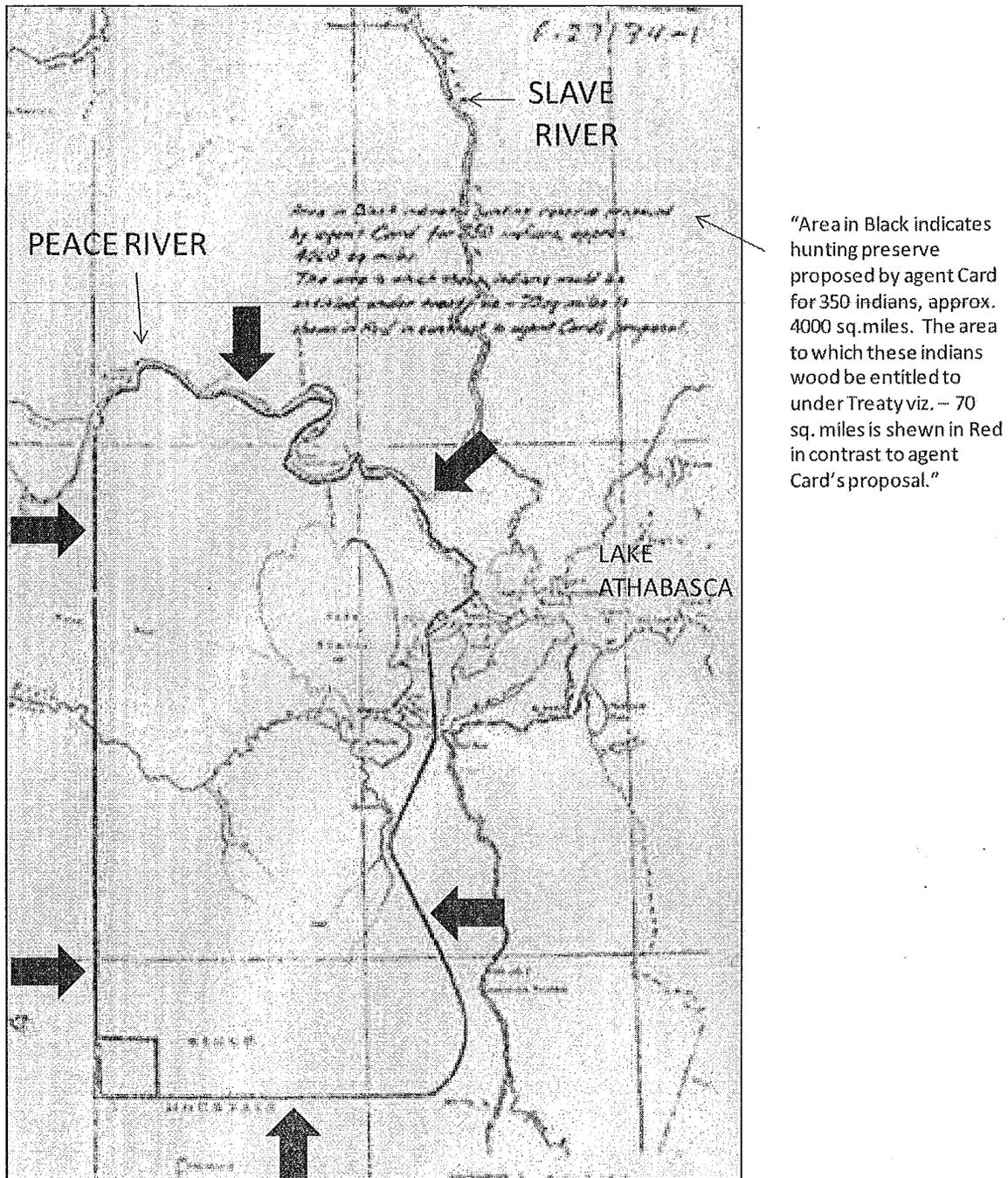
<sup>26</sup> Indian Claims Commission. 1998. Athabasca Chipewyan First Nation Inquiry WAC Bennett Dam and Damage to Indian Reserve 201, March 1998. Pg. 17-18. Original citation; J. Card, Indian Agent, Fort Smith, NWT, to [Department of Indian Affairs, Ottawa], July 5, 1922, NA, RG 10, vol. 7778, file 27134-1.

<sup>27</sup> Russel, B. 1981. Report to the Chipewyan Band of Fort Chipewyan on Treaty Land Entitlement and Other Land Matters. Treaty and Aboriginal Rights Research of the Indian Association of Alberta. Pg. 10.

<sup>28</sup> Ibid.

<sup>29</sup> Ibid. Pg. 15.

FIGURE 3-1: Hunting Preserve Proposed for ACFN in 1922



Agent G. Card to Department of Indian Affairs, July 5, 1922. PAC, RG10, 7778:27134-1. Map annotated by writer by adding geographic place names in red font and red arrows indicating the outer boundaries of the Preserve area identified on the original map. Text on original map duplicated for clarity to the right of the graphic.

McCormack (1992:370) reports “Residents of the Fort Chipewyan region had opposed park expansion unless there were firm guarantees that their use of the area would not be impaired (letter from McDougal to Finnie, 25 March 1926 [PAC, RG 85, v. 1213, file 400-2-3, pt. 11].” At about the same time that year the Alberta government again exercised its powers to regulate game. Sandlos (2007) reports that two Mikisew Cree First Nation (then known as Chipewyan Cree Band) members were tried for killing two bison just south of the Peace River in an area that was just about to be annexed to Wood Buffalo Park. The trial took place in Fort Chipewyan and was witnessed by several hundred Cree and Chipewyan. The individual who had actually killed the bison was sentenced to six months in jail at Fort Saskatchewan, and his father, charged with accessory, received a three month sentence at the same jailhouse. The justice of the peace who sentenced the two Cree harvesters is said to have lectured all who witnessed the trial that anyone found killing buffalo in the future would lose their ‘privilege’ to hunt and trap in the park.

In 1926, the park was expanded to take in the important Peace-Athabasca Delta area on the west end of Lake Athabasca (see Figure 3-2). Park rules for the newly annexed park area only permitted ACFN, other Treaty 8 members, Metis and white trappers who were resident in the new park area in 1926, to continue to live and use the area. ACFN members who had long engaged in traditional pursuits, but happened not to be resident in the park that specific year, were subsequently restricted from entering the park.<sup>30</sup> ACFN Elders recalled;

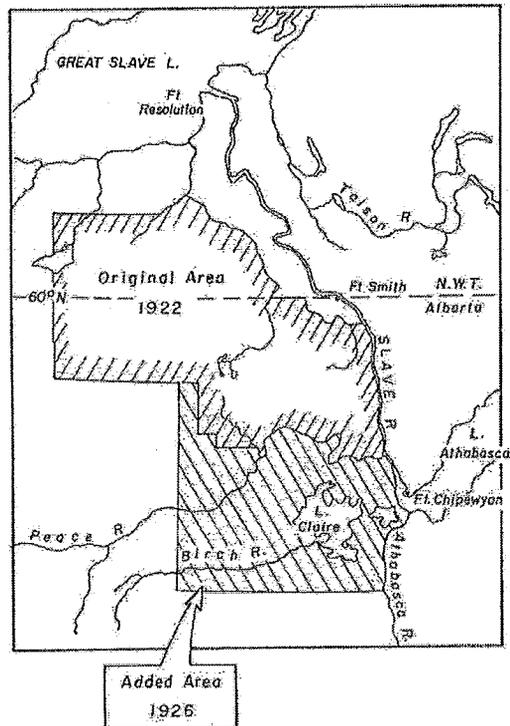
*Many families were given no choice but leave the WBNP area, people like the Bouchers, Trip de Roche, Fletts, L’homme courts, Cypriens, were once all had lived and trapped in the Birch River and later relocated to Athabasca River, like Jackfish Lake, Old Fort, Big Point, Point Brule, and Popular [sic] Point. [Interview with Rene Bruno, no date, translated by Alex Bruno]*

*The [families] I remember are Adams, Piches, Maderia, also many people from Point Brule, Popular Point [sic], Big Point and Old Fort had hunted and trapped in Birch River area. Most of the people had home steadied [sic] and raised their families in their respected areas for many years, but because of the WBNP they all had to relocate and move from the area. [Interview with Victoria Mercredi, no date, translated by Alex Bruno].*

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<sup>30</sup> McCormack, P.A. 2010b. Research Report-An Ethnohistory of the Mikisew Cree First Nation. Prepared for Janes Freedman Kyle, legal counsel for Mikisew Cree First Nation. Also Stuart Adam and Associates. 2003. Fort Chipewyan Way of Life Study. Prepared for ACFN.

Figure 3-2: Original and Annexed Boundaries of Wood Buffalo National Park<sup>31</sup>



*Many of the Dene people relocated to other areas like Jackfish Lake, Old Fort, Big Point, Point Brule, Popular [sic] Point. Many others just left the country and tried elsewhere, Fort McMurray, Fort Smith, etc. [Interview with Albert Voyageur, no date]*

Importantly, non-local trappers restricted from the park moved east into the remaining important trapping areas of ACFN members. On this matter the Indian Claims Commission (1998:13) wrote<sup>32</sup>;

*“By 1926, the competition for fur resources in the area became critical. In that year, the boundaries of neighbouring Wood Buffalo Park were extended to include much of the Peace delta, Lake Claire, Lake Mamawi, and areas as far west as the Athabaska and Embarrass Rivers. Non-Indian trappers who were excluded from the park moved into the Jackfish Lake area where the Indians traditionally trapped. The situation became so tense that, in the summer of 1926,*

<sup>31</sup> McCormack, P.A. 2010b. Figure 3, pg. 78.

<sup>32</sup> Reference source: D.C. Scott to G. Hoadley, Minister of Agriculture for the Province of Alberta, July 17, 1926, NA, RG 10, vol. 6732, file 420-2B. See also Russell, B. 1981:13.

*the Indians retaliated against non-Indian encroachment by setting forest fires in the hunting grounds.”*

The impact of this encroachment was described by ACFN Chief Jonas Laviolette in a letter dated February 20, 1927 to the Chief of the Indian Department in Ottawa<sup>33</sup>;

*“I hope you will not mind me writing this letter to you but I have been waiting so long to hear from you that I think you have forgotten all about me and my people from Fort Chipewyan. . . . I told you in Edmonton that the white trappers where [sic] going to spoil my country and what I said then has come true. My country is just about ruined. The white men they kill fur with poison, they trap in the sand before the snow comes. They break the rat house and they break the beaver house and now there is hardly anything left and if you don't do something for us we are going to starve. .... For a long time now I have been begging for a Reserve for me and my people at Jackfish Lake and we still want this very badly. I hope you won't mind me writing this to you but it is no good sending this letter to Mr. Card he does not seem to try to help us. Why doesn't he come down here and try and stop these trappers doing wrong to us. No one seems to care what happens to us. There are lots of men here looking after Buffalo, no one looking after us. ... The white trapper comes here and kills all here then moves to another country. We cannot move and we don't want to because our fathers father's used to live here and want our children to live here when we die. Jackfish Lake use to be fine rat country but they don't get a change to breed up because there are more trappers than rat. ... Thirty years ago it was a fine country because just the Indians lived in it.”*

Sandlos' (2007) research indicates that by the 1930's, the park warden service had established a network of patrol trails, overnight cabins and phone lines to support the efforts of a dozen wardens monitoring harvesting activities. Wardens reportedly conducted random searches of boats looking for illegally harvested beaver pelts. The widespread warden presence was thought at the time to send a message to Aboriginal harvesters that the game laws for the park were to be enforced.

Until the mid-1920's, ACFN had not requested Reserve land be set aside under the terms of Treaty 8. However, the combination of park creation, hunting and trapping regulations, and competition for food and fur resources by both locals and outsiders forced the Nation to request Reserves for protection purposes. In 1927, an ACFN spokesperson marked out on a map the boundaries of the hunting preserve they wished, as well as the locations of Reserves at Jackfish Lake (Richardson Lake), Big Point, Old Fort and Poplar Point. Nothing occurred until 1931, when according to the Indian Claims Commission, “increased mineral exploration in the area threatened the most desirable locations already selected by the Indians as reserves”. It was only then that discussions were held to identify the Reserve locations. In the summer of 1931 seven

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<sup>33</sup> Jonas Laviolette, Chief of Fort Chipewyan Indians, to Chief of the Indian Department, Ottawa, February 20, 1927, NA, RG 10, vol 6732, file 420-2B. Quoted and referenced in Indian Claims Commission, Athabasca Chipewyan First Nation Inquiry WAC Bennett Dam and Damage to Indian Reserve 201, March 1998.

Reserves were surveyed and identified as Reserves 201A to 201G. The reserves ranged in size from 10.7 acres to 2,237 acres for a total of 4.4 square miles of land.<sup>34</sup>

There were serious problems and delays however with the survey of the largest ACFN selection, Reserve 201, which was selected because of the bountiful muskrat and waterfowl populations. In his report on the surveys in 1931, Mr. Fairchild described the area within the delta as;

“a hunter’s paradise”: No. 201 which is the main reserve, lies wholly within “The Delta” and is without a doubt the best revenue producing tract in the north country, as it is a natural breeding ground for fur bearing animals and game birds, which afford both revenue and sustenance for this band of Indians. Thousands of muskrat are taken annually from the area between the East channel of the river and Fletcher Channel.”<sup>35</sup>

Reserve 201 lay in the delta and presented survey methodological challenges. Reserve 201 was not surveyed until 1935, owing to protracted discussions between federal and provincial agencies on survey methods and the identification of natural boundaries to anchor the survey. Certificate of title for Reserve 201 transferred from Alberta to Canada in 1937. The transfer document (Order in Council) did not contain language stating that ACFN members were to have exclusive hunting and trapping on Reserve 201, as had be stipulated by federal representatives.<sup>36</sup> Within three years of the setting aside of Reserve 201, problems arose. Due to the natural changing nature of the delta channels and small lakes, the plan of survey quickly no longer coincided with the actual layout of the Reserve. Further, the original survey did not include the internal waterbodies and channels. In 1940, Indian Agent Head complained that many of the important trapping areas were outside of what was depicted on the survey plan of the Reserve and non-treaty trappers were taking full advantage of this situation by claiming the right to trap in those areas. Indian Affairs immediately tried to rectify their survey error with the province, but were not successful.<sup>37</sup>

A letter by ACFN Chief Laviolette 1938 poignantly summarizes the situation in which ACFN members found themselves,<sup>38</sup>

*“I am taking the liberty of writing to you, in regard to the game regulations enforced this winter which puts us in an awkward position to make our living at this place (Fort Chipewyan, Alberta), and as chief of the Chipewyan Band, I have to make some complaints to you, and I hope you take steps to remedy the situation, that is to say, that the strangers (white trappers) from outside are taking all our best hunting grounds from us, and they do not allow the Indians to hunt near these, and this has been going on since a good few years. The result, a good many Chipewyans of my Band cannot find any place to trap rats, and how are we*

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<sup>34</sup> Indian Claims Commission. 1998. Pgs. 20-21.

<sup>35</sup> Ibid. Pg. 21.

<sup>36</sup> Ibid. Pg. 20.

<sup>37</sup> Russel, B. 1981. Pg. 22-24.

<sup>38</sup> In Stuart Adam and Associates. 2003:57. Quoting from letter by Chief Laviolette to the Alberta Minister of Agriculture on April 4, 1938, cited in Fumoleau (2004).

*to live, all the place left for Chipewyan belong to Jack Fish Lake, Old Fort and Big Point is the Delta, which is barren, no rats there, nothing but sand bars, and we cannot go anywhere else to trap rats. I wish to mention also, that the present Game Guardian....is not fit for a game Guardian, is siding on white trappers only, and Indians never see him to talk to him, I presume that this Game Guardian and a few trappers (his favorites) are the ones that are making laws as they please. And another thing is, if an Indian sets a few traps before the white trappers, those white trappers take the traps away (Indian traps) and set their own traps there. We cannot call that just, that which happens often, according to our Treaty, we are free to trap and fish and hunt anywhere. I wish to mention also that the white trappers are taking Big Ground and Big Lakes for their own trappings, while a poor old Indian has no chance to kill a few rats, and most of those white trappers are Russian, Germans and Swedes. I want fair play for my Band of Chipewyans and I hope the Government comes to our rescue."*

Stuart Adam and Associates (2003) and Tanner and Rigney (2003) describe ACFN's trapping area allocation system based on interviews with ACFN Elders. According to their work, prior to the institution of trapper management systems by the Alberta government in the late 1930's, ACFN had a communal system of trapping area allocation and management. Rather than individual family owned traplines, large areas were identified in which larger groups could engage in trapping activities, often under the leadership of one individual. Once an individual of a larger group had cut their trail, others in the group would acknowledge that this was that individual's line for trapping purposes. These large communal trapping areas were generally associated with the people living in settlements at places such as Point Brule, Poplar Point, Old Fort, Jackfish Lake, Birch River and Athabasca River.<sup>39</sup> ACFN continued its indigenous model of trapline management on Reserve 201. According to Adam (2003) during the 1940's and 1950's, the Chief set quotas and maximum harvests, largely for muskrat, on a per family basis for trapping activity and individual areas within the Reserve were established for individual trappers for commercial trapping purposes.<sup>40</sup>

According to Passelac-Ross (2005:15), Alberta first instituted a system of trapping licenses in 1937 and then created a system of registered traplines and trapping areas during 1941-1942 which applied to all areas outside of First Nation Reserves and Wood Buffalo Park. Some ACFN members were allocated specific off-Reserve traplines under this system. According to McCormack (2010b) trappers who had trapping privileges in Wood Buffalo National Park at the time the Alberta registered traplines were being allocated, were not eligible for traplines outside the park boundaries. Shortly after the provincial trapline system was created, Wood Buffalo Park also introduced a regulated trapline system. Under this park system, over the objection of local First Nations, Treaty Indians were divided into group areas and non-Treaty trappers were permitted to obtain individual traplines.

In 2003, 10 ACFN members held registered traplines not situated on their own Reserve lands or within Wood Buffalo Park and their trapping is regulated by the province.<sup>41</sup> Currently, 11

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<sup>39</sup> Stuart Adam and Associates. 2003:44, 46.

<sup>40</sup> Ibid. Pg. 79.

<sup>41</sup> Stuart Adam and Associates. 2003:79.

traplines outside of the park and south of Lake Athabasca are held by ACFN Members.<sup>42</sup> Additionally, ACFN Members hold 4 to 5 traplines north of the lake.<sup>43</sup>

Throughout the 1930's and early 1940's, as ACFN members were dealing with encroachment by non-member trappers and hunters, provincial game regulations, and the provincial trapline system, many continued to request access to the park addition area, but were turned down every time.<sup>44</sup> A delayed impact of the 1926 Wood Buffalo Park exclusionary rules was that a large number of ACFN members subsequently transferred to the Chipewyan Cree (now Mikisew Cree First Nation) Band in order to ensure their continued right of use of the annexed park area. In 1944, 116 ACFN members from 36 families who had continued hunting, trapping and fishing in the new portion of the park, transferred their membership to Mikisew Cree. On this issue McCormack (2010) writes;<sup>45</sup> "Park users were economically much better off than First Nations people living outside the park in Alberta, because they were protected from the destruction of animal resources by White trappers who had no interest in conservation. This situation encouraged Crees and park Chipewyans to focus their land use in the park, and in 1946 the park Chipewyans were legally transferred to the Cree band."

That same year (1946) Wood Buffalo Park introduced regulations limiting harvesters to one moose per year.<sup>46</sup> McCormack (1992:371) reports that; "By the 1940s, conditions of drought and related changes in sizes of animal populations, combined with heavy trapping and the elimination of controlled burning, depleted the numbers of fur and game animals in the park. For the first time, park residents were restricted in the number of moose they could kill. They requested permission to kill bison instead. All requests were denied."<sup>47</sup>

The 1950's through mid to late 1960's were reasonably stable years for the remaining ACFN members. Families lived on the various Reserves and at their seasonal camps or cabins and made a good livelihood trapping and harvesting animals, fish and plants. Towards the latter half of the 1960's, two things happened. First, fur prices declined having a substantial impact on ACFN Members. Second, many families moved from the land to Fort Chipewyan at the insistence of the federal government that their children attend school. In 1954 the Holy Angels Roman Catholic School, which had operated in Fort Chipewyan since 1874, was transferred to the Department of Indian Affairs and renamed the Bishop Piche School in 1959. This school was exclusively for the education of Treaty Indian students.<sup>48</sup>

This movement to Fort Chipewyan has been testified to by a number of ACFN members, as illustrated in the following interview quotes;

*Until the 1960s, everyone lived at Old Fort. "We lived there year round." In the 60s Indian Affairs told XXX family to move to town so their kids could to go*

<sup>42</sup> The Firelight Group. May 5, 2012. ACFN Reserves and traplines (RFMAs) shown in relation to the Teck Project. [http://www.ceaa.gc.ca/050/documents\\_staticpost/65505/56887/App01\\_ACFN\\_Reserves\\_and\\_Traplines.pdf](http://www.ceaa.gc.ca/050/documents_staticpost/65505/56887/App01_ACFN_Reserves_and_Traplines.pdf)

<sup>43</sup> Jonathan Bruno, ACFN. Pers.com. September 6, 2012.

<sup>44</sup> McCormack, P.A. 2010b.

<sup>45</sup> Ibid.

<sup>46</sup> Stuart Adam and Associates. 200:59.

<sup>47</sup> McCormack, P. 1992:371.

<sup>48</sup> Scace, R. et al. 2005.

*school. "When the government planned things, they plan way ahead." The residential school was there until 1974. In 1966, XXX, XXX, XXX moved into town. They were some of the last to do so, by then everyone else was in town. The first year people moved into town, some of the people, who had kids, had to stay in a tent all winter. XXX family had to stay in a tent.<sup>49</sup> [XXX-personal names removed by writer]*

Talking about his own generation, Chief Allan Adam has reported;

*"their kids, the generation after them [his grandparents time], we weren't allowed to live on the land. For us it was different because we were brought into town for school. We were taken away from our land, so we didn't get to see that side of our traditional way of life, the way that my father and everyone lived on the land."<sup>50</sup>*

Patrick Marcel mentions;

*When we were moved off the land to Fort Chipewyan, we could no longer feed ourselves, and then we were dependent on welfare. We were displaced. It seems like the government is trying to make sure we don't use those lands. Like they are trying to make sure that we can't go there to live as we always have. This displacement is still happening with this development.<sup>51</sup>*

Regarding the continuing impact of exclusion from Wood Buffalo Park, ACFN Elders have reported;

*People lost access to their traditional trapping and hunting grounds, even today we are not allowed to travel or hunt in Wood Buffalo National Park. [Interview with Madeline Marcel, no date, translated by Alex Bruno]*

*People are not herds of Bison to be placed from one country to another. This movement is due to the making of WBNP has caused our people hardship, not only did they lose their home land but also loss of identity and dignity. [Interview with Victoria Mercredi, no date, translated by Alex Bruno]*

Restriction of ACFN Treaty 8 rights within the 1926 annex boundaries of Wood Buffalo National Park were enforced under the terms of various iterations of Wood Buffalo Park Game Regulations from 1926 until approximately 2005-06 (current regulation SOR/78-830, November 3, 1978). Beginning in the late 1990's, Parks Canada commenced consultation with ACFN and other First Nations and Aboriginal groups to discuss changes and amendments to the regulations to bring them in line with contemporary legal and constitutional requirements. However it was not until the 2005 Mikisew Cree decision (*Mikisew Cree First Nation v. Canada, Minister of*

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<sup>49</sup> [ACFN Land Use Planning Elders Focus Group Interviews, October 15, 2009, Group Code PA-1].

<sup>50</sup> Affidavit of Allan Adam, October 1, 2010, Paragraph 11. Federal Court No. T-1437-10.

<sup>51</sup> Affidavit of Patrick Marcel, October 1, 2010, Paragraph 29. Federal Court No. T-1437-10.

*Canadian Heritage*, [2005] 3 S.C.R. 388, 2005 SCC 69) that Parks Canada ceased enforcing certain clauses of the 1978 regulations. Although harvesting of species at risk, notably bison and whooping cranes, continues to be prohibited, and certain activities continue to be regulated for public safety and public health purposes, ACFN members, as well as all Treaty 8 signatory Nations and Indigenous Metis card holders, are no longer denied access within the park. As far as Parks Canada is concerned, ACFN members are free to exercise their Treaty 8 rights throughout the park. Based on a number of consultative forums that have occurred in the mid 2000's, new park regulations are currently being drafted.<sup>52</sup>

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<sup>52</sup> Cam Zimmer, Cooperative Management Coordinator, Wood Buffalo National Park. Pers.Com. October 31, 2011.

## **4.0 CONTEMPORARY DRIVERS OF ENCROACHMENT**

For purposes of discussion, the main influences on ACFN's Rights, Values and Knowledge since the mid 1960's include population growth, industrial development and non-industrial government resource allocations, designations and use. The types of industrial development relevant to the ESA include hydroelectric, quarry and other mineral development and/or exploration, commercial forestry, oil sands exploration and extraction, and linear features associated primarily with industrial development, but also related to population growth and demands. Non-industrial factors include the use of lands, waters, and other resources for urban development, for consumptive and non-consumptive use, and Crown land use policies, designations and plans. All of these 'drivers' have in one way or another begun to directly and/or indirectly affect ACFN's Rights, Values and Knowledge and due to their long-term operational characteristics, will likely to continue to do so for decades. Future industrial and government plans and priorities have a high probability of causing incremental and cumulative affects over and above existing encroachment over the next fifty to seventy years or so.

The purpose of this section of the report is to provide an overview of the various types of drivers that currently exist, that are planned, and where relevant, have potential to occur within the ACFN ESA. Information presented about each form of driver is by no means exhaustive. Rather the writer has attempted to assemble information from credible sources to provide a synopsis of current and future conditions for each of the identified drivers of encroachment.

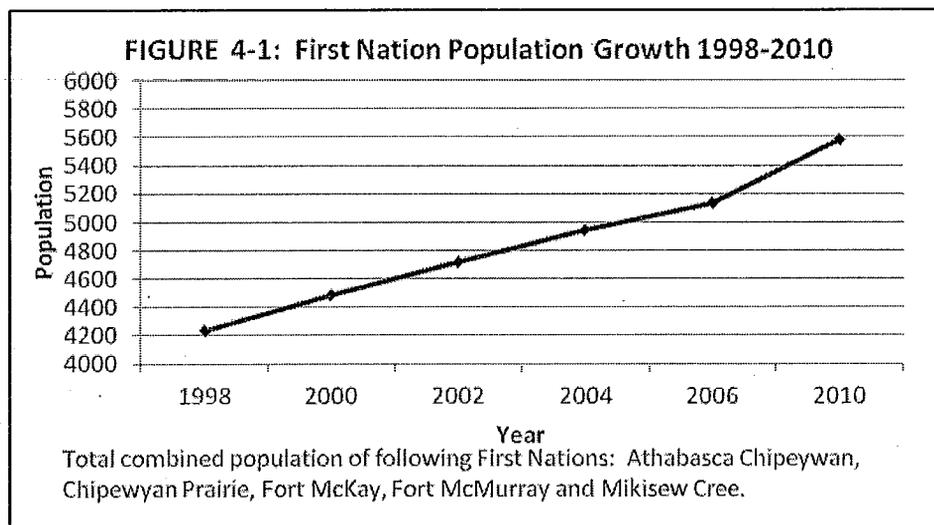
### **4.1 Population Trends in the ACFN ESA**

ACFN's population is growing, as are other First Nations and Aboriginal populations that exercise Treaty rights or other rights within the ACFN ESA and beyond. The non-First Nation/Aboriginal population within and adjacent to the ACFN ESA has grown rapidly in the past few decades, and by all accounts is expected to continue to grow. This segment of the population also utilizes the ACFN ESA for consumptive and non-consumptive sport, recreational and leisure activity purposes.

This section of the report provides information on recent and projected population data and trends in order to set the stage for understanding how the human population has and will continue to create demands and competition for land and resources within the ACFN ESA, an issue discussed throughout the remainder of this section of the report.

### 4.1.1 Recent Population Trends

The First Nation population in the ESA has been growing at a steady rate in the past thirteen years as illustrated in Figure 4-1.<sup>53</sup> The combined populations (total membership regardless of residence location) of Athabasca Chipewyan, Chipewyan Prairie, Fort McKay, Fort McMurray and Mikisew Cree First Nations increased from 4,230 in 1998 to 5,579 in 2010, representing an average annual growth rate of 2.45%.



The ratio of First Nation members living on-Reserve and off-Reserve has remained relatively similar over the past thirteen years with just over a third of members residing on-Reserve (see Figure 4-2).<sup>54</sup> ACFN's current population (registered members as of August, 2012) is 1,049 members, of which approximately one fifth reside on an ACFN Reserve or on nearby Crown lands (primarily the town of Fort Chipewyan).<sup>55</sup> The remaining 79% of ACFN members reside predominantly in Fort McMurray, Edmonton, Fort McKay, and Fort Smith or on other First Nation Reserves.<sup>56</sup> ACFN's population increased by almost 50% from 2000 to 2012, indicating an average annual growth rate of approximately 4.2%.<sup>57</sup>

<sup>53</sup> Indian and Northern Affairs Canada. 1998-2010. Registered Indian Population by Sex and Residence. Pre 1998 data was not readily available to the writer. Data for the year 2008 not accessible.

<sup>54</sup> Indian and Northern Affairs Canada population counts for "On-Reserve" includes members living on a Reserve of their own First Nation, a Reserve of another First Nation, on Crown land associated (adjacent) with their own First Nation, or another First Nation, or land not affiliated with any First Nation. For example, Athabasca Chipewyan First Nation members residing at Fort Chipewyan are included by this federal agency in their "on-Reserve/On Crown Land" grouping.

<sup>55</sup> Indian and Northern Affairs website. [http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND\\_NUMBER=463&lang=eng](http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=463&lang=eng)

<sup>56</sup> Email from Lisa King, Athabasca Chipewyan First Nation Industry Relations Corporation. February 22, 2011.

<sup>57</sup> Indian and Northern Affairs Canada. Registered Indian Population by Sex and Type of Residence for the year 2000 and footnote 55 for August 2012 population.

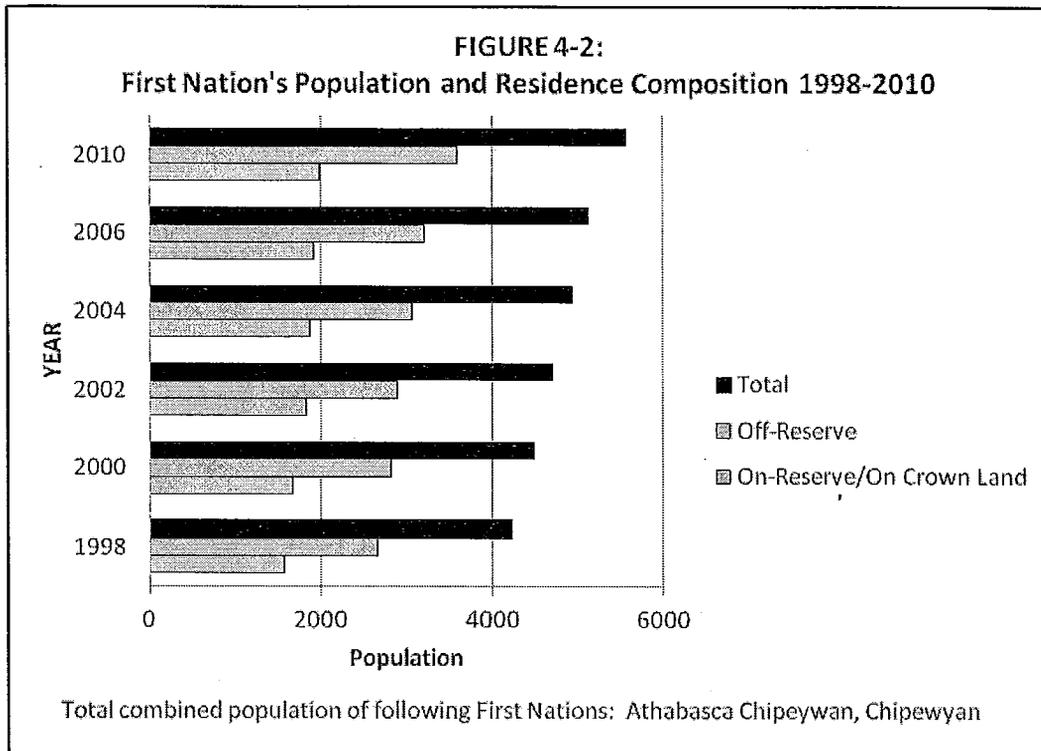
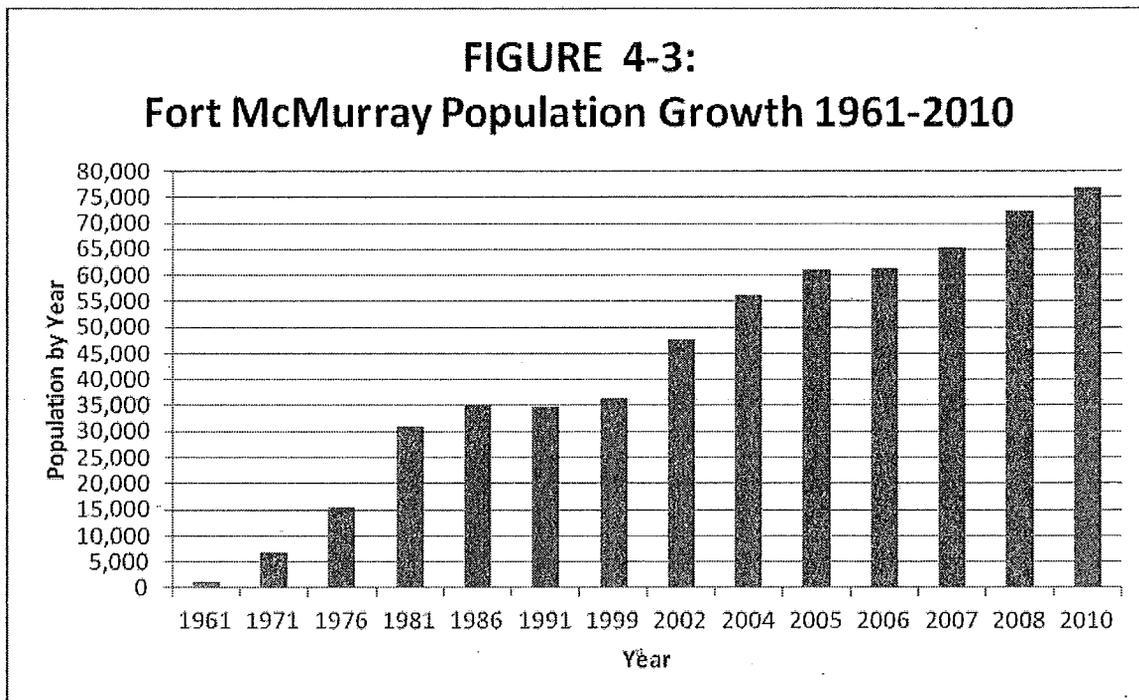


Figure 4-3 illustrates population growth of Fort McMurray from 1961 to 2010.<sup>58</sup> The population of this community increased substantially starting in the 1970's and has continued to increase through 2010. From 1961 to 1971, the population increased by 5.7 fold, more than doubled between 1971 and 1976 and doubled again between 1976 and 1981. Between 1981 and 2010 the population increased by 147.7%, representing an average annual growth rate of about 5%.

<sup>58</sup> Sources: Data for 1961-1991 from Government of Alberta. Alberta Sustainable Resource Development. 2002. Fort McMurray-Athabasca Oil Sands Subregional Integrated Resource Plan (1996, Amended June, 2002); Data for 1999 from Wood Buffalo Census 1999; and data for 2002-2010 from Regional Municipality of Wood Buffalo, Municipal Census 2010.



The RMWB estimates of total population and the composition of the population for the period 2000-2010 are presented in Figure 4-4.<sup>59</sup> It is noted that these figures do not include First Nations people living on Reserves situated within the regional municipal boundaries. The Municipality reports that the RMWB population grew at average annual rate of 7.4% from 2000 to 2010. Annual growth rates for Fort McMurray and rural and hinterland areas during that decade were 6.1% and 3.7%, respectively. Notably, the population associated with remote oil sand project accommodation sites (e.g., work camps) increased on average by 17.1% annually during the same timeframe, despite a negative growth rate of 11.3% between 2008 and 2010 as a result of the global economic slowdown that started in 2008. In 2010 the remote project accommodation workforce population was estimated at 23,325.<sup>60</sup> The locations of remote workforce accommodation camps circa 2008 are shown on Figure 4-5.<sup>61</sup>

<sup>59</sup> Regional Municipality of Wood Buffalo, Municipal Census 2010.

<sup>60</sup> Ibid.

<sup>61</sup> Figure annotated by writer to improve legibility by adding enlarged legend box.

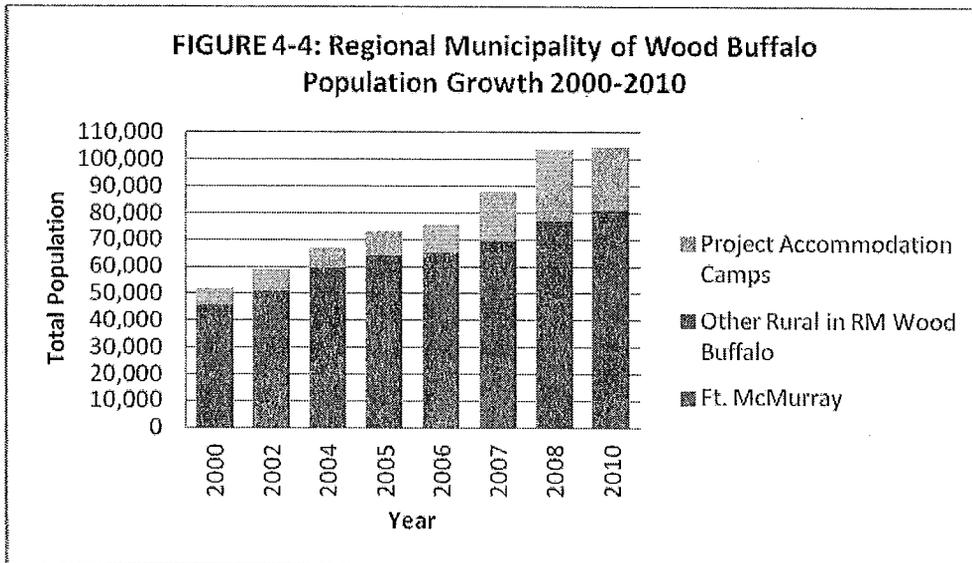
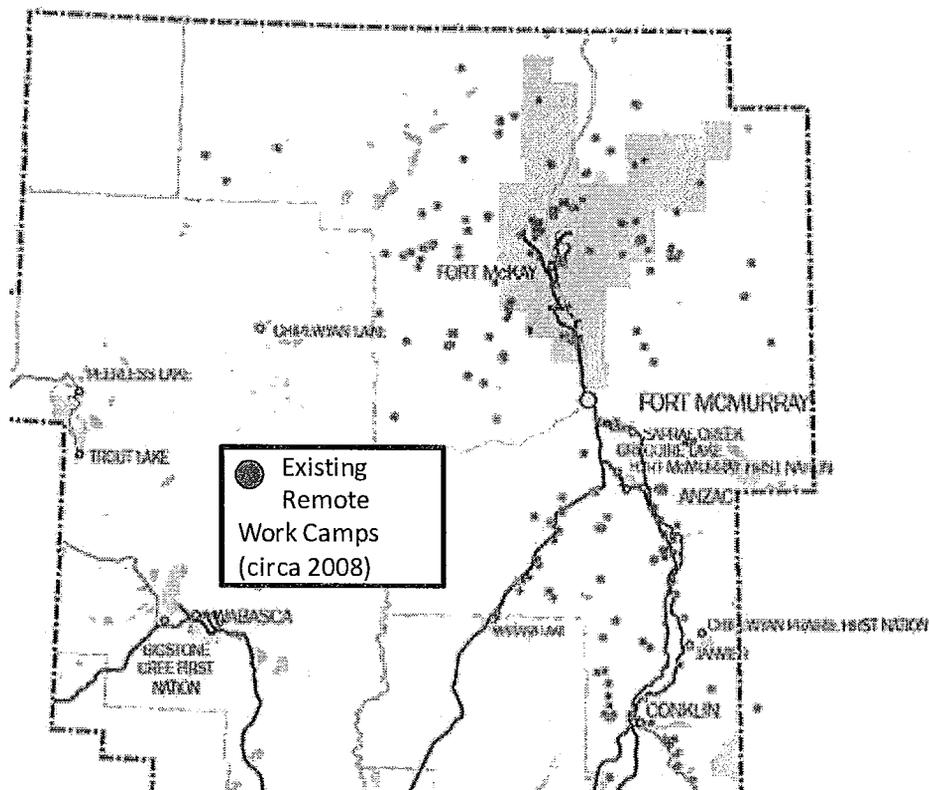


FIGURE 4-5: Location of Oil Sands Project Remote Accommodation Camps in 2008



Source: Government of Alberta. No Date. Comprehensive Regional Infrastructure Sustainability Plan for the Athabasca Oil Sands Area. Figure 2.3.1. <http://treasuryboard.alberta.ca/1213.cfm>

The GoA reported the Wood Buffalo region's (i.e. Census Division #16) population in 2010 was 66,898 based on post-censal data.<sup>62</sup> This is significantly lower than the 104,338 figure reported by the RMWB in its 2010 municipal census. The difference between the two estimates is largely a result of how federal and municipal censuses define "usual residence," as well as how "shadow populations" are treated. While municipalities define the "shadow population" as "temporary residents of a municipality who are employed by an industrial or commercial establishment in the municipality for a minimum of 30 days" and include them in their official population numbers if they consist at least 10% of the municipality's population or a minimum of 1,000 individuals. On the other hand, the shadow population of transient workers is not accounted for in population counts conducted by Statistics Canada.<sup>63</sup>

#### 4.1.2 Projected Population Trends

No information concerning projected population growth specific to the five First Nations in the ESA was identified. However, based upon Indian and Northern Affairs Canada projected average annual growth rates<sup>64</sup> the population of the five First Nations is estimated to increase by 52.3% by the year 2050.<sup>65</sup> This may be considered a conservative estimate in light of the fact that Indian and Northern Affairs indicates that Alberta First Nation populations are expected to have the second highest on-Reserve growth rate and highest off-Reserve growth rate in Canada to the year 2029, as illustrated in Figure 4-6. Applying the same projection calculations to ACFN, suggests that its population will grow from approximately 1,041 (July, 2012) to 1,374 by the year 2050.

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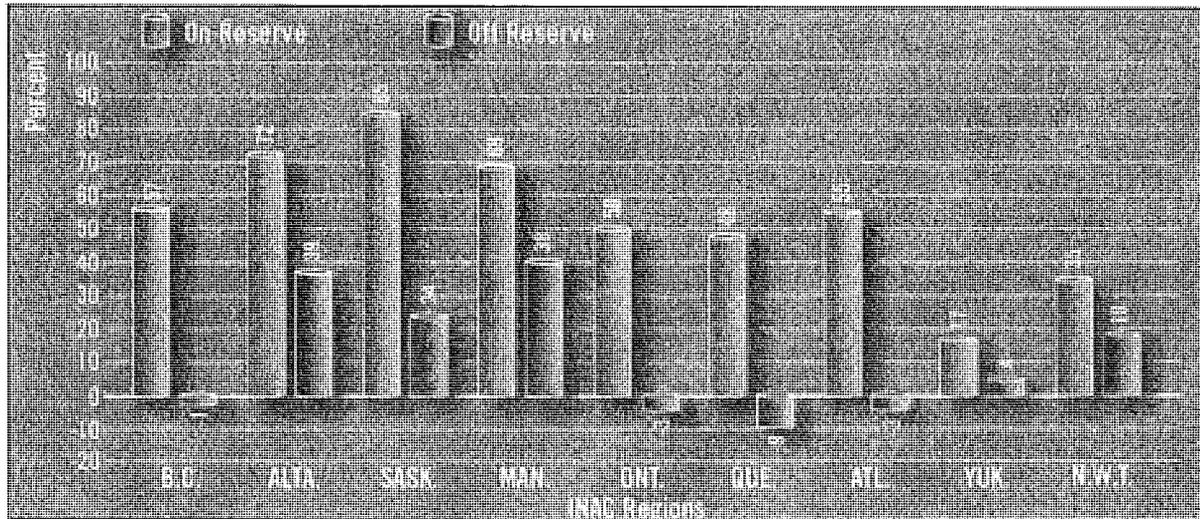
<sup>62</sup> Government of Alberta, Finance and Enterprise. 2010. Alberta Population Projections 2011-2050 by Census Division. Note that this report uses Statistics Canada Census Division #16 which geographically covers all of the Rural Municipality of Wood Buffalo boundary, but also includes the portion of Wood Buffalo National Park that lies within Alberta. Census Division #16 includes the on-Reserve population of First Nations.

<sup>63</sup> Government of Alberta. Regional Economic Indicators, Wood Buffalo Region, December 2010. Footnote 1 on Pg. 2.

<sup>64</sup> Indian and Northern Affairs Canada. No Date. Registered Indian Demography, Population, Household and Family Projections, 2004-2029. [http://www.ainc-inac.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/rgd\\_1100100016839\\_eng.pdf](http://www.ainc-inac.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/rgd_1100100016839_eng.pdf) Medium Growth Scenarios for On and Off Reserve populations.

<sup>65</sup> Estimated calculated based upon annual average growth rates contained in Indian and Northern Affairs Canada. No Date. Registered Indian Demography, Population, Household and Family Projections, 2004-2029 and applied to reported 2010 on-Reserve and off-Reserve population figures reported above. In order to project the population to the year 2050, the annual average growth rate reported by the federal agency for the period 2024-2029 was carried forward.

FIGURE 4-6:  
Projected First Nation Growth (%) by Region, Medium Growth Scenario, 2004-2029<sup>66</sup>



The Government of Alberta reports the population of the Wood Buffalo census division (Statistics Canada Census Division #16) in 2010 was 66,898. Based on this baseline, they project the population in this census division will grow to 157,950 by the year 2050 (based on an annual growth rate of 2.2%) and that Census Division 16 will have the highest growth rate of any census division area in the province during the projection period.<sup>67</sup>

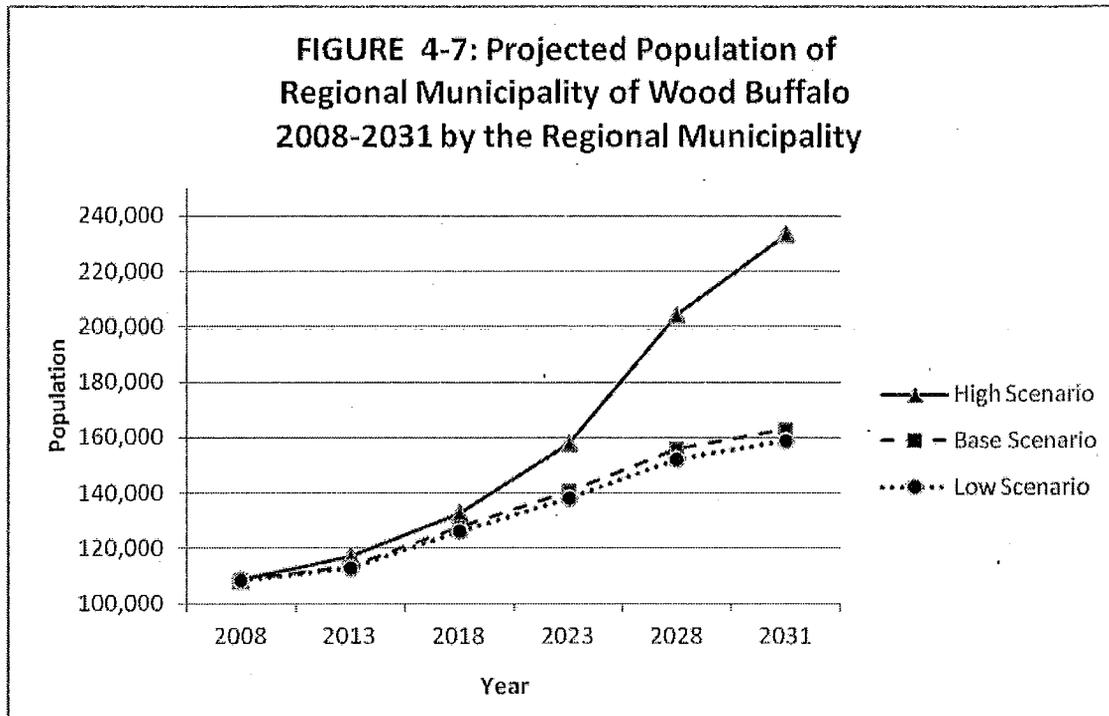
The RMWB has also developed population projections to the year 2031 as presented in Figure 4-7.<sup>68</sup> They estimate the population will reach 162,900 in the year 2031 (base scenario) but may reach as high as 233,300 (high scenario). In comparison, the aforementioned GoA projection estimates the 2031 population will be 113,760 or about 70% of the municipal estimate. Differences between the GoA and RMWB projections can be attributed to: (1) differences in base year populations as explained above and (2) the municipal projection considered planned and announced oilsands projects in their forecast modelling, including assumptions about growth in the project accommodation and non-permanent population sectors.<sup>69</sup>

<sup>66</sup> Indian and Northern Affairs Canada. No Date. Registered Indian Demography, Population, Household and Family Projections, 2004-2029. Figure 2. [http://www.ainc-inac.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/rgd\\_1100100016839\\_eng.pdf](http://www.ainc-inac.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/rgd_1100100016839_eng.pdf)

<sup>67</sup> Government of Alberta, Finance and Enterprise. 2010. Alberta Population Projections 2011-2050 by Census Division.

<sup>68</sup> Regional Municipality of Wood Buffalo. 2010. Commercial and Industrial Land Use Study (January, 2010). Note authors of this document state that the projections hold the First Nations population constant at 5,177 in all years.

<sup>69</sup> Regional Municipality of Wood Buffalo. 2010. Population and Employment Projection Model, January 12, 2010, contained in Council Meeting Minutes of January 12, 2010.



### 4.1.3 Summary

The population in ACFN’s Territory has rapidly grown since the advent of the oil sands industry in the early 1970’s. The largest population increase has occurred in Fort McMurray. The town’s population increased by 65 fold from 1961 to 2010, growing from a small hamlet of less than 1,500 people to a sizeable town of an estimated 75,609. The RMWB population, excluding the on-Reserve First Nation population, has also grown substantially in the past decade. This is largely attributed to population growth in oil sand-related remote workforce camps which increased by almost 4 fold from 2000 to 2010.<sup>70</sup> The First Nation population has also grown in the past decade, albeit at a much slower rate.

Population projections for the Wood Buffalo region, whether based on the GoA or RMWB forecasts, indicate that the population in ACFN ESA will continue to grow at a rapid rate. By the year 2031, the population is forecasted to reach between 113,760 to 233,300, depending on source and scenario. First Nation populations are also forecasted to continue growing, potentially increasing by 31% by about the year 2031 and by 52% by the year 2050.

Historic and future population growth has and will further create demand for land for housing, commercial, industrial, recreational, roads and other infrastructure purposes within the ACFN

<sup>70</sup> Based upon Rural Municipality of Wood Buffalo data cited earlier in this section.

ESA as discussed in Section 4.3.1. Additionally, this population has and will continue to put pressure on other resources in the ACFN ESA in terms of wildlife and fish harvesting, recreational access associated with boating, snowmobiling, all-terrain vehicles, hiking, camping, etc. as discussed in Section 4.3.2

Finally, as discussed above, First Nation and other Aboriginal group populations in the ESA are projected to continue to grow. Government, institutional and academic research indicates that while overall per capita consumption rates of harvested goods has generally declined since the 1970's and 1980's, harvesting remains an important aspect of the mixed land-based food harvesting and wage-economy of many communities. For example, Statistics Canada (2001:7) reported that 49% of Arctic adult residents think that harvesting activities won't change for themselves or others in their household over the next five years; 21% thought harvesting activities would increase; and 13% predicted a decrease. The main reason given by those who said harvesting would increase was due to the growth in population, while the main reason given by those who said harvesting would decrease was fewer resources and greater scarcity of harvestable resource populations.

Other literature suggests that while country food consumption remains important, per capita country food consumption is declining as a consequence of a shift towards store-bought foods for reasons including: government regulations restricting harvesting, adverse effects of industrial development and natural resource exploitation, scarcity of animal, fish and plant resources, concerns about contaminants, cost of harvesting activity, climate change effects on resource abundance, composition and transportation and access, lack of time due to employment, and easier access to commercial (store) food items.<sup>71</sup> Notwithstanding the aforementioned general declining trend in country food consumption, the consumption frequency of harvested foods and its contribution to overall diet has been reported in a number of recent studies. Examples of recent harvest or consumption research are presented on the following page.

In the writer's opinion, the need for access to landscapes and preferred numbers and quality of animals, fish and plants resources will continue to increase as ACFN's, other First Nation and Aboriginal populations in the ESA grow. While per capita harvesting and/or consumption rates may increase, decrease or remain at current levels, the total quantity of harvested resources for food consumption may increase along with population growth.<sup>72</sup> This opinion is based in part on the writer's knowledge of working with a variety of First Nations and Aboriginal communities across Canada who continue to place great importance and reliance on the act of harvesting and/or consumption of country foods. As well, it is apparent from reviewing various ACFN documents cited in this report, that ACFN members continue to value and pursue traditional activities and the products of these activities for cultural, social and economic reasons. The many publically available documents concerning Mikisew Cree, Fort McKay and Fort

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<sup>71</sup> See for example: Batal, M., Gray-Donald, K., Kuhnlein, H.V., and Receveur, O. 2005. Estimation of Traditional Food Intake in Indigenous Communities in Denendeh and the Yukon. *International Journal of Circumpolar Health* 64:1.; Chan, L. et al. 2011, *First Nations Food, Nutrition and Environment Study, Results from B.C.*

<sup>72</sup> The writer has not discovered any longitudinal research on long term trends in harvest and/or consumption trends for Dene communities. It is noted that Usher (2002) determined that the number of Inuvialuit harvesters increased from the 1960's to the 1990's, although at a slower rate than actual population growth. He also found that per capita harvest rates were similar between the two periods of study, although the composition of the harvest in terms of species had change.

McMurray First Nations and Metis communities also indicate that traditional activities and harvesting of animals, fish and plants continue to be important.<sup>73</sup> The selection of harvesting or consumption study results below provide an illustration of the continuing importance of traditional food harvesting and consumption for First Nations.

Data Reported	Year of Data	Geographic Location	Source
% of Survey Population Consuming Country Food: Moose/Caribou – 100% Fish – 93% Birds – 59%	2010	Ecozone 4 of Manitoba: Sayisi Dene and Northlands First Nations [Denesuline peoples]	Chan, L. et al. 2012
% of Survey Population Consuming Country Food: Moose – 97% Deer – 94% Birds – 38%  % of Survey Population Participating in Food Harvest Practices: Hunting 48% Fishing 55%	2008	Ecozone 4 of B.C.: Tsay Keh Dene and Tl'azt'en First Nations [Athapaskan peoples]	Chan, L. et al. 2011
Country food made up about half or more of the meat and fish eaten in 78% of Inuit households	2001	Nunavik (northern Quebec) [Inuit peoples]	Statistics Canada 2005
Country food made up about half or more of the meat and fish eaten in 73% of Inuit households	2001	Nunavut [Inuit peoples]	Statistics Canada 2005
Country food made up about half or more of the meat and fish eaten in 56% of Inuit households	2001	Inuvialuit Region (NWT) [Inuvialuit peoples]	Statistics Canada 2005
The mean number of caribou and moose harvested annually was 1,707 and a mean number of 46,777 fish were harvested annually. Based upon a total reported population of 4,482 (2001), this equates to .38 moose/caribou per capita and 10.4 fish/capita.	1995-2001	Gwich'in Settlement Region (NWT) [Dene peoples]	Gwich'in Renewable Resources Board

<sup>73</sup> Examples of documents are Traditional Use Study submissions, statements of concern, technical reviews and information requests concerning environmental impact statements and correspondence on the Canadian Environmental Assessment Agency website for various oil sand project proposals under review.

## 4.2 Industrial Development

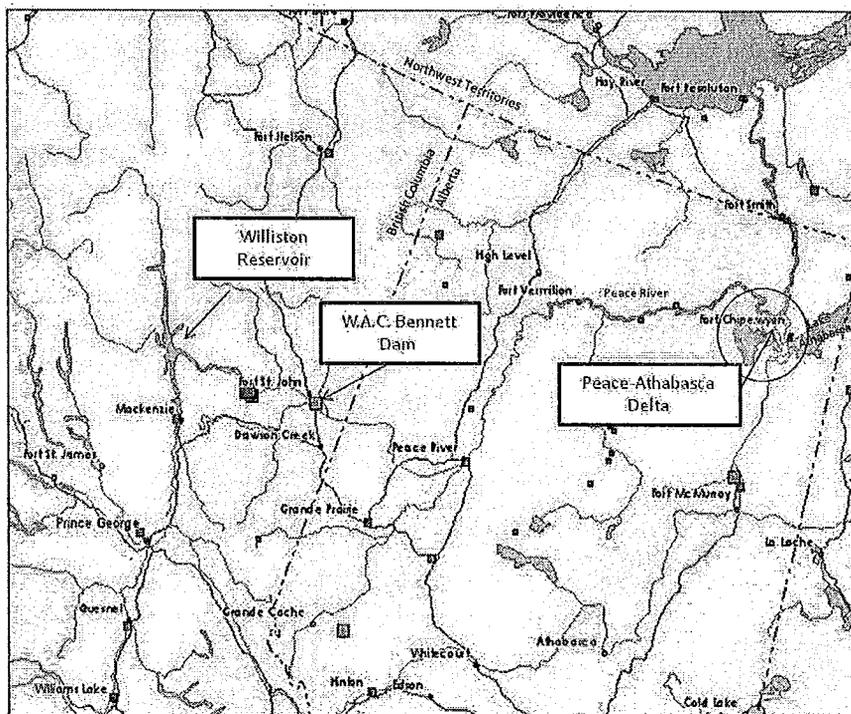
### 4.2.1 Hydroelectric Development

#### 4.2.1.1 W.A.C. Bennett Dam and Williston Reservoir

The Peace-Athabasca Delta is one of the largest freshwater deltas in the world. It is formed by the convergence of the Peace, Athabasca, and Birch River systems, which empty into Lake Athabasca in northeastern Alberta (see Figure 4-8).

Manipulation of the Peace River for purposes of hydroelectric development began in 1962 with the construction of the W.A.C. Bennett Dam, situated on the Peace River, near Hudson's Hope, British Columbia (Figure 4-8). Construction of the 600 foot high water control structure and generating facility was completed in December 1967. That same year BC Hydro began to regulate the downstream flow of the Peace River by restricting flow to fill the Williston Lake reservoir. It took until 1971 to completely fill the reservoir however hydroelectric power was being generated by 1968.<sup>74</sup>

FIGURE 4-8:  
Location of Peace-Athabasca Delta, W.A.C. Bennett Dam and Williston Reservoir



<sup>74</sup> Indian Claims Commission (March 1998). Athabasca Chipewyan First Nation Inquiry WAC Bennett Dam and Damage to Indian Reserve 201. Pages 28-30.

The effects of the Peace River regulation on the Peace-Athabasca Delta (the Delta) were noticed by ACFN as early as 1969-70 as water levels declined significantly in the delta for several years due to B.C. Hydro's filling of the Williston Reservoir. A preliminary report by the Canadian Wildlife Service, dated March 1970, indicated that reduced water levels in the Peace River had already had an impact on the water regime, vegetation pattern, and waterfowl use of the Delta.<sup>75</sup> ACFN reacted quickly to protect its Rights, Values and Knowledge. In December of 1970, a Statement of Claim against BC Hydro for damages was filed by a number of claimants, including members of ACFN, in the Supreme Court of British Columbia. In the claim, damages were sought for nuisance and wrongful interference with the Peace River, and an injunction to stop the project. According to ACFN Elder testimony before the Indian Claims Commission, the claim never got to the courts because the First Nation lacked the financial resources to pursue the action.<sup>76</sup>

The governments of Canada, Saskatchewan, and Alberta responded to growing concern about changes and impacts in the Delta by establishing the Peace-Athabasca Delta Project Group (PADPG) in 1971. The mandate of the PADPG was to review and to assess the environmental damage caused by the dam and devise and implement a strategy to address the continuing environmental deterioration in the Delta. The two-year PADPG study was the first to conduct a systematic assessment of the Bennett Dam's potential contribution to reduced water levels in the delta and changes in the ecosystem affecting waterfowl, fish, and aquatic fur-bearer populations and vegetation succession. The study confirmed that the Peace River project had altered the flow regime of the Peace River and that water levels were significantly lower in the Delta. The resulting changes had been most severe during the initial filling of the reservoir, and it was expected that as long as the dam continued to operate changes would cause "continued, although less severe, changes in the ecology of the Delta" than was experienced in the first few years.<sup>77</sup>

During the 1970s, considerable effort went into stabilizing water levels in the Delta through the construction of control weirs, initially by the PADPG and later by the Peace-Athabasca Delta Implementation Committee (formed by Canada, Alberta and Saskatchewan) beginning in 1974. None of the stabilization strategies and infrastructure were completely successful in restoring the natural water regime and ecology of the Delta.<sup>78</sup> In 1986 ACFN implemented their own mitigation strategy involving re-watering of certain perched basins and it was reported that although these measures improved habitat for muskrat, they did not fully mitigate the damages.<sup>79</sup>

The Northern Rivers Study Basin Report (1996) concluded that;

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<sup>75</sup> Reported in Indian Claims Commission (March 1998). Athabasca Chipewyan First Nation Inquiry WAC Bennett Dam and Damage to Indian Reserve 201. Page 34.

<sup>76</sup> Indian Claims Commission (March 1998). Athabasca Chipewyan First Nation Inquiry WAC Bennett Dam and Damage to Indian Reserve 201. Page 44. Other plaintiffs in the action included the Athabasca Fish Co-Operative Limited, the Metis Association of Alberta, the Cree Band at Fort Chipewyan now known as Mikisew Cree Nation.

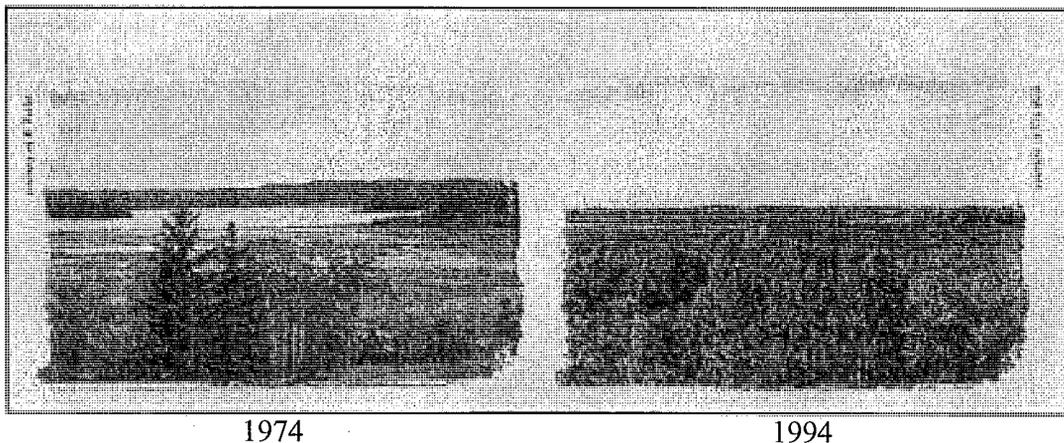
<sup>77</sup> Reported in Indian Claims Commission (March 1998). Athabasca Chipewyan First Nation Inquiry WAC Bennett Dam and Damage to Indian Reserve 201. Page 44. Citation: Green, "Preliminary Assessment" (ICC Exhibit 2A, tab 7, ICC p. 15).

<sup>78</sup> Ibid. Page 45.

<sup>79</sup> Ibid. Page 46.

*Since the landscape of the delta is relatively flat, many of its waterways can flow in two directions. The direction of the flow depends upon the relative water levels in different parts of the delta. When the water level in Lake Athabasca is higher than Claire and Mamawi Lakes, water flows westward into the delta. When Lake Athabasca is low, water flows east out of the delta lakes and into Lake Athabasca. The reversing concept holds true for the channels that drain the delta: Chenal des Quatre Fourches, Revillon Coupé and Rivière des Rochers. Usually, these three channels flow north to meet with the Peace River and then continue north as the Slave River. However, when the flooding of the Peace River rises higher than the water level of Lake Athabasca, water flows south into Lake Athabasca and the delta. The backflooding of the three channels by the Peace plays an important role in maintaining the delta wetlands. Many of the small lakes of the delta exist as "perched basins" that are only replenished through the periodic, spring ice jam flooding by the Peace River. However, since the construction of the Bennett Dam, these floods have been rare and less extensive. As a result, many of the marshy areas of the delta are transforming into terrestrial landforms dominated by willows and sedges.<sup>80</sup>*

The following before (1974) and after (1994) photographs of Egg Lake, situated within ACFN Reserve 201, published in the Northern River Basins report, illustrate the impact of the hydroelectric project on a perched basin lake.<sup>81</sup>



<sup>80</sup> Northern Rivers Basin Study Board (1996). Northern Rivers Basin Study Final Report. Edmonton: Nautilus Publications. <http://www3.gov.ab.ca/env/water/nrbs/toc.html>.

<sup>81</sup> Photographs included in the Indian Claims Commission Inquiry Report (1998) on page 74. The footnote for these photographs states "These pictures are reproduced from the Northern Rivers Basin Study, which provided the following caption and description at page 23 of the report; Then and Now: Egg Lake is one of the perched basins in the Peace-Athabasca Delta that is only replenished by periodic overland flooding. Its marshy shores were once a focal point for fur trappers and a haven for waterfowl. In fact, this lake once set the Hudson's Bay Company standard for high quality muskrat pelts. In the absence of these floods over the last two decades, Egg Lake is being transformed into a terrestrial ecosystem marked by grasses and willows."

Starting in 1991, ACFN sought compensation and redress for the adverse impacts on their Rights, Values and Knowledge and damages to Reserve 201 through filing a claim under the Indian and Northern Affairs Canada specific claims policy. Canada refused to accept (validate) the claim, and the parties agreed to try to resolve the claim through mediation by the Indian Claims Commission. No agreement was reached in mediation, and thus in 1994, ACFN requested an independent inquiry by the Indian Claims Commission.<sup>82</sup>

In 1998, the federal Indian Claims Commission (1998:6-7) completed its inquiry, concluding community oral and western science technical evidence, presented;

“compelling *prima facie* evidence, which leads inescapably to the conclusion that significant environmental damage was sustained by the First Nation and IR 201. The construction and the operation of the Bennett Dam have substantially changed the hydrology and ecology of the Peace Athabasca Delta, causing direct and serious harm to IR201 and the Athabasca Chipewyan First Nation.”<sup>83</sup>

In 2008, provincial and federal regulatory bodies approved Glacier Power Ltd.’s application to build and operate its Dunvegan hydroelectric facility. Situated on the Peace River, downstream of the Bennett Dam, near the town of Dunvegan, Alberta this project is a 100-megawatt, low head, run-of-river operation. The project does not require any substantial water storage because the Bennett Dam project already regulates the seasonality and rate flow on the Peace River.<sup>84</sup> The Joint Panel report for the Dunvegan project made a finding that the “Project will not interfere with any potential future actions or programs designed to simulate a more natural flow regime of the Peace River. Periodic releases by the Bennett Dam to flood the [Peace-Athabasca Delta], if this were to occur as a potential restoration action, would not affect the viability of the Project.” The Panel agreed with the proponent’s assessment that the project would not adversely affect the ecosystem of the Delta, nor the “traditional lands” of ACFN or Mikisew Cree Nation.<sup>85</sup> The proponent did not offer, nor did the panel recommend any monitoring or follow-up to determine if these conclusions would prove to be correct. Although approved in 2008, the Dunvegan project has not been developed at the time of writing.

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<sup>82</sup> Indian Claims Commission (March 1998). Athabasca Chipewyan First Nation Inquiry WAC Bennett Dam and Damage to Indian Reserve 201. Page 75. The mandate of this Commission is set out in federal Orders in Council providing the Commissioners with the authority to conduct public inquiries into specific claims and to issue reports on “whether a claimant has a valid claim for negotiation under the [Specific Claims] Policy where that claim has already been rejected by the Minister . . .” pg. 5.

<sup>83</sup> Indian Claims Commission (March 1998). Athabasca Chipewyan First Nation Inquiry WAC Bennett Dam and Damage to Indian Reserve 201. Pgs. 6-7.

<sup>84</sup> Report of the Joint Review Panel. 2008. Glacier Power Ltd. Dunvegan Hydroelectric Project, Fairview, Alberta. Decision NR 2008-03, CEAA Reference No. 04-05-2996, NRCB Application No. 0602, AUC Application No. 1485454.

<sup>85</sup> Ibid. Pgs. 82 and 86.

#### **4.2.1.2 Potential New Hydroelectric Developments**

BC Hydro is currently in the regulatory review stage of its proposed Site C hydroelectric generation project located on the Peace River, 83 kilometers downstream of the Peace Canyon generating station, and below the existing Williston reservoir, W.A.C. Bennett dam and Gordon M. Shrum generating stations. If approved, Site C will be the third hydroelectric facility on the Peace River in British Columbia.

Preliminary reports by BC Hydro suggest that the Site C facility will not alter the downstream water regime, nor affect the river's sediment profile. However, BC Hydro has indicated that further studies will likely be necessary as the project moves further along in the environmental assessment process.<sup>86</sup> Environment Canada has indicated that "Operation of Site C in combination with the existing generating stations has the potential to result in cumulative impacts on downstream ecological values in the Peace River, including wetland, riparian and other important habitat values in the Peace-Athabasca Delta. Environment Canada recommended that the Guidelines for the Site C environmental review direct B.C. Hydro to include in its Environmental Impact Assessment "a thorough discussion of existing hydroelectric developments on the Peace River, the environmental effects that have occurred as a result and the effectiveness of measures taken to manage them. Environment Canada further recommends that the spatial scope of assessment include a consideration of how the operation of Site C in combination with the existing generating stations can affect – either positively or negatively – downstream ecological values in the Peace River including values in the Peace-Athabasca Delta. From Environment Canada's perspective, these elements of the environmental assessment can be undertaken largely through use of existing data and modeling techniques, and could be further aided by the work of the recommended technical committee [A committee tasked with defining ecological flow needs as part of the ongoing environmental assessment.]<sup>87</sup>

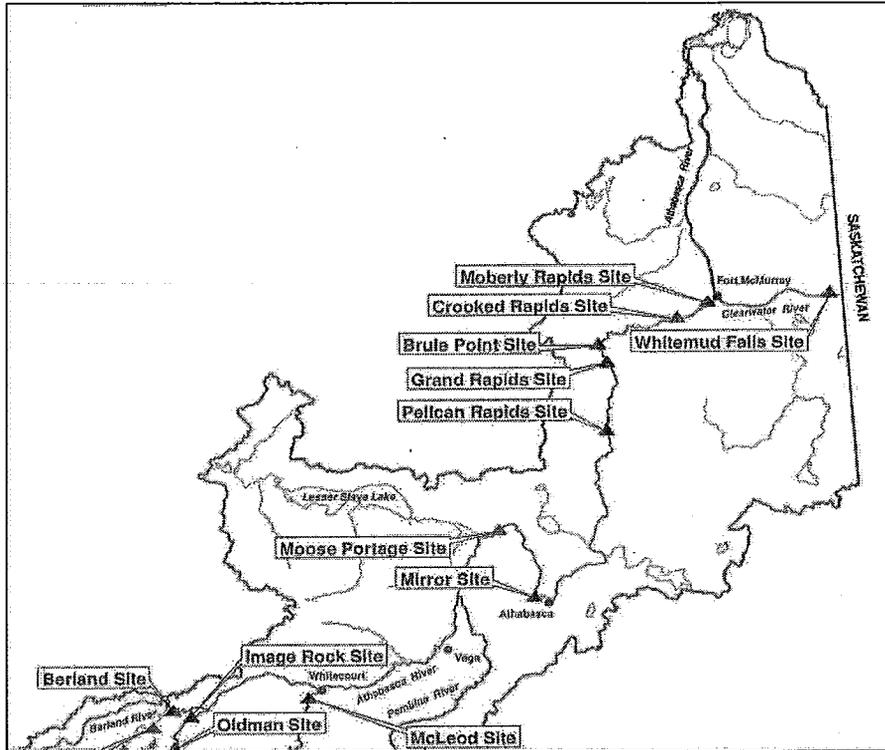
The potential to utilize the flow of the Athabasca River for hydroelectric energy generation has been investigated at least since the mid 1950's. A number of potential sites between Athabasca and Fort McMurray were most recently described in a report by Hatch Ltd. (2010), the locations of which are shown in Figure 4-9.

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<sup>86</sup> BC Hydro. October 2009. Peace River Site C Hydro Project, Stage 2 Review of Potential Downstream Changes from Site C Operations, Preliminary Findings. [http://www.bchydro.com/etc/medialib/internet/documents/planning\\_regulatory/site\\_c/2010Q2/peace\\_river\\_site\\_c20.Par.0001.File.Peace\\_River\\_Site\\_C\\_Hydro\\_Project\\_Stage\\_2\\_-\\_Review\\_of\\_Potential\\_Downstream\\_Changes\\_from\\_Site\\_C\\_Operations\\_-\\_Preliminary\\_Findings.pdf](http://www.bchydro.com/etc/medialib/internet/documents/planning_regulatory/site_c/2010Q2/peace_river_site_c20.Par.0001.File.Peace_River_Site_C_Hydro_Project_Stage_2_-_Review_of_Potential_Downstream_Changes_from_Site_C_Operations_-_Preliminary_Findings.pdf)

<sup>87</sup> Environmental [sic] Canada Comments on the draft Environmental Impact Statement (EIS) Guidelines for the Proposed Site C Clean Energy Project, June 11, 2012 to Canadian Environmental Assessment Agency. <http://www.ceaa.gc.ca/050/documents/57120/57120E.pdf>

FIGURE 4-9: Potential Hydroelectric Sites on Lower Athabasca River

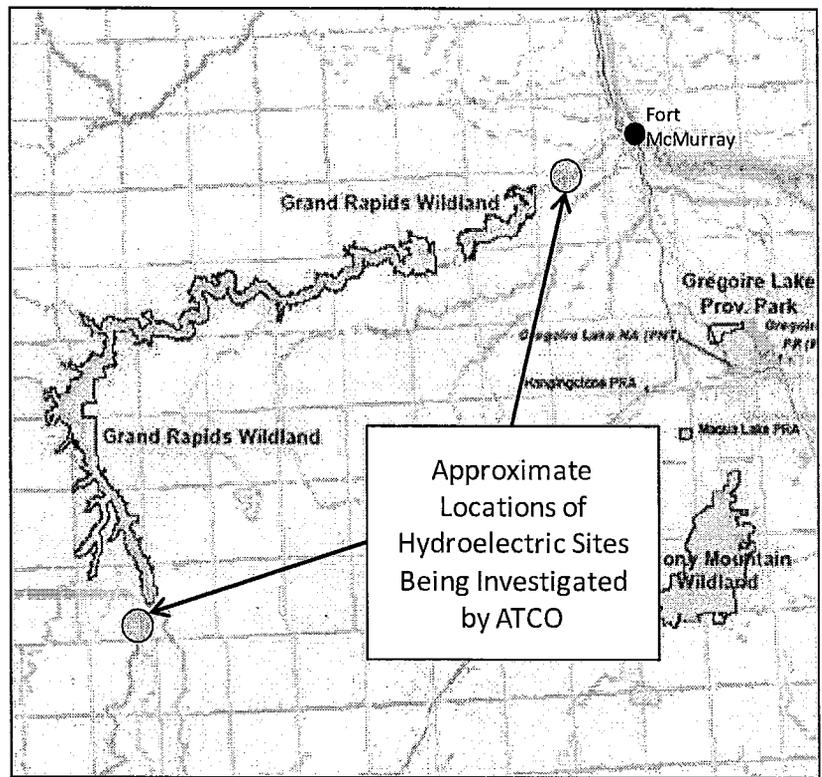


Source: Hatch, February 26, 2010. Final Report for Alberta Utilities Commission, Calgary, Alberta. Update on Alberta's Hydroelectric Energy Resource.

Recently, ACFN was made aware that ATCO Electric is conducting pre-feasibility engineering studies on two potential sites on the Athabasca River upstream of Fort McMurray.<sup>88</sup> The general location of the two sites is depicted in Figure 4-10. The company indicated they planned to conduct an aerial inspection and do some drill holes testing. Whether or not ATCO Electric will proceed with this project, if the project would be approved, and what effects the project would have on the Athabasca River and the ACFN ESA and ACFN Rights, Values and Knowledge is unknown at this time. However, as discussed in Section 6 of this report, knowledge about potential additional encroachments into the ACFN ESA, and possible attendant new and incremental impacts on ACFN Rights, Values and Knowledge adds to the stress and anxiety of ACFN and its Members.

<sup>88</sup> Letter to Mikisew Cree First Nation from ATCO Electric, June 15, 2011. Letter shared by Mikisew Cree First Nation with ACFN.

FIGURE 4-10: Approximate Locations of Sites on Athabasca River Being Investigated for Hydroelectric Potential



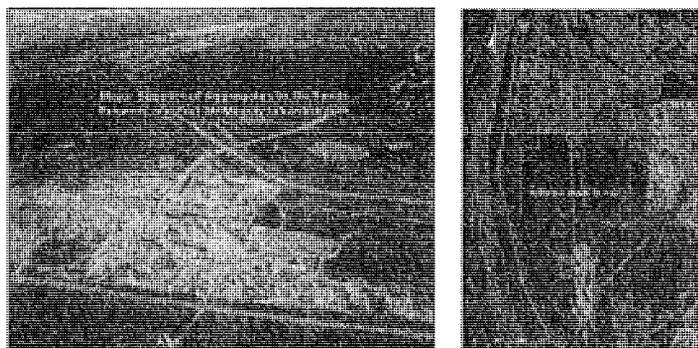
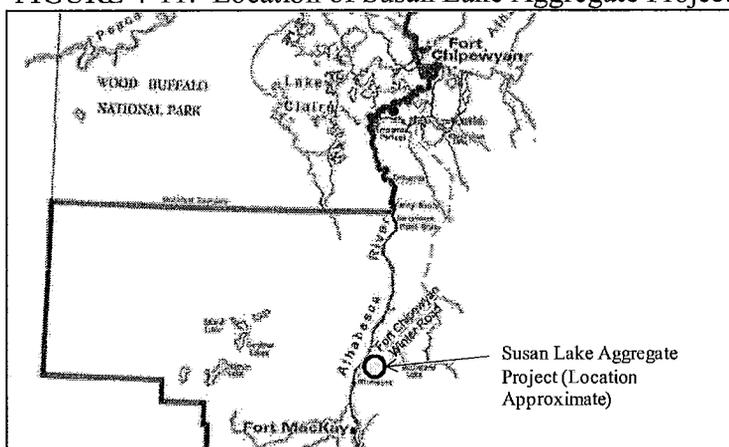
## 4.2.2 Quarry and Other Mineral Exploration and Development

### 4.2.2.1 Quarry Development

There are currently five major quarry developments in the ACFN ESA. The largest development, Susan Lake Gravel Pit is located in ACFN's *k'es hochela nene* Homeland; two are located in the Fort McKay Proximate Zone; one is located in both the Fort McMurray Proximate Zone and Athabasca River Critical Waterway Zone; and the fifth is also located in this Waterway Zone.

The Susan Lake Gravel Pit is the largest sand and gravel operation in Canada. Operated by Athabasca Minerals Inc., it is located about 85 km north of Fort McMurray, on the east side of the Athabasca River as shown in Figure 4-11. The company holds a lease of approximately 3,750 hectares. Since 1998, about 23% or 845 hectares, in the south end of the lease, has been developed for aggregate extraction.<sup>89</sup> The lease boundary and a photograph of the operation are shown below. The project is situated in the ACFN's *k'es hochela nene* homeland.

FIGURE 4-11: Location of Susan Lake Aggregate Project



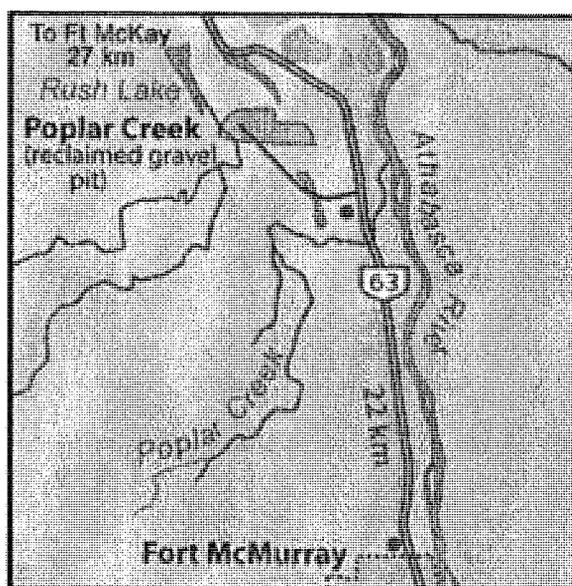
Photograph from Athabasca Minerals website; <http://www.athabascaminerals.com/SJIcone.asp>

<sup>89</sup> <http://www.athabascaminerals.com/s/SusanLakeGravel.asp>

According to Golder and Associates Ltd. (2007), the Susan Lake deposit is an important source of gravel for several oil sands users north of Fort McMurray. It is expected to supply aggregate at current demand levels until at least 2013.<sup>90</sup>

Poplar Creek Gravel Pit is located about 30 km north of Fort McMurray on the west side of the Athabasca River and north side of Poplar Creek (see Figure 4-12). This pit is owned by the GoA and operated by Athabasca Minerals Inc. The total lease area is approximately 3,680 acres. The company reports that most of the gravel at Poplar Creek has been extracted, but the pit still contains a significant amount of sand. This project is situated in ACFN's Fort McMurray Proximate Zone.

FIGURE 4-12: Location of Poplar Creek Aggregate Site



Source: <http://www.srd.alberta.ca/RecreationPublicUse/WildlifeViewing/NortheastLakelandBoreal/PoplarCreek/Default.aspx>

The Alberta Natural Resources Conservation Board approved Birch Mountain Resource Ltd.'s Muskeg Valley Quarry project in June of 2005<sup>91</sup> and the company commenced production that same year.<sup>92</sup> The quarry is located on the east side of the Athabasca River and just east of Fort McKay, as illustrated in Figure 4-13. It is situated in ACFN's Fort McKay Proximate Zone. This

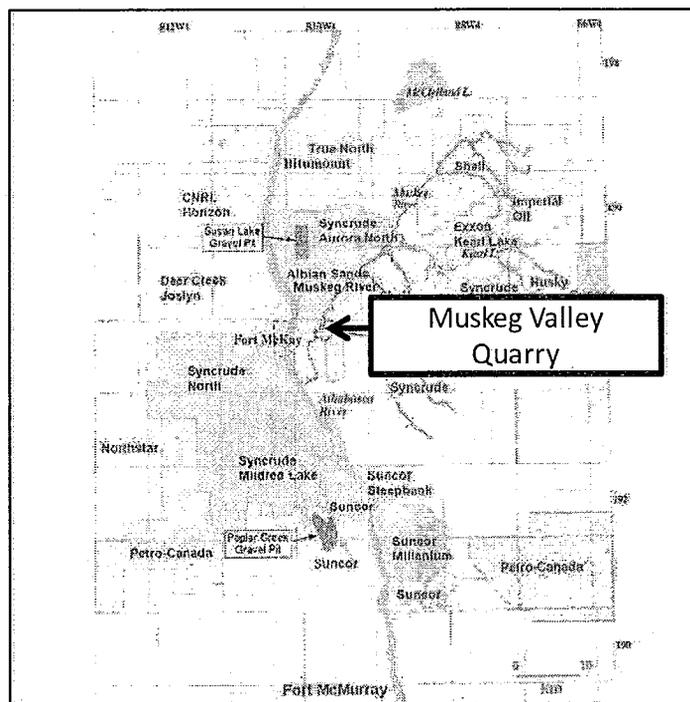
<sup>90</sup> Golder Associated Ltd. 2007. Resource Use Environmental Setting Report for the Suncor Voyager South Project. Golder Associates Ltd. July 2007, page 26-27. Information cited as Highwood et al. 2003 and W. Fownes 2006, pers. comm.

<sup>91</sup> Natural Resources Conservation Board, Birch Mountain Resources Ltd. Muskeg Valley Quarry Project Decision Report (NR2005-01), June 2005. <http://www.nrcb.gov.ab.ca/nrp/Decisions.aspx?id=167>

<sup>92</sup> [http://goliath.ecnext.com/coms2/gi\\_0199-5066541/Birch-Mountain-Opens-Muskeg-Valley.html](http://goliath.ecnext.com/coms2/gi_0199-5066541/Birch-Mountain-Opens-Muskeg-Valley.html)

quarry primarily produces granular limestone. The project is expected to disturb 255 hectares of land over its 31-year lifespan.<sup>93</sup>

FIGURE 4-13: Location of Muskeg Valley Quarry



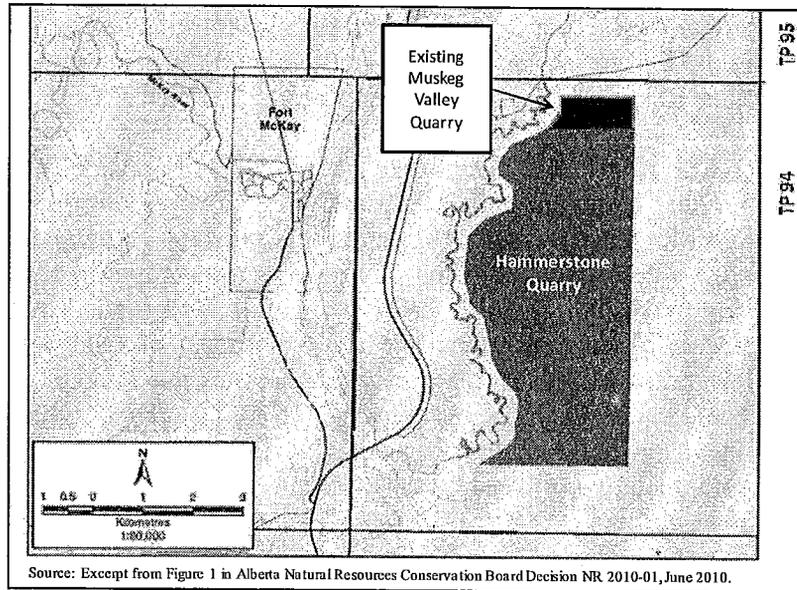
In mid 2010, the Alberta Natural Resources Conservation Board approved the Hammerstone Quarry, situated directly south of the Muskeg Valley Quarry (see Figure 4-14). This project is situated within ACFN's Fort McKay Proximate Zone. The Hammerstone Project is an extension of the existing Muskeg Valley Quarry.<sup>94</sup> Both the Muskeg Valley and Hammerstone projects are operated as a single integrated quarry and aggregate production operation. It is estimated that the combined quarry operation will disturb 1,265 hectares, of which 1,010 hectares is attributed to the Hammerstone Project. Quarry operations are anticipated operate until the year 2060.<sup>95</sup>

<sup>93</sup> Alberta Natural Resources Conservation Board. 2005. Birch Mountain Resources Ltd. Muskeg Valley Quarry Project Decision Report (NR2005-01), June 2005. <http://www.nrcb.gov.ab.ca/nrp/Decisions.aspx?id=167>

<sup>94</sup> Hammerstone Corp. took ownership of the Muskeg Valley Quarry from Birch Mountain Resource Ltd.

<sup>95</sup> Alberta Natural Resources Conservation Board. 2010. Hammerstone Corporation Hammerstone Quarry Project Report (NR 2010-01), June 2010. <http://www.nrcb.gov.ab.ca/Downloads/documentloader.aspx?id=12512>

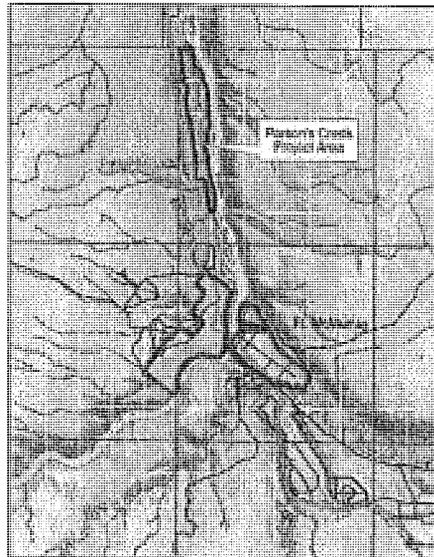
FIGURE 4-14: Location of Hammerstone Quarry



Source: Excerpt from Figure 1 in Alberta Natural Resources Conservation Board Decision NR 2010-01, June 2010.

Parsons Creek Quarry is currently in the Alberta regulatory process. The project is situated on a 566 ha lease just north of Fort McMurray (see Figure 4-15); within ACFN's Fort McMurray Proximate Zone and Athabasca River Critical Waterway Zone. Proposed quarry activities and operations are forecasted to disturb up to 391 hectares. The project proponent indicates they expect to close the quarry and have final reclamation work done between 2047 and 2052.<sup>96</sup>

FIGURE 4-15: Location of Parson's Creek Project



Source: Parson Creek Aggregates, Environmental Assessment Application, Figure B.1.0-1.  
<http://www.parsonscreekresources.com/pdf/environment/mainmenu.pdf>

<sup>96</sup> [http://www.parsonscreekresources.com/pdf/environment/Application/04\\_Part\\_B.pdf](http://www.parsonscreekresources.com/pdf/environment/Application/04_Part_B.pdf)

In addition to the aforementioned existing and proposed aggregate and/or quarry projects, there are smaller pits within the ACFN ESA which supply a variety of users. These include the Peden pit, located across the Athabasca River from Fort McMurray and operated by TBG Contracting; the Algar pit south of Fort McMurray, operated by Burnco; and pits being developed on several of the oil sands operations leases (Golder and Associates Ltd., 2007:26-27).

Golder and Associates Ltd. (2007:26-27) reported that a verified supply of about 56 Mm<sup>3</sup> of aggregate has been identified in the northern Athabasca Oil Sands Region (excluding what were then referred to as Birch Mountain Resources reserves, i.e. Muskeg Valley and Hammerstone). They further reported that an estimated 80 Mm<sup>3</sup> of coarse aggregate within NTS areas 74E and 74D [both entirely within the ACFN ESA] are relatively well-documented. They concluded that total demand for aggregate by current projects in the Athabasca oilsands region is about 97 Mm<sup>3</sup>, and that this demand level will increase as more projects are announced. Jim Bentein recently reported "There is also a growing shortage of sand, gravel, limestone and other aggregates used to build roads, buildings, well pads and virtually every bit of the infrastructure needed to progress development in northeastern Alberta."<sup>97</sup>

#### **4.2.2.2 Historic Uranium Mining**

Uranium mining on the northeastern shoreline of Lake Athabasca started in the early 1950's and ended in the early 1980's. By 1958, there were some 12 mines in various stages of operation, three mills (Gunnar, Lorado and Eldorado), numerous satellite mine sites, and ongoing exploration activity. All mines were located within the ACFN ESA. The mining town, Uranium City, housed or provided services to a population of some 5,000 residents and by 1958 had an airstrip, school, hospital and stores.<sup>98</sup> Three of the larger mine sites were: Gunnar Mine; Lorado Mine; and Beaverlodge Mine.

The Gunnar Mine was in operation from 1955 to 1963 and included both an open pit and underground mine operation, and included tailings ponds, a mill, acid plant, and worker infrastructure (residences, school, hospital, stores, recreation centre and maintenance buildings). The Gunnar site officially closed in 1964 with little or no decommissioning of the facilities.<sup>99</sup> Figure 4-16 shows the layout of this abandoned mine site.<sup>100</sup>

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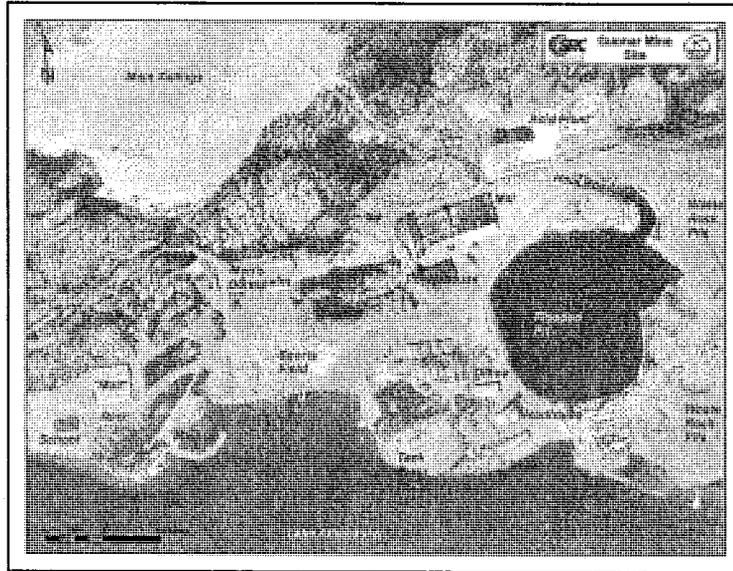
<sup>97</sup> Bentein, J. September 2011. Oil Sands Review. A growing shortage of construction aggregates in the Athabasca region forces operators to branch out. <http://www.oilsandsreview.com/osr-article.asp?id=8878>

<sup>98</sup> Parsons, G.F. and Barsi, R. Uranium Mining in Northern Saskatchewan: A Public-Private Transition. In: Large Mines and the Community, Socio-Economic and Environmental Effects in Latin America, Canada and Spain. Editors Gary McMahon and Felix Remy. The International Development Research Centre and The World Bank, 2001.

<sup>99</sup> Saskatchewan Research Council. 2007. Former Gunnar Mining Limited Site Rehabilitation Project Proposal. SRC Publication No. 12194-3E07, April 2007. [http://www.saskcleans.ca/images/file/Publications/2007-068\\_project\\_proposal.pdf](http://www.saskcleans.ca/images/file/Publications/2007-068_project_proposal.pdf)

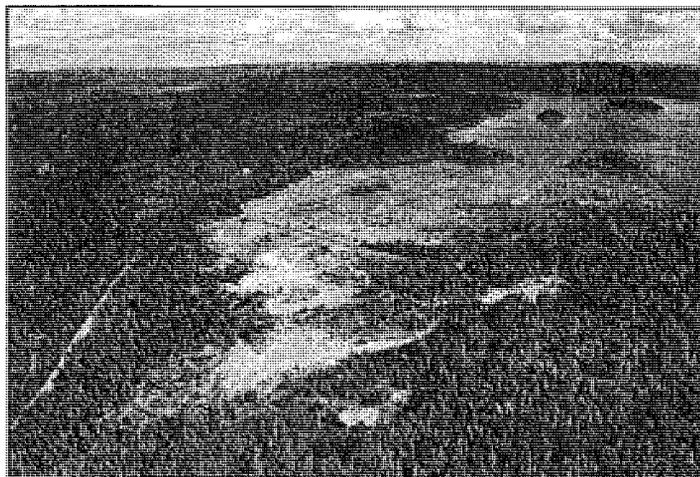
<sup>100</sup> Photograph from: [http://www.saskcleans.ca/html/mine\\_sites/Gunnar/index.cfm](http://www.saskcleans.ca/html/mine_sites/Gunnar/index.cfm)

FIGURE 4-16: Photograph of Abandoned Gunnar Mine Site



Lorado Uranium Mines Limited operated an underground mine and a mill near Beaverlodge Lake. The Lorado Mine operated from at least 1953 to 1960. Figure 4-17 shows the current status of this former mining site.<sup>101</sup>

FIGURE 4-17: Photograph of Lorado Mine Site Area



<sup>101</sup> Photograph from: [http://www.saskcleans.ca/html/mine\\_sites/Lorado/index.cfm](http://www.saskcleans.ca/html/mine_sites/Lorado/index.cfm)

The Beaverlodge mine was operated by Eldorado Nuclear Limited from 1952 to 1982 and decommissioned from 1982 to 1985. Since 1988, Cameco has been the licence holder for the Beaverlodge site and has been assigned the responsibility of managing the on-going reclamation, maintenance and monitoring activities. Funding for these activities is provided to Cameco by Canada Eldor Inc., a Crown Corporation of the Government of Canada. Cameco was issued a Waste Facility Operating Licence in 2007 for the decommissioned facility with a maturity date of March 31, 2009. Cameco applied for a three-year extension to the Canadian Nuclear Safety Commission in August of 2008 and in 2009 the Commission granted an extension to December 31, 2012.<sup>102</sup>

In 1997, a Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan reported "To date, no uranium mining operation in northern Saskatchewan has been completely decommissioned. Although initial work was done at the Eldorado site in the early 1980s, decommissioning efforts continue to this day in an attempt to mitigate concerns with the tailings management area. The length of time required to complete the Eldorado decommissioning is understandable in terms of its history; the mine started operations in the mid-1950s, when there was little concern for, or knowledge about, the design of tailings management areas that provided environmental protection or long-term containment. The other two mining and milling operations on the north shore of Lake Athabasca, Gunnar and Lorado, were privately owned and no site decommissioning or reclamation took place when the owners ceased operations in the mid-1960s. As a result, each site continues to discharge varying levels of contaminants to the environment."<sup>103</sup>

The clean up and remediation of abandoned uranium mines and associated infrastructure started in 2007 under the auspices of The Cleanup of Abandoned Northern Sites (CLEANS) project, a multi-year, multimillion-dollar project to assess and reclaim the Gunnar and Lorado sites as well as 36 satellite mine sites (see Figure 4-18). The CLEANS project is being managed by the Saskatchewan Research Council with funding provided by the governments of Canada and Saskatchewan.<sup>104</sup>

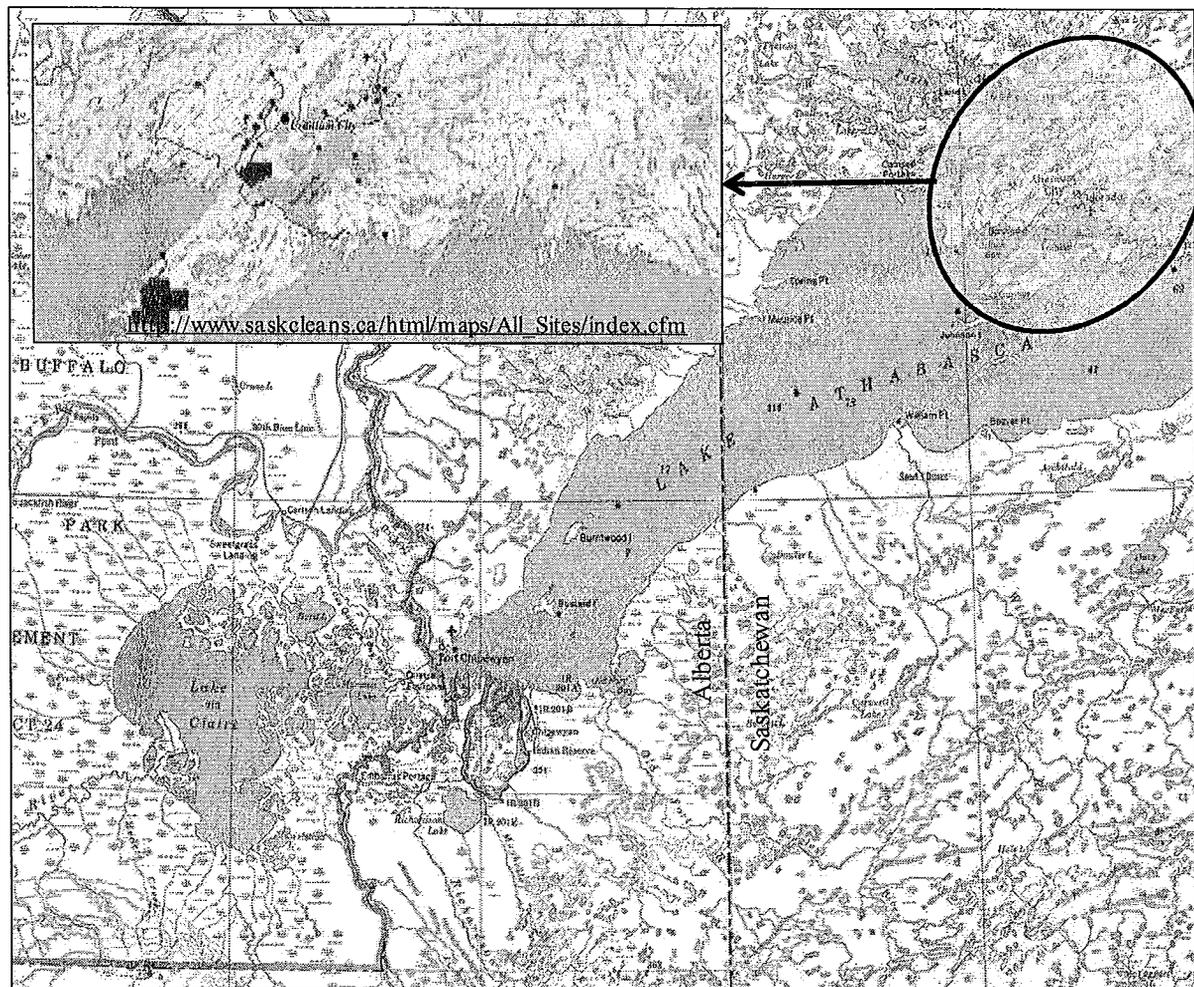
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<sup>102</sup> Canadian Nuclear Safety Commission. Record of Proceedings, Including Reasons for Decision In the Matter of Applicant Cameco Corporation, Application to Renew the Beaverlodge Mine and Mill Site Waste Facility Operating Licence and to Exempt Five Decommissioned Sites. <http://www.nuclearsafety.gc.ca/eng/commission/pdf/2009-11-05-Decision-Cameco-Beaverlodge-Edocs3464281.pdf> [http://www.nuclearsafety.gc.ca/eng/mediacentre/releases/news\\_release.cfm?news\\_release\\_id=361](http://www.nuclearsafety.gc.ca/eng/mediacentre/releases/news_release.cfm?news_release_id=361)

<sup>103</sup> Panel Report. November, 1997. Report of the Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan -Cumulative Observations. <http://www.ceaa.gc.ca/default.asp?lang=En&xml=061B3B44-CC39-4BDF-BAC8-32C084BD6D41&offset=&toc=hide>

<sup>104</sup> <http://www.saskcleans.ca/html/overview/index.cfm>

FIGURE 4-18: Abandoned Uranium Mines on the Northeast Shore of Lake Athabasca



#### 4.2.2.3 Current Uranium Exploration

Exploration for uranium in northeastern Alberta commenced primarily starting in the 1970's. Several uranium deposits were identified and other deposits have been identified as a result of more recent exploration. According to the GoA (2008:11) potential deposits have been identified in the Precambrian Shield area of north-eastern Alberta and in the Maybelle River deposit just south of Lake Athabasca.

Since first researching and drafting this section of the report (and Section 4.2.24) the GoA released its August 22, 2012 version of the LARP (discussed in Section 4.3.3 in more detail) which has implications for some of the uranium interests and activities described below. According to the GoA, existing metallic and industrial mineral agreements within new

Conservation Areas and Provincial Recreation Areas identified in the LARP are not considered compatible with the management intent of these designations and therefore will be cancelled in accordance with the *Alberta Mines and Minerals Act*.<sup>105</sup> Some of the mineral interests and activities within the ACFN ESA described below appear to be located in whole, or part, within the proposed Conservation Areas and Provincial Recreation Areas described in the LARP (August 22, 2012). Notwithstanding this recent government announcement, the writer has chosen to present the information in the balance of this section because the work and activity associated with mineral company exploration activity to date has contributed to encroachment in the ESA. Additionally, it is not clear if the GoA's August 22, 2012 LARP is final or if the boundaries of new Conservation Area and/or Provincial Recreational Park Areas in the LARP are final. It is noted that the *Globe and Mail* on August 23, 2012, quoted Sustainable Resource Development Minister, Mel Knight, had stated the August 22, 2012 LARP is still a draft and is open to a 60-day consultation process.<sup>106</sup>

Areva Resources Canada, sole owner and operator of the Cluff Lake uranium mine, operator and 70% owner of the McClean Lake mine, and shareholder in other Saskatchewan-based uranium operations such as Midwest, Cigar Lake, McArthur River and Key Lake<sup>107</sup> has interests close to Jackfish Lake (Richardson Lake), an area they call the Maybelle River area (see Figure 4-19). Areva currently holds mineral permits and a mineral lease within ACFN's *k'es hochela nene* Homeland area. Areva recently contacted ACFN indicating they may commence ground exploration work in the Mabelle River area in 2011 at the earliest.<sup>108</sup> It is noted that some of Areva's holdings are located within the proposed Richardson Public Land Area for Recreation and Tourism (LARP), a designation in the LARP that does not preclude mineral development. According the LARP (August 22, 2012:33); "If approvals are granted in the future for a mining development in the new Richardson PLART, the boundaries for this area will be re-examined, if deemed necessary and acceptable as a result of the regulatory review for the mining development."

CanAlaska also has exploration permits just north of Fort Chipewyan within Lake Athabasca (see Figure 4-19), situated in ACFN's Fort Chipewyan Proximate Zone. This interest comprises 13 contiguous permits totaling 97,147 ha covering most of the Alberta portion of Lake Athabasca. It stretches from the Saskatchewan border to just north of the community of Fort Chipewyan. In the early part of 2006, the Company conducted an electromagnetic airborne survey over the property, as well in 2005 and 2006 marine seismic surveying was carried out. In early 2008, a geophysical survey camp was operated in the Fiddler Point area for further field studies.<sup>109</sup> It appears that some of CanAlaska's holdings on the north shore of Lake Athabasca are situated within the proposed Lake Athabasca Public Land Area for Recreation and Tourism in the LARP (August 22, 2012), again a designation that does not preclude mineral development.

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<sup>105</sup> GoA. August 24, 2012. Information Letter 2012-30. Lower Athabasca Regional Plan: Surface and Subsurface Commitments related to Crown mineral development in Conservation Areas and Provincial Recreation Areas.

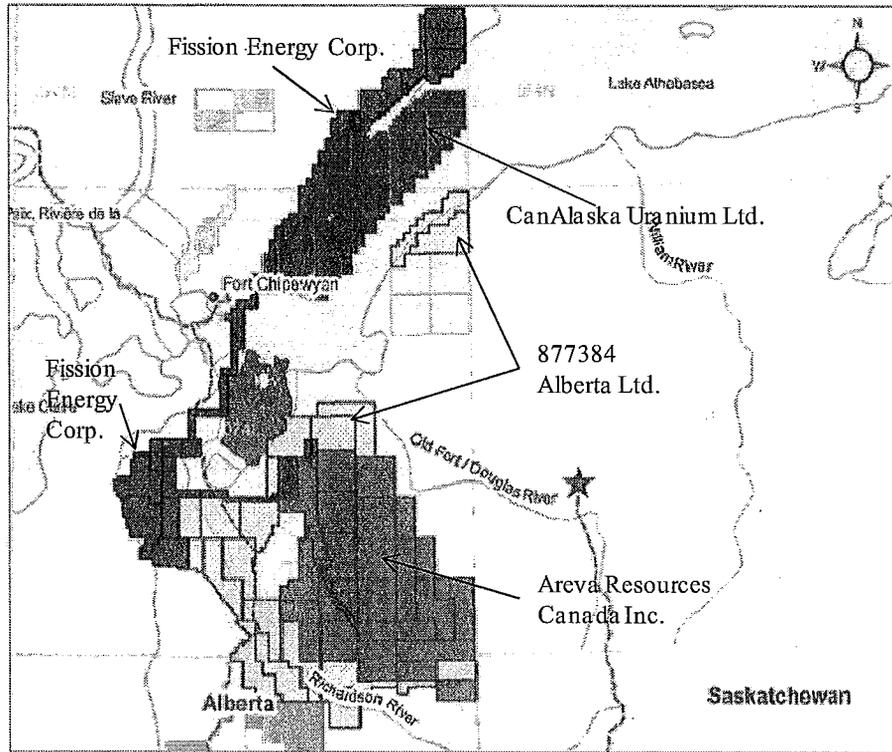
<sup>106</sup> *Globe and Mail* – Calgary, August 23, 2012. On-line edition. "Alberata conservation plan stuns oil patch."

<sup>107</sup> [http://www.cri.ca/about/overview/operations\\_map/](http://www.cri.ca/about/overview/operations_map/) [accessed July 5, 2011]

<sup>108</sup> Email from Willy Loch, Areva Resources Canada to Nicole Nicholls, Athabasca Chipewyan First Nation Industry Relations Corp, dated August 18, 2009.

<sup>109</sup> <http://www.canalaska.com/s/CorporateInfo.asp?ReportID=31285> [accessed July 5, 2011].

FIGURE 4-19: Location of Larger Uranium Exploration Leases in ACFN ESA<sup>110</sup>



Source: Areva Resources Canada Inc. "Rea & Maybelle River Projects, Land Holdings Current, August 8, 2009."

Fission Energy Corporation acquired a 100% interest in a property referred to as the North Shore in 2008 (see Figure 4-19). Prior to this acquisition, Tribune Uranium Corp had spent approximately a million dollars on exploration activities, under an option agreement with Fission Energy. In 2007, 140 km of line cutting and a ground electromagnetic survey had been completed.<sup>111</sup> Fission Energy reports the property is in stage C of exploration, meaning drilling.<sup>112</sup> In 2011 the company reported that 24 of its 28 metallic and mineral permits fall within lands proposed as conservation, recreational/tourism and river corridor routes under the Lower Athabasca Region Plan proposed by the GoA. Due to uncertainty surrounding the future of these permits, the Company requested and was granted by the Alberta Department of Energy a two-year "holiday" from exploration work requirements. The company reported in 2011 that it did not intend to advance exploration until the Lower Athabasca Regional Land is adopted.<sup>113</sup> It appears that some of Fission Energy Corporation's holdings on the north shore of Lake

<sup>110</sup> Areva map annotated by author by adding names of holding companies based on the legend in the original map.

<sup>111</sup> Fission Energy Corp website <http://www.fission-energy.com/s/NorthShore.asp> [accessed July 5, 2011]

<sup>112</sup> Fission Energy Corp. Consolidated Financial Statements, March 31, 2011. <http://www.fission-energy.com/i/pdf/2011Mar31-FS-MDA.pdf>

<sup>113</sup> Ibid.

Athabasca are situated within the proposed Lake Athabasca Public Land Area for Recreation and Tourism in the LARP (August 22, 2012), again a designation that does not preclude mineral development. The company's interests on the west side of Jackfish Lake (Richardson Lake) appear to be situated within the proposed LARP Richardson Wildland Park and thus may be cancelled.

The company named 877384 Alberta Ltd. which holds interests as shown on Figure 4-19 is not a publically traded company and no information could be located regarding any work being done.<sup>114</sup> It appears that some of this company's holdings south of Jackfish Lake (Richardson Lake) are situated within the proposed LARP Richardson Wildland Park and thus may be cancelled.

Most of the uranium exploration leases depicted on Figure 4-19 lie within ACFN's three Homeland Zones and their Fort Chipewyan Proximate Zone. When or if any of these uranium projects will be developed is unknown. However, in the meantime exploration activity has brought workers and machinery into the ACFN ESA, and also contributed to incremental encroachment through seismic lines, drill holes, and camps.

#### **4.2.2.4 Other Mineral Exploration**

DNI Metals Inc. (formerly Dumont Nickel Inc.) holds a 100% interest in an area called the SBH Property, shown on Figure 4-20. The SBH Property is situated in ACFN's *k'es hochelea nene* Homeland. In 2008, the company acquired 28 contiguous metallic and industrial mineral permits covering an area of 244,408 ha. Prior to DNI acquiring the permits, the only exploration work conducted was during the period 1993-1999 by the previous tenure holder, Tintina Mines Limited, augmented by work done in the same era by Alberta Geological Survey and the Geological Survey of Canada. In 2008 it was recommended that the company expend approximately \$5.3 Million in further exploration work.<sup>115</sup> Importantly, the company reports "The Property's location in a mature mining district, in a well organized regulatory, jurisdictional and permitting framework tailored to the development of laterally extensive deposits, provides significant logistical and infrastructural advantages rarely available elsewhere. The local availability of many processing reagents is an added benefit. The local availability of sulphur, as a waste product from surrounding oil sands operations, is also an added benefit to any sulphur consuming leaching methods which might ultimately be applied for the recovery of metals from the shale."<sup>116</sup> In 2011, DNI reported "The studies were implemented in several iterative stages commencing in late 2009, and were completed at the end of 2010. The studies collectively confirmed that suitable bioleaching organisms are indigenous to the shale and can be readily extracted, cultivated and adapted to the shale's chemistry. The studies also confirmed that a broad suite of metals can be collectively extracted from the shale, with high recoveries for Ni/U/Zn/Co/Cd and lower recoveries for Mo/V/Cu/Li which might be enhanced through

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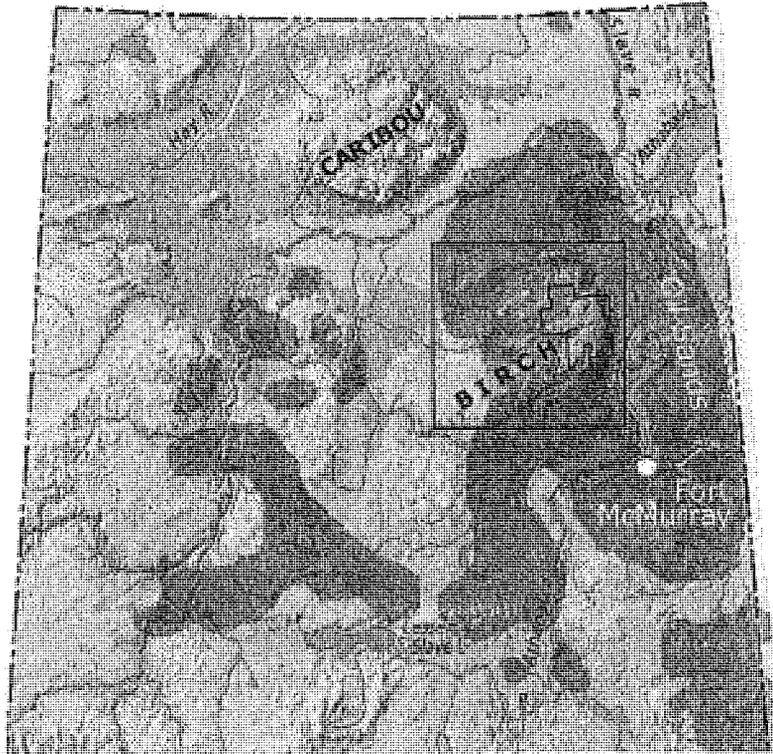
<sup>114</sup> Ibid.

<sup>115</sup> Sabag, S.F. 2008. Technical Report on The Polymetallic Black Shale SBH Property. Prepared for Dumont Nickel Inc. [http://www.dnimetals.com/PDF/TechRpt\\_SBH-Pty-AB\\_Dumont-2008.pdf](http://www.dnimetals.com/PDF/TechRpt_SBH-Pty-AB_Dumont-2008.pdf)

<sup>116</sup> <http://www.dnimetals.com/>

optimized leaching parameters.”<sup>117</sup> The company’s website indicates further exploration work is pending.

FIGURE 4-20: Location of DNI Metals Inc. Birch Mountain Exploration Project



Athabasca Minerals Inc. recently (August, 2011) announced it had acquired Metallic and Industrial Mineral Leases totaling 12,800 hectares for its Firebag Frac Sand Project. The Corporation has submitted applications for a pilot project with production capacity of 45,000 tonnes/year and a second application for a silica processing plant with frac sand production capacity of 1,000,000 tonnes/year. The company indicates the GoA has informed them that a Environmental Impact Assessment is not required for the development of the pilot scale plant. The company reports it intends to continue development of this project by initiating a National Instrument 43-101 technical report and pilot scale production of frac sand.<sup>118</sup>

In addition to the mineral exploration activity mentioned above, there are numerous permits, leases and pending applications for both, throughout the ACFN ESA.

<sup>117</sup> <http://www.dnimetals.com/> DNI METALS INC. - September 8, 2011 news release.

<sup>118</sup> Athabasca Minerals. December 19, 2011 New Release.  
<http://www.athabascaminerals.com/s/news.asp?ReportID=538626>



Northland Forest Products Ltd. has operated a saw mill near Fort McMurray since the 1970's. There are a number of forestry-based mill operations located outside of the ESA which draw water from and/or release treated effluent into the Athabasca River, including: West Frazer Timber Co. Ltd.'s Hinton pulp mill; Millar Western's Fox Creek and Whitecourt pulp mills<sup>123</sup>; Alberta Newsprint Company paper mill near Whitecourt;<sup>124</sup> and Alberta Pacific Forest Industries pulp mill located northeast of the town of Athabasca and west of the town of Lac la Biche.<sup>125</sup> There are also a number of pulp mills in the Alberta portion of the Peace River watershed including Weyerhaeuser Canada's Grand Prairie pulp mill and Daishowa-Marubeni International Ltd.'s pulp mill just north of the town of Peace River.<sup>126</sup>

Alberta Pacific Forest Industries is required under the *Alberta Forests Act* and associated Timber Management Regulations, to prepare a Forest Management Plan for the area under the Forest Management Agreement every five to ten years (current plan dated 2007), and submit Annual Operating Plans, among other documents. The Forest Management Plan area is divided into forest management units as shown in Figure 4-22. Units A14 and A15 are situated within the ACFN ESA; A14 is situated in ACFN's Fort McMurray Proximate Zone and A15 is situated in both the Fort McMurray and Fort McKay Proximate Zones.

According to Alberta Forest Industries 2007 Forest Management Plan, the focus of harvesting activities to the year 2021 in Unit 15 is focused in the area north of Fort McMurray as illustrated in Figure 4-23.<sup>127</sup> Yellow coloured areas indicate deciduous forest areas and red, green and blue coloured areas indicate coniferous forest areas. Proposed harvest areas include portions of ACFN's k'es hochela nene, Fort McKay Proximate Zone and portions of the Athabasca River Critical Waterway Zone.

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<sup>123</sup> <http://www.millarwestern.com/fox-creek/> and <http://www.millarwestern.com/whitecourt/>

<sup>124</sup> <http://www.albertanewsprint.com/mill/envpractises.htm>

<sup>125</sup> <http://www.alpac.ca/index.cfm?id=milenvironment>

<sup>126</sup> Northern Rivers Ecosystem Initiative, Synthesis Report. Pg. 13. <http://environment.gov.ab.ca/info/library/30.pdf>

<sup>127</sup> <http://srd.alberta.ca/LandsForests/ForestManagement/ForestManagementPlans/documents/AlbertaPacificForestProducts/A15-2006-2021-SpatialHarvestSequence.pdf>

FIGURE 4-22: Forest Management Plan Forest Management Units

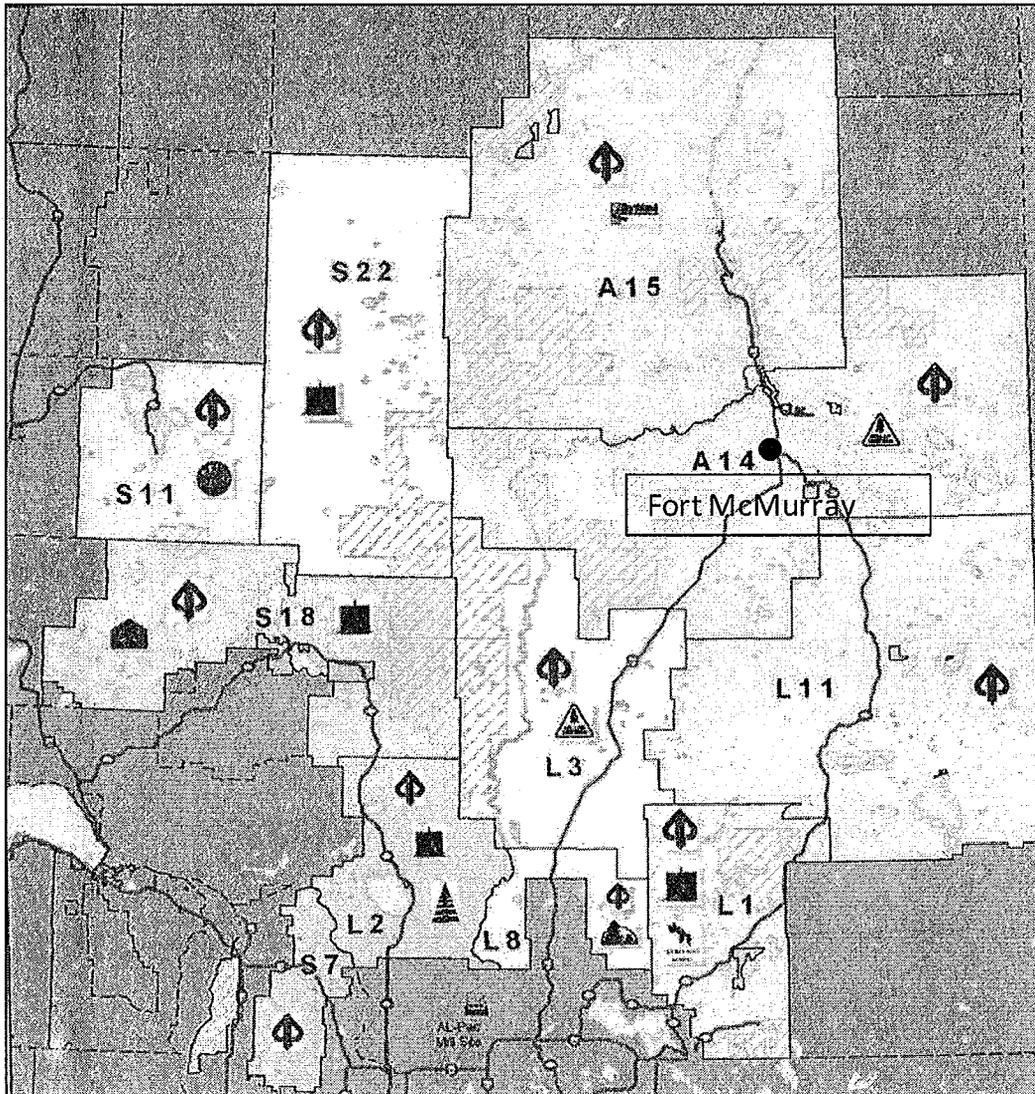
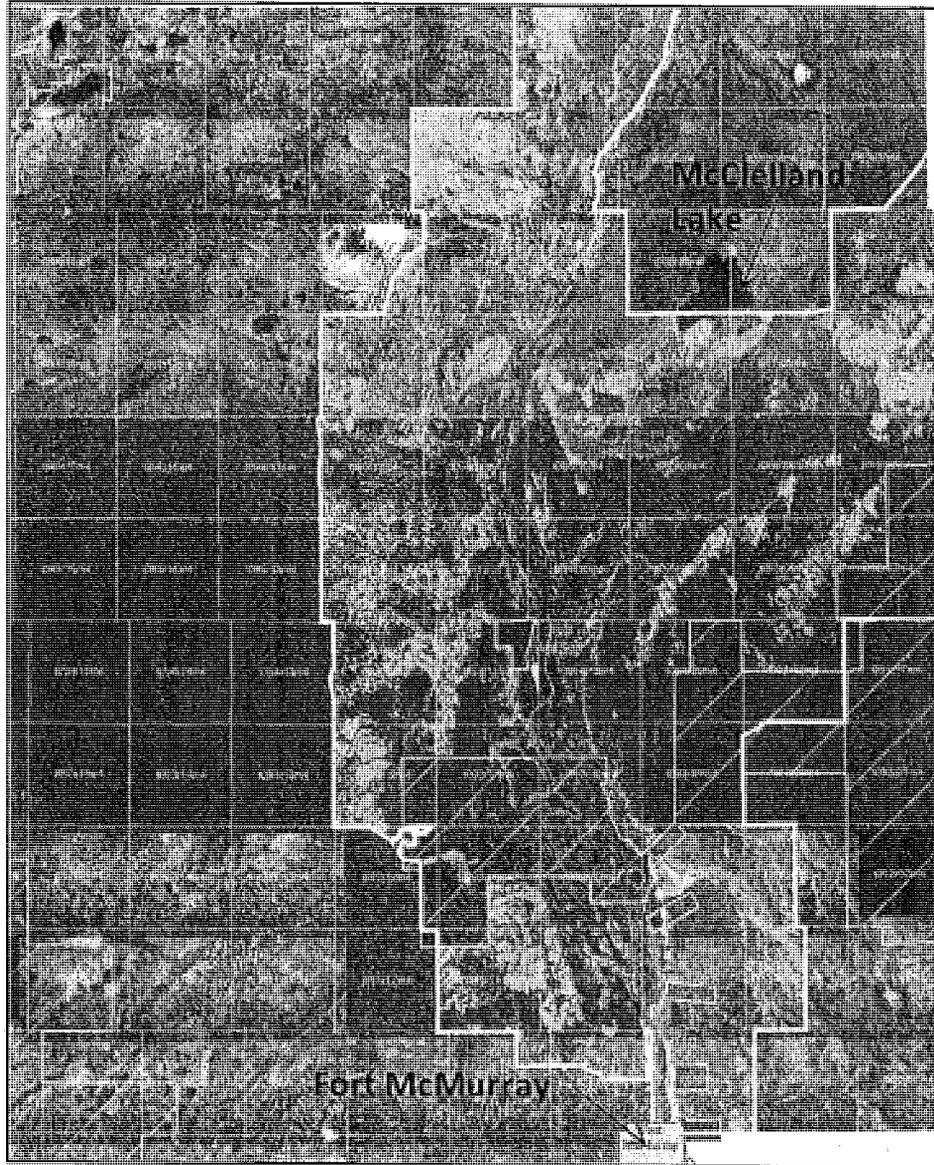


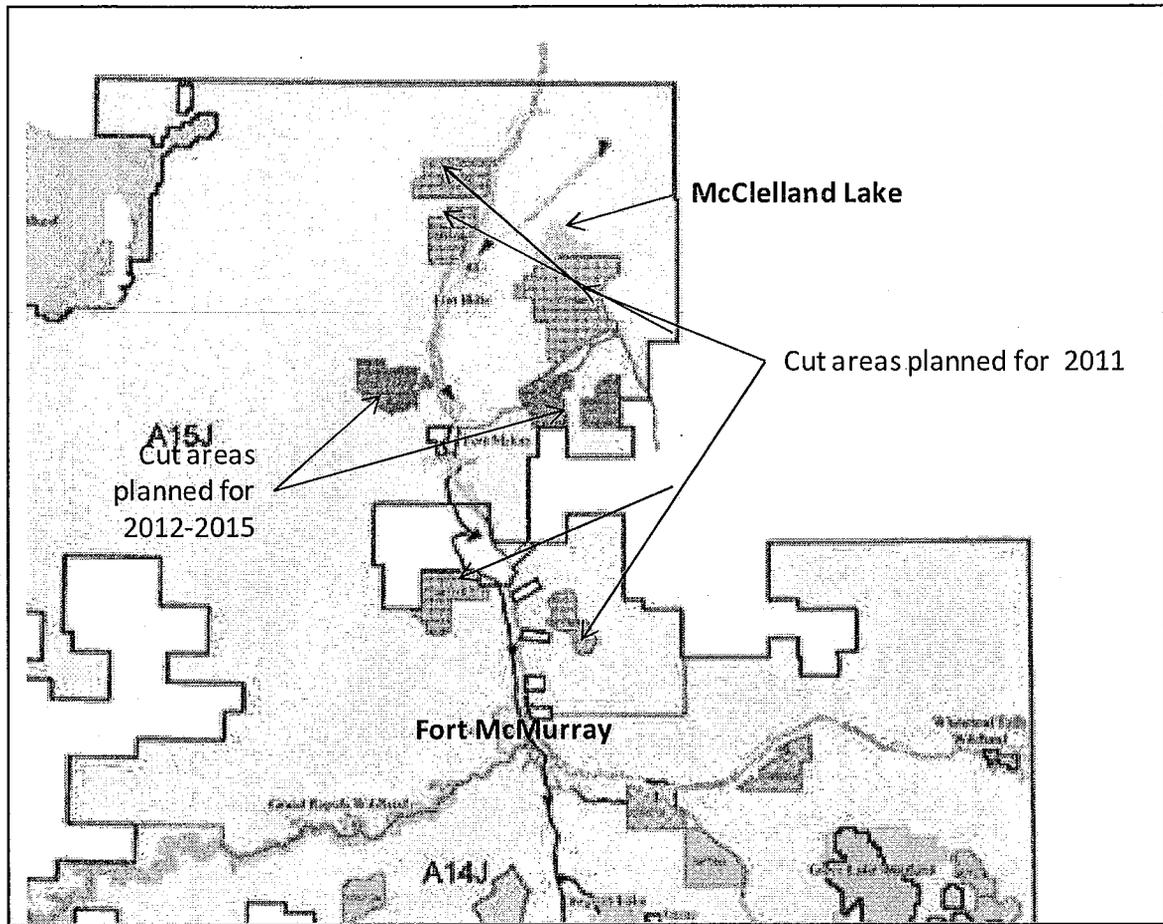
FIGURE 4-23:  
Alberta Forest Industries Forest Management Unit 15 Spatial Harvest Strategy (2006-2021)<sup>128</sup>



Areas within Unit 15 scheduled for harvest in the immediate term (2011-2015) are located east and west of the Athabasca River in the vicinity of McClelland Lake and Fort McKay, as well as just north of Fort McMurray as shown on Figure 4-24. The northern areas identified for harvest in 2011 coincide with new oil sand mines under regulatory review.

<sup>128</sup> Figure annotated by writer by adding place names for Fort McMurray and McClelland Lake.

FIGURE 4-24: Planned Harvest Areas 2011-2015



The GoA (2011) reports that “The expansion of oil sands development in the region creates challenges for forest companies. A growing portion of timber for the region’s mills now comes from salvage connected to oil sands and other non-renewable resource developments. Reductions in the forestry land base accumulate due to the long time horizon for reclamation of oil sands areas. Timber shortfalls are projected over the term of the regional plan.”<sup>129</sup> As discussed in Section 4.3.3 of this report, the government is contemplating opening up new areas to commercial forestry as part of the Lower Athabasca Integrated Regional Planning process.

<sup>129</sup> Government of Alberta. 2011. Draft Lower Athabasca Integrated Regional Plan 2011 – 2021, Strategic Plan/Implementation Plan. April 15, 2011. Pg. 7.

## 4.2.4 Oil Sands Development

The first written record of knowledge about the oil sands in the Athabasca River valley was based upon a verbal report of a Cree person trading at the Hudson Bay Company's post at Fort Churchill on the Hudson Bay coast in 1719. In 1875, the Geologic Survey of Canada conducted an investigation of the oil sands potential, followed by numerous investigations and reporting by federal agents. Research on methods for separating the bitumen from the sand and pilot studies occurred through the late 1950's. In 1967, Suncor's predecessor The Great Canadian Oil Sands consortium, commenced operation of the first commercial oil sands mine just north of Fort McMurray. The second open pit operation, Syncrude's Mildred Lake mine, commenced operations a dozen years later in 1978.<sup>130</sup> The geographic boundaries of the Athabasca Oil Sands Area and the Surface Mineable Area are available at the following GoA website [http://www.energy.alberta.ca/LandAccess/pdfs/OilSands\\_Projects.pdf](http://www.energy.alberta.ca/LandAccess/pdfs/OilSands_Projects.pdf).<sup>131</sup>

Until 2002, the currently named Suncor Energy Inc. Millenium and Syncrude's Mildred Lake/Aurora operations were the only open pit mines operating in the ACFN ESA. Additionally, there were a number of historical in-situ thermal operations north of Fort McMurray (Alberta Utilities Board, 2000).<sup>132</sup> Since 2002, the number of surface mine and in-situ steam-assisted gravity drainage (SAGD) projects operating in the ACFN ESA has grown substantially as illustrated in Figure 4-25.<sup>133</sup> Five new open pit mines, six new SAGD operations, and numerous expansions of both types of operations have occurred in the past ten years. Most of these projects have operating lifespans of 25-50 years. According to the GoA, 99% of the 4,750 km<sup>2</sup> surface mineable area is under lease and 75% of the 93,000 km<sup>2</sup> Athabasca Oil Sands Area is under lease.<sup>134</sup>

Currently there is one new open pit and several new or expansion SAGD projects under construction, as indicated in Figure 4-26 (top box). Figure 4-26 also lists projects which have received regulatory approval. This list includes: three new open pit mines; expansions of four existing or under construction open pit mines; four new SAGD projects; and expansions of two existing or under construction SAGD projects. The third box in Figure 4-26 lists projects which are currently under regulatory review; a list that includes: three new open pit mines and twelve new proposed SAGD projects, as well as expansion projects. Finally, Figure 4-26 lists projects

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<sup>130</sup> [www.ercb.ca/portal/server.pt.gateway](http://www.ercb.ca/portal/server.pt.gateway) For a description of the history of the Athabasca oil sands see: The Royal Society of Canada Experts Panel: Environmental and Health Impacts of Canada's Oil Sands Industry, December 2010 and Alberta Energy and Utilities Board, Earth Sciences Report 2000-05: Historical Overview of the Fort McMurray Area and Oil Sands Industry in Northeastern Alberta, May 2000.

<sup>131</sup> GoA disclaimer for this map product indicates the map may not be reproduced or copied without prior consent of the GoA.

<sup>132</sup> Alberta Energy and Utilities Board. 2000. Earth Sciences Report 2000-05: Historical Overview of the Fort McMurray Area and Oil Sands Industry in Northeastern Alberta, May 2000. Figure 2.1 shows five historical thermal projects.

<sup>133</sup> Projects listed in Figure 4-25 are all located from approximately north of Cheecham, north to Wood Buffalo National Park, to the western side of Birch Mountain Park, and east to the Saskatchewan border.

<sup>134</sup> <http://www.energy.alberta.ca/LandAccess/pdfs/OSAagreeStats.pdf>





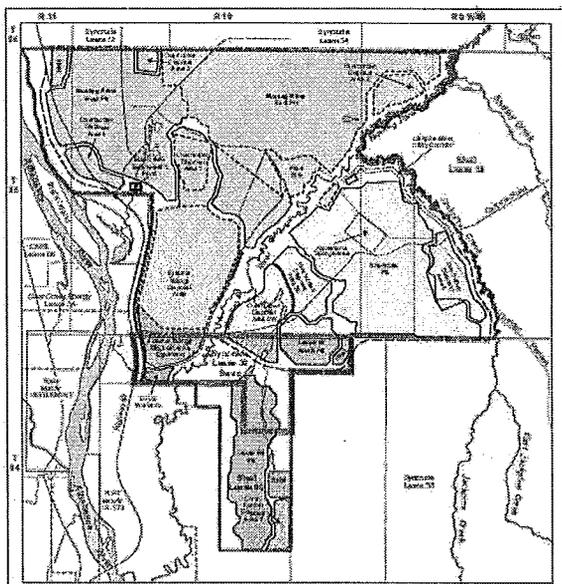
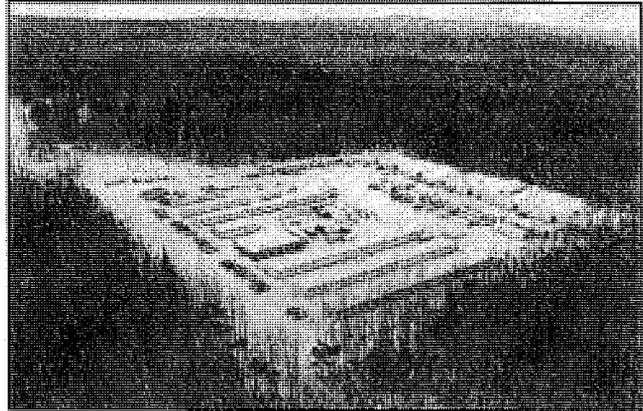
FIGURE 4-26: Status of Pending Oil Sands Projects in ACFN ESA  
(At August, 2012)

PROJECTS IN REGULATORY REVIEW		EXPECTED START UP DATE																		
<input checked="" type="checkbox"/> Surface Mines	<input type="checkbox"/> SAGD Operations	TBD	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<input checked="" type="checkbox"/>	Alberta Oilsands Inc. - Clearwater West Phase 1 Pilot																			
<input checked="" type="checkbox"/>	Athabasca Oils Sands-Dover West Clastics Phase 1																			
<input checked="" type="checkbox"/>	Athabasca Oils Sands-Dover Wt Leduc Phase 1 Demo																			
<input checked="" type="checkbox"/>	Athabasca Oils Sands-Dover Wt Leduc Phase 2																			
<input checked="" type="checkbox"/>	Cenovus FCCL Ltd. - Telephone Lake Borealis Phase A																			
<input checked="" type="checkbox"/>	Cenovus FCCL Ltd. - Telephone Lake Borealis Phase B																			
<input checked="" type="checkbox"/>	Dover Operating Corp. - Dover North Phase 1																			
<input checked="" type="checkbox"/>	Dover Operating Corp. - Subsequent Phases 2-5																			
<input checked="" type="checkbox"/>	Ivanhoe Energy Inc. - Tamarack Phase 1																			
<input checked="" type="checkbox"/>	Ivanhoe Energy Inc. - Tamarack Phase 2																			
<input checked="" type="checkbox"/>	Marathon Oil Corp. - Birchwood Demo																			
<input checked="" type="checkbox"/>	Oak Point Energy Ltd. - Lewis Pilot																			
<input checked="" type="checkbox"/>	Shell-Albian Sands - Jackpine Expansion																			
<input checked="" type="checkbox"/>	Shell-Albian Sands - Pierre River Phase 1																			
<input checked="" type="checkbox"/>	Shell-Albian Sands - Pierre River Phase 2																			
<input checked="" type="checkbox"/>	Southern Pacific Resource - STP MacKay Phase 2A																			
<input checked="" type="checkbox"/>	Southern Pacific Resource - STP MacKay Phase 2B																			
<input checked="" type="checkbox"/>	Suncor Energy Inc. - Voyageur South Phase 1																			
<input checked="" type="checkbox"/>	Suncor Energy Inc. - Lewis Phase 1																			
<input checked="" type="checkbox"/>	Suncor Energy Inc. - Lewis Phase 2																			
<input checked="" type="checkbox"/>	Suncor - Mackay River MR2																			
<input checked="" type="checkbox"/>	Sunshine Oilsands Ltd. - Legend Lake Phase 1																			
<input checked="" type="checkbox"/>	Sunshine Oilsands Ltd. - Thickwood Phase 1																			
<input checked="" type="checkbox"/>	Sunshine Oilsands Ltd. - West Ells Phase 2																			
<input checked="" type="checkbox"/>	Teck Resources Ltd. - Frontier Phase 1																			
<input checked="" type="checkbox"/>	Teck Resources Ltd. - Frontier Phase 2																			
<input checked="" type="checkbox"/>	Teck Resources Ltd. - Frontier Phase 3																			
<input checked="" type="checkbox"/>	Teck Resources Ltd. - Frontier Phase 4 Equinox																			

ANNOUNCED PROJECTS		EXPECTED START UP DATE																		
<input checked="" type="checkbox"/> Surface Mines	<input type="checkbox"/> SAGD Operations	TBD	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<input checked="" type="checkbox"/>	Alberta Oil Sands - Clearwater West Phase 2																			
<input checked="" type="checkbox"/>	Alberta Oil Sands - Birch Phase 1																			
<input checked="" type="checkbox"/>	Athabasca Oils Sands-Dover West Clastics Phase 2																			
<input checked="" type="checkbox"/>	Athabasca Oils Sands-Dover West Clastics Phase 3																			
<input checked="" type="checkbox"/>	Athabasca Oils Sands Corp. - Hangingstone Phase 1																			
<input checked="" type="checkbox"/>	Athabasca Oils Sands Corp. - Hangingstone Phase 2																			
<input checked="" type="checkbox"/>	Athabasca Oils Sands Corp. - Hangingstone Phase 3																			
<input checked="" type="checkbox"/>	CNRL - Birch Mountain Phase 1																			
<input checked="" type="checkbox"/>	CNRL - Birch Mountain Phase 2																			

The footprint of open pit and SAGD projects are land extensive. Even at the exploration stage, the oil sands industry creates a footprint on the land. By way of example, the picture to the right shows the exploration camp at the Frontier project site (UTS Teck Cominco Joint Venture, 2008).<sup>135</sup>



Typically the landscape footprint of open pit mines are comprised of working pits, tailings ponds, overburden storage areas, settling ponds, co-generational facilities, pipelines, utility corridors, plant buildings, and may also include workforce accommodation facilities and fisheries habitat compensation lakes. In the future, the footprint may also include water storage reservoirs. Shell Albian Sands Muskeg River proposed mine expansion layout shown to the left is illustrative of an open pit oil sand mine project (Albian Sands Energy Incorporated, 2005).<sup>136</sup>

<sup>135</sup> UTS Teck Cominco Joint Venture Frontier and Equinox Proposed Oil Sands Mine Projects Public Disclosure Document, March, 2008

<sup>136</sup> Albian Sands Energy Incorporated. Application for Approval of the Muskeg River Mine Expansion Project. April 28, 2005.

SAGD projects also have substantial landscape footprints. For example, both Athabasca Oil Sands Corporation's MacKay River In-Situ and Dover Operating Corp's Dover Commercial In-Situ projects are proposed to have maximum disturbance areas of 3400 hectares.<sup>137, 138</sup>



For example, Cenovus Encana reports that its proposed Borealis in-situ project will be slightly smaller than its existing Foster Creek project, shown in picture to the left.<sup>139</sup>

Up to date data could not be located regarding individual or total areal extent of existing operations disturbance footprint. More importantly, with respect to the discussion of encroachment on ACFN's RV&K, the total area that is no longer accessible and/or useful for RV&K has not been quantified. However for perspective Figures 4-27 and 4-28 illustrate the geographic footprint of some existing projects. Figure 4-27 shows the Mildred Lake and Millenium projects in 2008 while Figure 4-28 shows a number of operating and under construction projects just south of McClelland Lake, also in 2008.

<sup>137</sup> Project Summary Table for Athabasca Oil Sands Corp. MacKay River In-situ Project.

<sup>138</sup> <http://environment.alberta.ca/documents/Dover-Commercial-Project-Project-Summary-Table.pdf> Total Area to be Disturbed is the area within the Total Project Area that will be disturbed (e.g. vegetation cleared, soil removed, soil or wetlands disturbed by construction activities). Total Project Area typically means the area being requested for a mineral lease or a surface lease for the project per Alberta Environment. Guide to Using the Project Summary Table Updated March 2010. <http://environment.gov.ab.ca/info/library/8155.pdf>.

<sup>139</sup> Encana. Borealis In-Situ Project Public Disclosure, September 2007.

FIGURE 4-27: Perspective of Mildred Lake and Millenium Oil Sands Project Footprints<sup>140</sup>

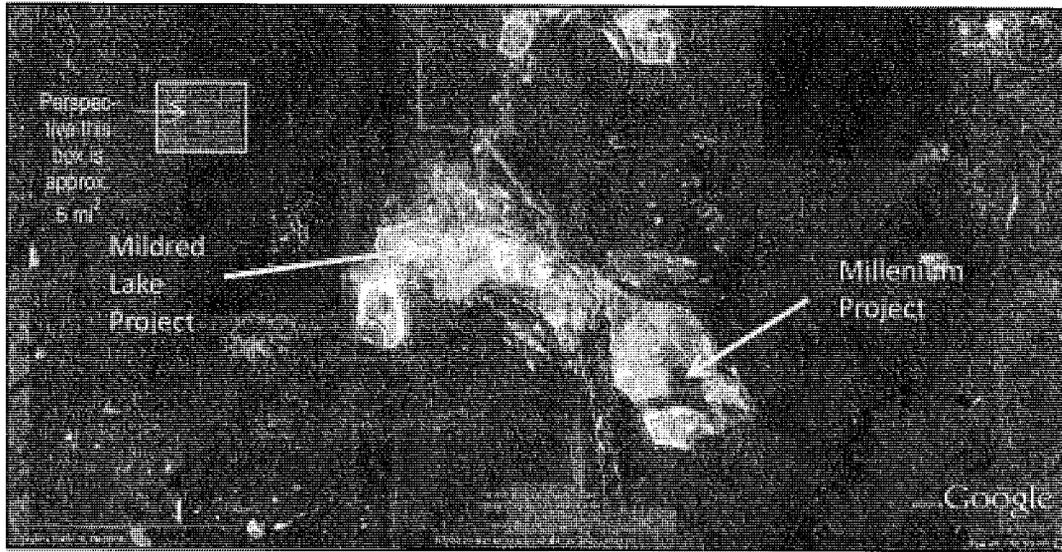
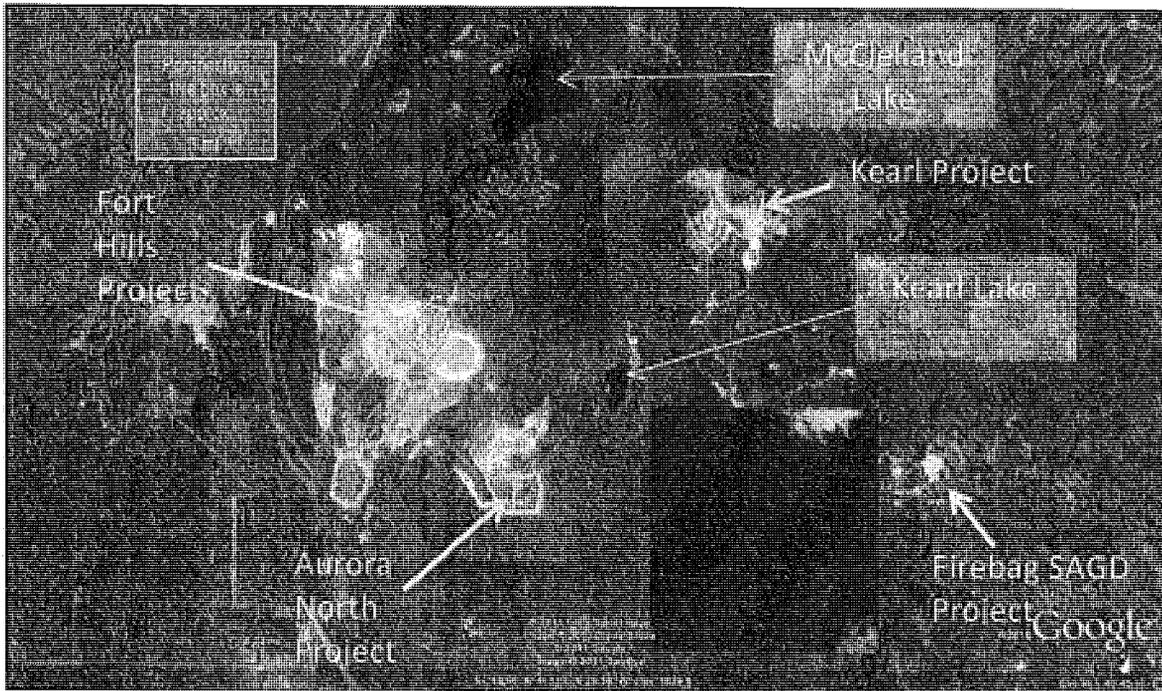


FIGURE 4-28: Perspective of Oil Sands Project Footprints near McClelland Lake<sup>141</sup>

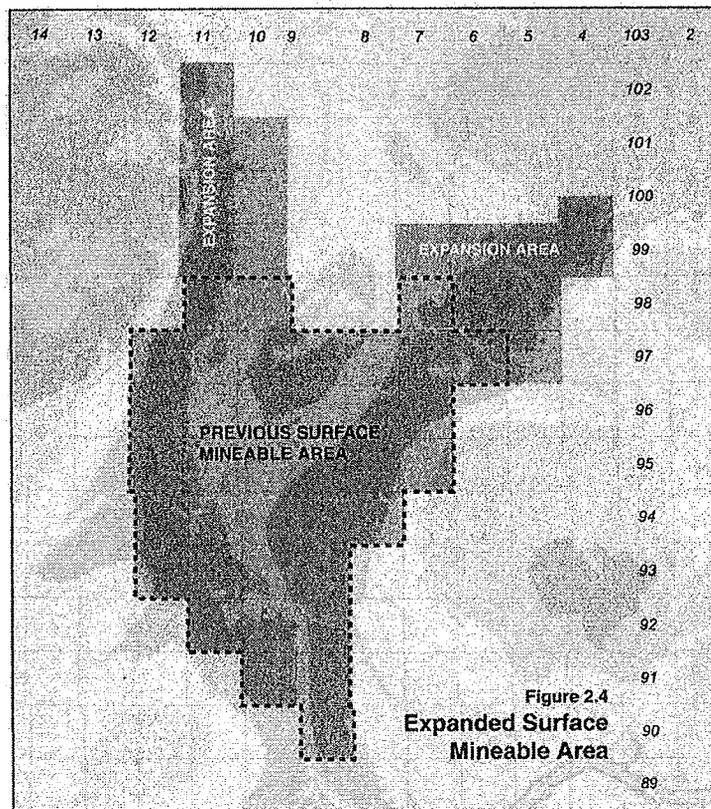


<sup>140</sup> Google Earth. Accessed October 14, 2011. Imagery date: June 29, 2008. Annotated by author. Locations of identified features determined by comparing the Google Earth satellite photograph with the GoA “Alberta’s Oil Sands Projects and Upgraders” map, dated July, 2012, [http://www.energy.gov.ab.ca/landaccess/pdfs/oilsands\\_projects.pdf](http://www.energy.gov.ab.ca/landaccess/pdfs/oilsands_projects.pdf), and Figure 1.4-1 (showing locations of Existing, Approved and Planned Oil Sand Developments), of Shell Canada Ltd. EIA, dated November 30, 2007, to geographically locate the names of the feature.

<sup>141</sup> Google Map. Accessed October 14, 2011. Annotated by author as described in footnote above.

CEMA's Sustainable Ecosystem Working Group (2008:13) reports; "Of the 6.8 Million hectares that comprises the RMWB, current data suggests that some 1.9 million hectares (28%) is underlain by bitumen deposits that are considered commercially viable using current technology and about another 3.8 million hectares (56%) is underlain by some measurable amount of bitumen."<sup>142</sup> Recently the ERCB expanded the area identified as the surface mineable area (SMA) from 37 contiguous townships (about 3,400 km<sup>2</sup>/1,300 sq mi) to 51.5 townships, or about 4,700 km<sup>2</sup>/1,800 sq mi. as shown on Figure 4-29 (Energy Resources Conservation Board, 2009).<sup>143</sup> The Oilsands Advisory Panel (2010:12-13) describes the current state of Athabasca oil sands development as being an initial development phase, dominated by major open strip mines and the start of in-situ projects. They suggest the next phase (2010-2030) is expected to transition from surface to in-situ dominant projects.<sup>144</sup>

FIGURE 4-29: Expanded Area of Surface Mineable Area by ERCB (2008)<sup>145</sup>



<sup>142</sup> Cumulative Environmental Management Association, Sustainable Ecosystem Working Group. 2008. Terrestrial Ecosystem Management Framework for the Regional Municipality of Wood Buffalo. Final Version, June 5, 2008. Pg. 13.

<sup>143</sup> Energy Resources Conservation Board. 2009. ST98-2009: Alberta's Energy Reserves 2008 and Supply/Demand Outlook 2009-2018.

<sup>144</sup> Oilsands Advisory Panel. 2010. A Foundation for the Future: Building an Environmental Monitoring System for the Oil Sands. A report submitted to the Minister of Environment. December 2010. Pgs. 12-13.

<sup>145</sup> Energy Resources Conservation Board. 2009. ST98-2009: Alberta's Energy Reserves 2008 and Supply/Demand Outlook 2009-2018. Figure 2.4, pg. 2-7.

GoA policies suggest that oil sands development in the ACFN ESA will be encouraged for the foreseeable future. The Fort McMurray Mineable Oil Sands Integrated Resource Management Plan outlines the following broad objectives for the mineable oil sands area;<sup>146</sup>

- “1. To provide opportunities for industry to evaluate and develop mineral resources.
2. To provide opportunities for the orderly exploration and development of mineral resources in less-explored areas or formations.
3. To encourage development of the surface mineable and in situ oil sands reserves in the Athabasca Oil Sands deposit.
4. The Mineable Oil Sands RMA will be managed as a coordinated development zone. Within the coordinated development zone, oil sand mining will have the highest priority.
5. To encourage development and use of new oil sands, mineral recovery and reclamation techniques that are more efficient and economical.
6. To manage the supplies of sand, gravel and topsoil, for availability to all users, at reasonable cost, for infrastructure and landscaping activities in the area.”

More recently the GoA (Government of Alberta Treasury Board, no date:4-5) has indicated its long-term vision for the oil sands “is that development occurs responsibly, sustains growth for industry and the province over the long term, and is done in a manner that enhances Albertans’ quality of life.”<sup>147</sup> As discussed in Section 4.3.3 of this report, the recently approved LARP also sets out a vision of that supports development of the Lower Athabasca Region and its oil sands reserves, while balancing economic, environmental and social outcomes and objectives.

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<sup>146</sup> Fort McMurray Mineable Oil Sands Integrated Resource Management Plan (Draft October 2005).

<sup>147</sup> Government of Alberta, Treasury Board. No Date, Circa February 2009. Responsible Actions – A Plan for Alberta’s Oil Sands. Pg. 4-5. [http://treasuryboard.alberta.ca/docs/GOA\\_ResponsibleActions\\_web.pdf](http://treasuryboard.alberta.ca/docs/GOA_ResponsibleActions_web.pdf)

## 4.2.5 Linear Features

A host of linear features exist in the ACFN ESA including primary and secondary roads, electric transmission lines, rail routes, pipelines and cutlines. This section of the report describes the historical development of linear features, the status of contemporary features, and mentions planned additional linear features.

### 4.2.5.1 Existing Linear Features

CEMA (2004) mapped the evolution of human disturbance in the Athabasca oil sands area during three temporal periods: pre 1951; 1951-1980; and 1980 to the early 2000's. Figure 4-30, taken from their work illustrates the expansion of linear features, as well as other land use development, for the latter two periods. It is important to note that features shown on the map for the post 1980 period are in addition to those depicted for the 1951-1980, thus the total extent of linear features for the 1951-1980 are in addition to those depicted on the post 1980's map.<sup>148</sup>

In 2009, Dr. Petr Komers undertook an assessment of the progression of linear and other landscape disturbance features (e.g. mine surface and forestry cut-block footprints) in a section of the ACFN ESA covering an area from just north of ACFN Reserve 201G south to approximately where the Fort Chipewyan winter road moves in a northeasterly direction from the Athabasca River.<sup>149</sup> Komers prepared maps showing all human disturbance features for the years 1992, 2002 and 2008, shown below in Figure 4-31.<sup>150</sup> This study determined that on average of 63 km/year of new linear developments were added to the focus area (depicted in Figure 4-31) between 1992 and 2002. Linear development accelerated in the period 2002 to 2008, with approximately 229 km. of new development annually in that period. The author estimated that by 2008 there were 2,695 km. of linear developments in this portion of the ACFN ESA.<sup>151</sup>

The above noted two studies pre-date a number of oil sands, mineral exploration, and quarry related developments, as well as roads, pipelines, cut lines etc. that have occurred since 2008. The total current area of linear features in the ACFN ESA is unknown.

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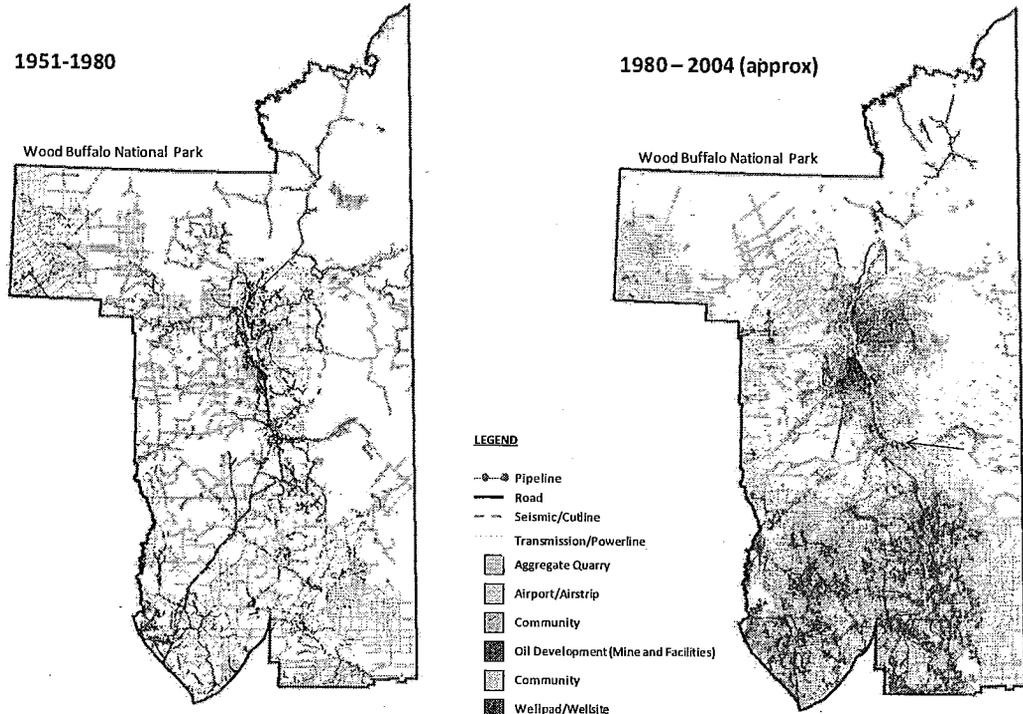
<sup>148</sup> Cumulative Environmental Management Committee, 2004. Assessment Analysis of Human Disturbance Pattern Report. Developed by the Natural Range Of Variation (NRV) Task Group For the Landscape and Biodiversity Subgroup of the Sustainable Ecosystem Working Group (SEWG), October 26, 2004.

<sup>149</sup> Affidavit of Dr. Petr Komers, included as Appendix 3 of ACFN's submission to the Joint Review Panel for the Joslyn North Mine Environmental Review. <http://www.ceaa.gc.ca/050/document-eng.cfm?document=44815>

<sup>150</sup> Dr. Komers noted in his affidavit that the data for linear features too small to detect on satellite images was only current to the year 2006 (paragraph 16).

<sup>151</sup> Affidavit of Dr. Petr Komers, included as Appendix 3 of ACFN's submission to the Joint Review Panel for the Joslyn North Mine Environmental Review. Paragraphs 34 and 35. <http://www.ceaa.gc.ca/050/document-eng.cfm?document=44815>

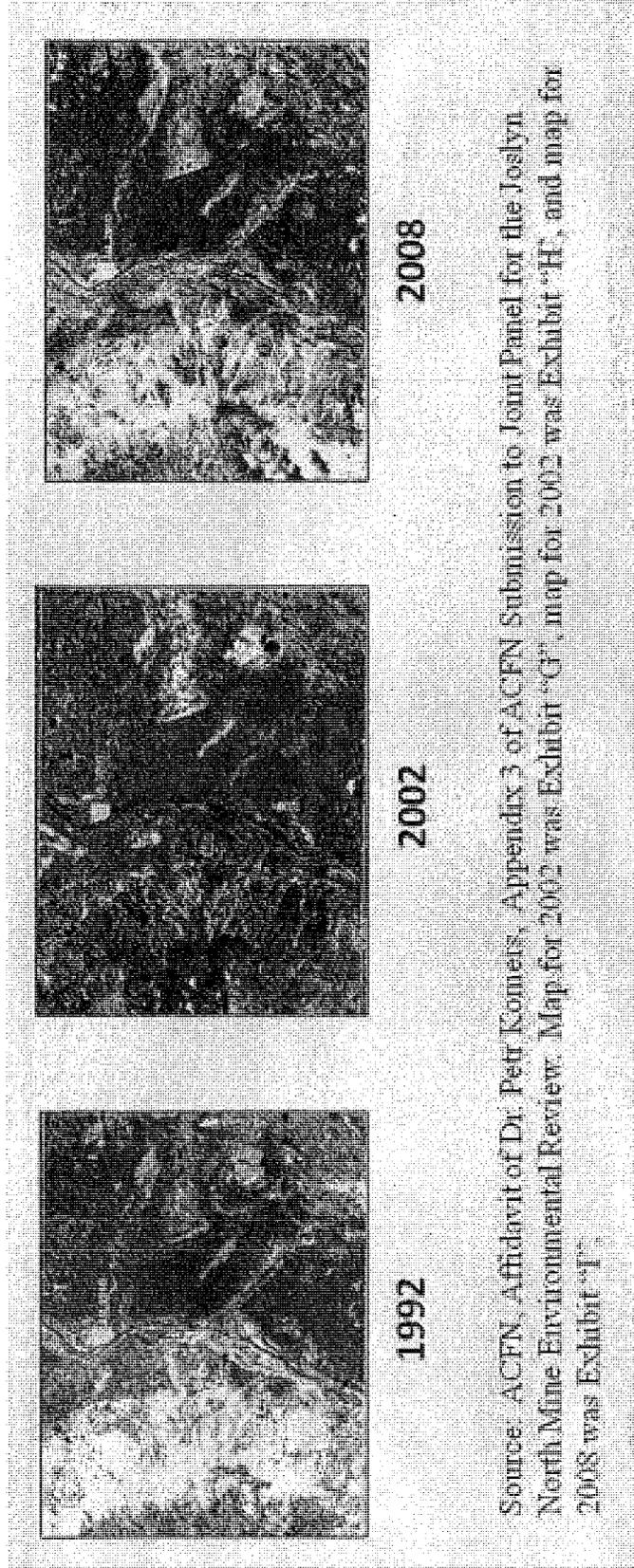
FIGURE 4-30: Evolution of Linear and Other Human Disturbance Features Based on Work of the Cumulative Environmental Management Committee



Source: Cumulative Environmental Management Committee. 2004. Assessment Analysis of Human Disturbance Pattern Report. Figure 3, page 17 "Human Footprint present within the Study Area between 1951 and 1980".

Source: Cumulative Environmental Management Committee. 2004. Assessment Analysis of Human Disturbance Pattern Report. Figure 4, page 18 "Human Footprint present within the Study Area from 1980. to present".

FIGURE 4-31: Evolution of Human Disturbance Features in the Vicinity of ACFN Reserve 201G



Source: ACFN, Affidavit of Dr. Petr Komers, Appendix 3 of ACFN Submission to Joint Panel for the Joslyn North Mine Environmental Review. Map for 2002 was Exhibit "G", map for 2002 was Exhibit "H", and map for 2008 was Exhibit "I".

## East Athabasca Highway

The industry owned and operated Canterra road which served as an access road to oil sands projects on the east side of the Athabasca River was recently replaced with the industry owned and operated 'East Athabasca Highway.' This new two lane gravel road was completed in early 2011 and is being used by Suncor, Imperial, Husky and other industry proponents. Suncor is acting as the operator of the road.<sup>152</sup>

### **4.2.5.2 Proposed Linear Features**

The GoA (no date) Alberta government recently released its draft Comprehensive Regional Infrastructure Sustainability Plan (CRISP), which is described as a guideline for long-term infrastructure development in the Athabasca Oil Sands Area.<sup>153</sup> This plan presents a four-phased approach to infrastructure development to the year 2045, based upon a scenario that the Athabasca Oil Sands Area is producing 6.0 million barrels per day and supporting a regional population of approximately 240,500. Each of the four phases is based upon assumptions concerning projected oil production and population growth.<sup>154</sup> This draft plan considered current and long-term traffic patterns and volumes associated with oil sands and related development and suggests that alternative transportation modes, such as new, fully dedicated bus corridors, targeted bus bypass shoulders on existing roads, and commuter rail service can reduce traffic volumes and demand for new roads north of Fort McMurray. Further, the draft CRISP indicates that population growth will be directed away from project specific work camps and towards existing communities, and envisions the creation of a new community or 'growth node' north of Fort McMurray, situated just north of Fort McKay (see Section 4.3.1).<sup>155</sup>

The first phase of the draft CRISP (2010-2014) calls for the following linear infrastructure (see Figure 4-32)<sup>156</sup>:

- transportation upgrades to Highways 63 and 881;
- construction of a ring road to the east of Fort McMurray;
- addition of lane capacity to Highway 63 north of Fort McMurray to connect it and the new urban growth node to projects in the Surface Mineable Area;
- a ring road to the east of the Fort McMurray to provide;
  - a bypass route for over dimensional loads,
  - improved access between the Fort McMurray airport and the Surface Mineable Area, and
  - better access to projects east of the Athabasca River.
- the beginning stages of a bus-based rapid transit system and enhanced bus service between Fort McMurray, the new urban growth node and projects in the Surface Mineable Area.

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<sup>152</sup> <http://sustainability.suncor.com/2010/en/responsible/3635.aspx>

<sup>153</sup> Government of Alberta. No Date. Comprehensive Regional Infrastructure Sustainability Plan for the Athabasca Oil Sands Area. <http://treasuryboard.alberta.ca/1213.cfm>

<sup>154</sup> Ibid. Pg. 2.

<sup>155</sup> Ibid. Pg. 3.

<sup>156</sup> Ibid. Pg. 48.

With respect to the ACFN ESA, the second phase (2015-2025) of CRISP involves<sup>157</sup> (see Figure 4-32):

- four major new transportation corridors;
  - new north-south corridor east of the Athabasca River connecting Fort McMurray and the new urban growth node to project sites east of the Athabasca River.
  - completed ring road around Fort McMurray is completed with the addition of the link around the west side of the city.
  - new east-west corridor established to connect Fort McMurray with communities to the west.
  - new road connecting Fort McMurray, the new urban growth node and oil sands resource areas in Saskatchewan.
- new commuter rail service could be introduced between Fort McMurray and the new urban growth node, servicing oil sands projects in the Surface Mineable Area. Freight service could also be provided on this same line; and
- bus-based rapid transit measures would continue to be introduced as necessary, as new roads are built and existing roads are expanded.

The third phase (2015-2025) of CRISP involves<sup>158</sup> (see Figure 4-32):

- new transportation corridor north of Fort McMurray and west of the Athabasca River provides relief for Highway 63, as well as enhanced access between Fort McMurray and the new urban growth node to projects in this area;
- additional connection to the oil sands resources of Saskatchewan is introduced; and
- a new all-season connection north to the Fort Chipewyan area.

Phase 4 of the CRISP (2035-2045) assumes population growth continues to be strong in the urban growth node and in Wabasca. Growth in both of these communities is related to employment growth in the Chipewyan Lake area. A new transportation corridor connecting both Wabasca and the new urban growth node to these employment areas allows these communities to house the workforce for some of this project activity (see Figure 4-32).<sup>159</sup>

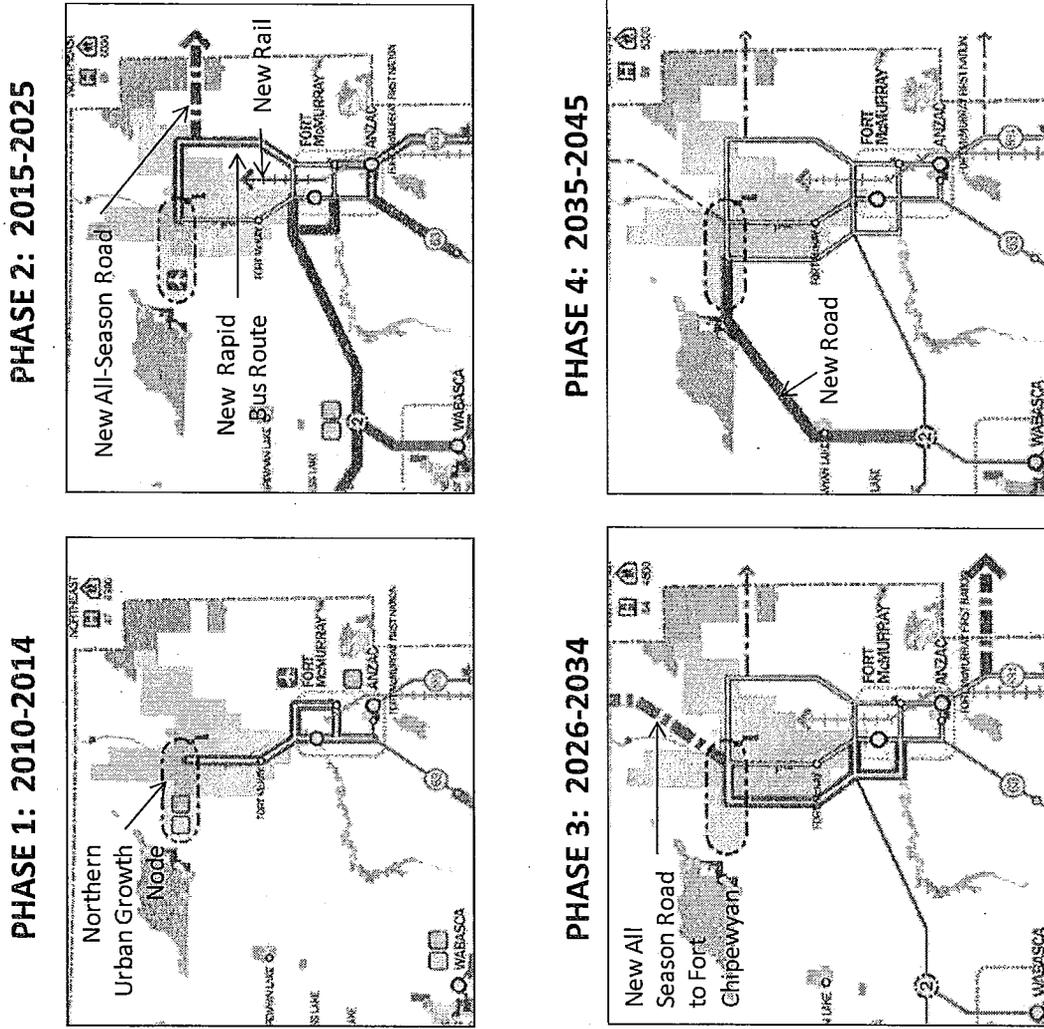
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<sup>157</sup> Ibid. Pg. 50.

<sup>158</sup> Ibid. Pg. 52.

<sup>159</sup> Ibid. Pg. 54.

FIGURE 4-32: Proposed Linear Development in Alberta's Comprehensive Regional Infrastructure Sustainability Plan<sup>160</sup>



<sup>160</sup> Maps annotated by author (e.g. "new road", "new rail") to depict types of transportation features identified on larger format original source maps.

There are also plans to upgrade and add electric transmission lines and substations both north and south of Fort McMurray.<sup>161</sup> Finally, a number of new pipelines are in various stages of development as indicated in Table 4-1.<sup>162</sup>

TABLE 4-1: Inventory of Pipeline Project Proposals in RM of Wood Buffalo

Project Sector/Company Name	Project Description	Project Location	Cost in \$ Millions	Construction Schedule and Remarks
Enbridge Inc.	'Waupisoo' Pipeline Expansion	Edmonton to Ft McMurray	\$400.0	Under construction 2011-2012
Enbridge Inc.	'Norealis' Bitumen Pipeline, Husky Sunrise to Cheecham Terminal	RM of Wood Buffalo	\$475.0	Under construction 2011-2013
Enbridge Inc.	'Wood Buffalo' Crude Oil Pipeline	RM of Wood Buffalo	\$370.0	Under construction 2011-2013
Enbridge Inc.	'Athabasca' Oil Pipeline Expansion 1	RM of Wood Buffalo to Hardisty	\$1,200.0	Proposed. Application filed Spring 2012. 2014-2015
Enbridge Pipelines	'Woodland' Bitumen Pipeline	RM of Wood Buffalo (Kearl to Cheecham Terminal)	\$100.0	Nearing completion 2011-2012
Enbridge Pipelines	'Woodland' Bitumen Pipeline Expansion	RM of Wood Buffalo (Kearl to Cheecham Terminal)	\$50.0	Proposed 2012-2014
Enbridge Pipelines	'Northern Gateway' Bitumen and Condensate Pipelines (Alberta portion)	RM of Wood Buffalo to Alberta / BC border	\$1,579.0	Application filed May 2010. Construction cost entire pipeline (Alberta and BC) \$5.5 billion. 2014-2015
Inter Pipeline Fund	'Polaris Pipeline' Expansion / Extension of Existing Diluent Pipeline	Edmonton area to Kearl Lake oilsands project	\$135.0	Under construction. 2010-2012

<sup>161</sup> See for example Alberta Electric System Operator, no date, 2011 Long-term Transmission Plan, Draft and Alberta Electric System Operator, March 2011, Fort McMurray Area Transmission Bulk System Reinforcement Function Specification (File No. RP-05-838).

<sup>162</sup> GoA, June 2012. Inventory of Major Alberta Projects.

## 4.3 Government Allocations, Designations and Plans

### 4.3.1 Urban Development

In the context of this section, urban development refers to residential, commercial, and industrial land use within the Fort McMurray urban service area, other rural towns and First Nations Reserves in the ACFN ESA, as well as industrial-related workforce camps.

#### Residential Land Use

In 2008, the Alberta Treasury Board indicated it planned to work with the RMWB to address residential accommodation needs by developing two new communities or subdivision areas on provincially owned lands in Fort McMurray. The Province indicated it would release approximately 16,200 ha (40,000 acres) of land to establish housing for approximately 40,000 people.<sup>163</sup> The RMWB (2011) recently reported that residential and green space land requirements to meet population growth to the year 2030 will require 9,316 ha.<sup>164</sup> All of this land is situated within ACFN's Fort McMurray Proximate Zone.

In 2006, the Government of Alberta reported that oil sands operators suggested that a new town north of Fort McMurray be built to reduce commute times from the city and reduce the need to build multiple remote worker camps. That year it was recommended that the Alberta Government, in conjunction with the RMWB and industry, undertake a feasibility study to determine the need for and the costs associated with development of a new town north of Fort McMurray (Government of Alberta, 2006).<sup>165</sup>

The aforementioned recently released CRISP for the Athabasca Oil Sands Area considered two options for accommodation of the existing and projected construction and operational workforces associated with oil sand industrial development: planned work camp communities and urban growth nodes. The planned work camp community option is described as an alternative approach to the project-by-project private work camp trend. Work camp communities would be planned to initially accommodate construction-phase workers, but designed to evolve into longer-term communities for oil sand project employees and their families and include higher quality housing and could evolve to contain communal facilities such as schools, recreation facilities, and commercial, administrative and health facilities. The CRISP report suggests two planned work camp communities; one north of Wabasca and a second between Anzac and Conklin.<sup>166</sup>

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<sup>163</sup> Bentein, J. August 24, 2011. "Wood Buffalo Eager to Bring Camp Workers – Its 'Shadow Residents' – Into Light. Oils Sands Review. <http://www.oilsandsreview.com>.

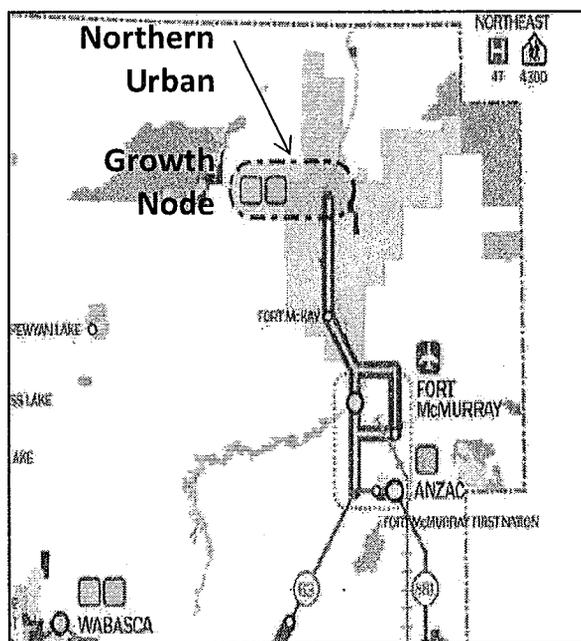
<sup>164</sup> Regional Municipality of Wood Buffalo, August 23, 2011. Municipal Development Plan, Public Draft, August 23, 2011.

<sup>165</sup> Government of Alberta. 2006. Investing in our Future: Responding to the Rapid Growth of Oil Sands Development — Final Report, December 29, 2006. Pg.135. <http://alberta.ca/home/395.cfm> Recommendation #16.

<sup>166</sup> Government of Alberta. No Date. Comprehensive Regional Infrastructure Sustainability Plan for the Athabasca Oil Sands Area. <http://treasuryboard.alberta.ca/1213.cfm>

In addition to the planned camps at Wabasca and Anzac, the CRISP also envisions the creation of “new urban growth node.” Unlike a planned work camp community, this node would be built to serve as permanent new community from the outset.<sup>167</sup> Two potential locations for a new growth node were identified; one on the east side of the Athabasca River near McClelland Lake and one on the west of the Athabasca River just outside of the Surface Mineable Area (see Figure 4-33). These locations are both in ACFN’s *k’es hochela nene* Homeland.<sup>168,169</sup>

FIGURE 4-33: Location of Potential Urban Growth Node in ACFN ESA<sup>170</sup>



<sup>167</sup> Government of Alberta. No Date. Comprehensive Regional Infrastructure Sustainability Plan for the Athabasca Oil Sands Area. <http://treasuryboard.alberta.ca/1213.cfm>

<sup>168</sup> Government of Alberta. No Date. Comprehensive Regional Infrastructure Sustainability Plan for the Athabasca Oil Sands Area. Page 35. <http://treasuryboard.alberta.ca/1213.cfm>

<sup>169</sup> It is noted that an architect company website indicates that the Athabaskan Resource Company (a joint venture of Fort McKay First Nation and Stewart Weir Group), with a team of engineers, environmentalists, planners and architects, is creating the physical plan for a new town. The mission is to design a truly northern community of 5000 housing units, not a generic sub-division, that may grow into a community that contributes to the region and complements other settlements in North East Alberta. StastnyBrun Architects provided urban design and physical planning consultation to the planning team. The plan “makes a business case” that will make this viable for the Fort McKay Nation and Canadian Natural Resources Limited to develop and provide an urban structure based on principles of water management, solar heating and wind buffering. [http://www.stastnybrun.com/StastnyBrun\\_Architects/UD-Fort\\_McKay\\_1.html](http://www.stastnybrun.com/StastnyBrun_Architects/UD-Fort_McKay_1.html)

<sup>170</sup> Government of Alberta. No Date. Comprehensive Regional Infrastructure Sustainability Plan for the Athabasca Oil Sands Area. Page 49. <http://treasuryboard.alberta.ca/1213.cfm>. Original source map annotated by author by adding the text “Northern Urban Growth Node” and arrow.

The CRISP indicates that the urban growth node would be a new permanent community for about 42,300 people by the year 2045, designed to be “a model of environmental sustainability, with water and energy efficient housing, transit-oriented development, walkable neighbourhoods, and extensive use of green technologies.”<sup>171</sup> Eventually the community would grow to include communal facilities such as schools, recreation facilities, and commercial, administrative and health facilities. It is suggested that the development of this growth node would begin in the first phase of the CRISP (2010-2014), with the establishment of housing, water and wastewater treatment facilities. In Phase 2, a new airport would be constructed at this location.<sup>172</sup>

### Remote Workforce Camps

As of March, 2007, there were a reported 65 ‘work camps’ in the RMWB. Most of these camps are situated north of Fort McMurray (see Figure 4-5). According to the RMWB (2008:8), as of January, 2008, permits had been granted for camps and accommodation for approximately 40,000 occupants.<sup>173</sup> As previously mentioned, the RMWB 2010 census reported the remote workforce population was in the order of 23,325. Most of these camps are located in ACFN’s Homeland, Proximate Zone and Critical Waterway Zone areas.

Shell Canada’s recently opened Albian Village camp at its Jackpine Mine-Phase 1 site is built to provide accommodation for 2,500 workers. At full capacity, Albian Village is planned to include squash and racquetball courts, running track, workout facility, movie theatre, ball diamond, outdoor skating rink, dining area, lounge, internet café and coffee shop.<sup>174</sup> Shell Canada indicates that Albian Village and other third party camps will be used during the construction phase of its proposed Jackpine Mine Expansion and Pierre River Mine. During the operation phase of the proposed Jackpine Expansion project, employees will be expected to live in Fort McMurray. However, the company proposes to build an operations camp for employees working at the proposed Pierre River mine (Shell Canada Limited, 2007).<sup>175</sup>

The GoA June 2012 Inventory of Major Alberta Projects reports that Horizon North Logistics Inc. has announced it plans to build a new oil sand work camp in 2012-2013. Teck Resources also proposes to build a 3,500 person lodge during the construction phase of its proposed Frontier Oils Sands Mine and then operate of 1500 person permanent lodge during operations.<sup>176</sup>

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<sup>171</sup> Government of Alberta. No Date. Comprehensive Regional Infrastructure Sustainability Plan for the Athabasca Oil Sands Area. Page 42. <http://treasuryboard.alberta.ca/1213.cfm>

<sup>172</sup> Government of Alberta. No Date. Comprehensive Regional Infrastructure Sustainability Plan for the Athabasca Oil Sands Area. Pages 48-50. <http://treasuryboard.alberta.ca/1213.cfm>

<sup>173</sup> Regional Municipality of Wood Buffalo. 2008. Where We Are Today. Pg. 8.

<sup>174</sup> Shell Canada Limited. 2007. Application for the Approval of the Jackpine Mine Expansion Project, Volume 1: Project Description. Pg. 18-14.

<sup>175</sup> Shell Canada Limited. 2007. Application for the Approval of the Jackpine Mine Expansion Project, Volume 1: Project Description. Pg. 18-14.

<sup>176</sup> Teck Resources Ltd. Frontier Oil Sands Mine Integrated Application. Volume 1, pg. 10-5.

## Airports and Airfields

There are a number of airports and airfields in ACFN's Territory. In the Fort McMurray urban service centre there is the Fort McMurray Airport Water Aerodrome. There is a regional airport at Fort Chipewyan. There are also public airfields at Gordon Lake; Muskeg Tower; Namur Lake (operated by Namur Lake Lodge); Birch Mountain (firefighting airstrip); Edra; and Jean Lake.<sup>177</sup> Private airfields which have operated and/or are still in operation include: Fort McKay Horizon operated by Canadian Natural Resources Ltd.; Fort McKay Albian Aerodrome operated by Shell Canada; Mildred Lake operated by Syncrude; and Firebag Aerodrome operated by Suncor.

### **4.3.2 Recreational and Sport Use of Lands and Resources**

ACFN Members have expressed concerns about the increasing numbers of people accessing and utilizing the lands, waterways and resources which support their RV&K. Activities which have been increasing include non-consumptive<sup>178</sup> uses associated with snowmobiles, all-terrain vehicles, boating, and backcountry camping, and consumptive uses associated with sport hunting and fishing. This section of the report discusses the current state of such activities within the ACFN ESA.

#### **4.3.2.1 Consumptive Uses**

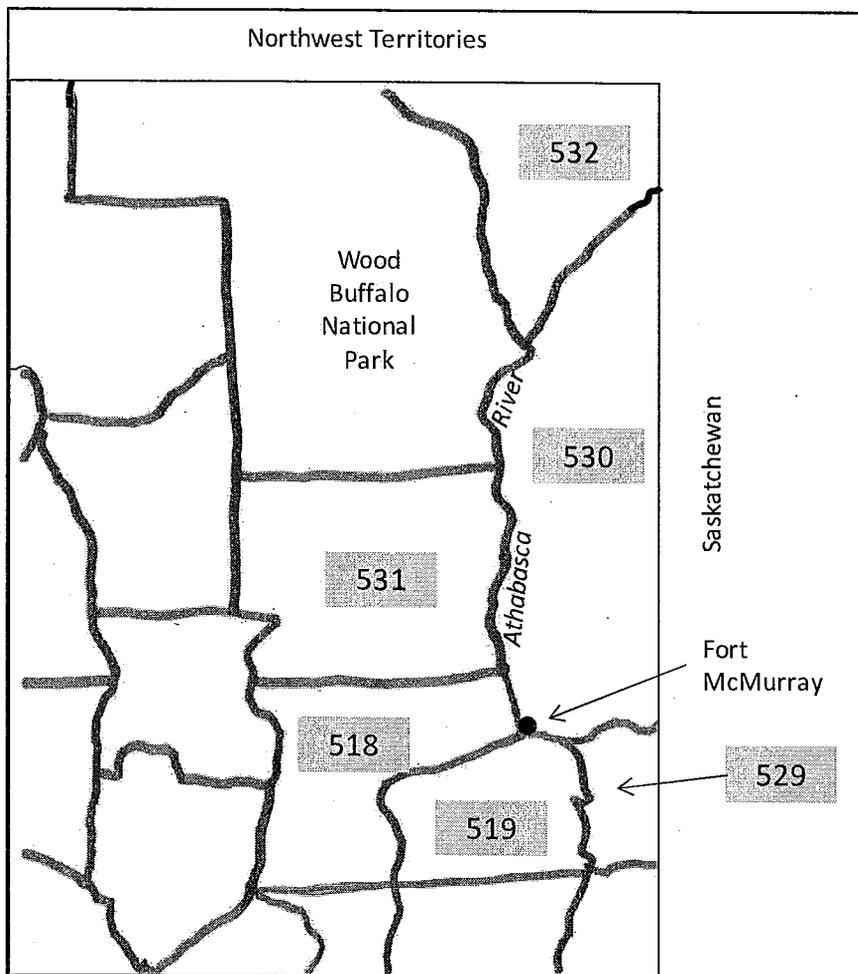
Both Alberta residents and non-residents (other Canadians and non-Canadians) engage in hunting wildlife and fish harvesting in the ACFN ESA. Hunted species include: moose, white-tailed deer, mule deer, black bear, grouse, ptarmigan, and waterfowl. There are six Wildlife Management Units that cover all or a portion of the ACFN ESA (518, 519, 529, 530, 531 and 532) as depicted in Figure 4-34. The Alberta 2011 Guide to Hunting Regulations indicates the following species are permitted to be hunted by sport hunters with the appropriate license, during the following seasons:

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<sup>177</sup> Canada Flight Supplement. Effective 25 August 2011 to October 2011.

<sup>178</sup> Non-consumptive uses means activities which do not result in the harvesting or killing of animals, fish and plants.

FIGURE 4-34: Wildlife Management Units



Species	Type	Season	Wildlife Management Unit					
			518	519	529	530	531	532
Moose	Antlered Archery Only	Aug 25-Aug 31	•	•	•	•	•	•
	Antlered General	Sep 1-Oct 31 Nov 1-Nov 30 <sup>179</sup>	•	•	•	•		
		Sep 1-Nov 30					•	•
Mule Deer	Antlered	Aug 25-Aug 31	•	•	•	•	•	•
White-Tailed Deer	Antlered & Antlerless Archery Only	Aug 25-Aug 31	•	•	•	•	•	•
	Antlered & Antlerless General	Sep 1-Nov 30	•	•	•	•	•	•
Black Bear	Fall 2011 Archery Only	Aug 25-Aug 31	•	•	•	•	•	•
	Fall 2011 General	Sep 1-Nov 30	•	•	•	•	•	•
	Spring 2012 General	Apr 1-Jun 15	•	•	•	•	•	•
Snow or Ross's Geese Canada Geese Ducks, Coots & Snipe		Sep 1-Dec 16	•	•	•	•	•	•
Male Pheasant, Ruffed & Spruce Grouse Grey Partridge		Sep 1-Nov 30	•	•	•	•	•	•
Sharp-tailed Grouse		Oct 1-Oct 31	•	•	•	•	•	•
Ptarmigan		Sep 1-Jan 15	•	•	•	•	•	•

It is noted that bison can be hunted in any of the Wildlife Management Units listed above without a license. Caribou licenses have not been issued by the Alberta government since the mid 1970's.<sup>180</sup>

The number of licensed outfitter-guide operations in each of the six Wildlife Management Units depicted in Figure 4-35 for the period 2000-2010 are presented in Table 4-2.<sup>181</sup> Each of the outfitter-guide operators receive annual allocations for the harvest of moose, white-tailed deer and black bear, which may be used by resident or non-resident hunters utilizing their services. It

<sup>179</sup> Split season. License issued for each season.

<sup>180</sup> Information provided by Access and Privacy Advisor, Alberta Sustainable Resource Development, August 16, 2011 in response to a request by ACFN under the *Freedom of Information and Protection Act*.

<sup>181</sup> Data provided by Access and Privacy Advisor, Alberta Sustainable Resource Development, August 16, 2011 in response to a request by ACFN under the *Freedom of Information and Protection Act*.

appears that the numbers of operators in total, and within Wildlife Management Units has remained relatively stable over the past decade.

TABLE 4-2:  
Number of Licensed Outfitter-Guides by Wildlife Management Unit

Year	TOTAL	Wildlife Management Unit					
		518	519	529	530	531	532
2000	56	12	10	6	16	11	1
2001	57	12	9	5	19	11	1
2002	63	10	11	5	19	15	3
2003	60	9	11	5	21	13	1
2004	62	9	11	5	22	13	2
2005	65	10	11	5	22	15	2
2006	65	10	11	6	21	15	2
2007	63	9	11	4	21	16	2
2008	61	9	11	4	20	15	2
2009	58	8	11	4	19	14	2
2010	59	9	11	4	18	15	2

The total number of moose, white-tailed deer and black bear harvested by resident and non-resident sport hunters in the six Wildlife Management Units during the period from 1985 to 2010 is presented in Table 4-3.<sup>182</sup> These data are estimated by the Alberta government based upon annual Game Harvest Surveys, resident hunter game tag returns, and outfitter-guide reports. These data suggest that on average, between 1985 and 2010, sport hunters annually harvested:

- 272 moose (average of 263 by resident sport hunters and 9 by sport hunters using the services of an outfitter-guide);
- 149 white-tailed deer (average of 136 by resident sport hunters and 13 by sport hunters using the services of an outfitter-guide); and
- 280 black bear (average of 37 by resident sport hunters and 243 by sport hunters using the services of an outfitter-guide).

<sup>182</sup> Information provided by Access and Privacy Advisor, Alberta Sustainable Resource Development, August 16, 2011 in response to a request by ACFN under the *Freedom of Information and Protection Act*.

**TABLE 4-3: Total Sport Hunter Harvests from  
Wildlife Management Units 518, 519, 529, 530, 531, and 532**

Year	Moose			White-tailed Deer			Black Bear		
	Resident Harvest	Outfitter-Guide Harvest	Total Harvest	Resident Harvest	Outfitter-Guide Harvest	Total Harvest	Resident Harvest	Outfitter-Guide Harvest	Total Harvest
1985	283	nd	283	163	nd	163	nd	nd	nd
1986	271	nd	271	216	nd	216	11	nd	11
1987	198	nd	198	144	nd	144	38	nd	38
1988	379	nd	379	212	nd	212	57	nd	57
1989	59	nd	59	30	nd	30	11	nd	11
1990	402	nd	402	132	nd	132	34	nd	34
1991	366	nd	366	331	nd	331	48	nd	48
1992	327	nd	327	156	nd	156	47	nd	47
1993	221	nd	221	132	nd	132	33	nd	33
1994	213	nd	213	63	nd	63	18	nd	18
1995	259	nd	259	105	nd	105	28	nd	28
1996	230	15	245	144	2	146	58	260	nd
1997	298	7	305	116	0	116	24	273	nd
1998	317	18	335	106	2	108	30	221	nd
1999	276	13	289	69	6	75	19	nd	nd
2000	345	16	361	69	18	87	33	nd	33
2001	331	nd	331	64	12	76	33	39	72
2002	315	9	324	162	26	188	34	245	279
2003	371	3	374	125	18	143	44	275	319
2004	365	1	366	59	16	75	17	275	292
2005	169	10	179	191	19	210	84	395	479
2006	174	nd	174	81	12	93	29	nd	29
2007	207	nd	207	21	nd	21	25	nd	25
2008	139	nd	139	118	nd	118	nd	nd	nd
2009	150	0	150	241	15	256	51	251	302
2010	173	2	175	284	21	305	76	196	272

1985-2010									
Average	263	9		136	13		37	243	
Median	274	9		129	15		33	256	
1985-1999									
Average	273	13		141	3		33	251	
Median	276	14		132	2		32	260	
2000-2010									
Average	249	6		129	17		43	239	
Median	207	3		118	18		34	251	

nd = no data.

Table 4-3 also provides average and mean harvest calculations for the period 1985-1999 and 2000-2010, and these data suggest that there has been a decline in moose and white-tailed deer harvests in the latter period. Although there has been a general decline in sport hunting province wide in the past several decades, it is important to note that there may be less 'reporting' of Aboriginal harvests within the provincial datum in more recent times. As a consequence of judicial decisions, such as the Supreme Court Decisions in *R. v. Sparrow* [1990] and *R. v. Powley* [2003], many provinces in Canada, including Alberta, have discontinued requiring First Nation, and in some cases Metis harvesters, from provincial game licenses and harvest reporting.

Table 4-4 provides a perspective on the numbers of sport hunters engaged in hunting and the number of days spent engaged in hunting during the 1990's (data for the period 2000-2010 were not available to the writer).<sup>183</sup> The GoA statistics presented in Table 4-4 do not include the additional hunters and hunter days associated with:

- sport hunters utilizing the services of a licensed outfitter guide operation;
- sport hunters engaged in upland bird, waterfowl, bison and small mammal hunting; or
- First Nation harvesters and other Aboriginal harvesters.

The data also do not include the number of fishers or days associated with fishing by sport fishers, First Nation and/or other Aboriginal harvesters. It is important to realize that moose, deer and black bear hunting activity by sport hunters, with the exception of spring black bear hunting, is concentrated in the period between the third week of August and the end of November, or about a 13 week period. For example, this means that in the six Wildlife Management Units, there may have been at least 176 sport hunters actively involved in moose, deer and/or black bear hunting in any given week (2,292/13 weeks).

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<sup>183</sup> Information provided by Access and Privacy Advisor, Alberta Sustainable Resource Development, August 16, 2011 in response to a request by ACFN under the *Freedom of Information and Protection Act*.

TABLE 4-4: Average Annual Number of Sport Hunters and Average Annual Days Engaged in Sport Hunting for the Period 1990-1999

Wildlife Management Units	ALL		MOOSE		WHITE-TAILED DEER		BLACK BEAR	
	# Hunters	# Hunter Days	# Hunters	# Hunter Days	# Hunters	# Hunter Days	# Hunters	# Hunter Days
518+519+ 529+530+ 531+532	2,292	16,497	1,207	8,647	963	6,813	122	1,037
530+531+ 532	509	3,366	332	2,143	119	854	58	369

Note: Numbers in table are the sum of averages for each Wildlife Management Unit due to data not being available for all years within each Unit.

The "All" columns assume that there is no overlap in species hunting activity.

#### 4.3.2.2 Non-Consumptive Outdoor Recreational Use

Non-consumptive outdoor recreational use refers to activities including snowmobile, all-terrain vehicle, hiking, cycling use of formal and informal trails, boating on waterways, wildlife viewing, camping, etc. A number of studies and reports regarding the status of and future demands for both indoor and outdoor non-consumptive recreational use have been conducted by CEMA<sup>184</sup> and oil sands-related project applications.<sup>185</sup> These reports generally surmise that non-consumptive recreation use in the ACFN ESA is currently focused within approximately a fifty-mile radius of Fort McMurray, and that the increasing population in the area will lead to shortages in camping and recreational trail enjoyment and opportunities. There is a general trend towards recreational use in a northerly direction due to lack of access associated with oil sands development, decreased aesthetics associated with oil sands development and increased density of recreationists in near urban locations.

WorleyParsons (2008) reported that ATV ownership in the RMWB had increased at a rate of 7.5% yearly and was projected to continue to grow at a rate slightly lower than actual population growth the next five years. Similarly, snowmobiling had increased at a rate of 7% in the

<sup>184</sup> See Greystone and Westwind Resources Group Ltd. 2003. Regional Municipality of Wood Buffalo Recreational Demand Assessment. Working Group: Sustainable Ecosystems Working Group, CEMA; AXYS Environmental Consulting Ltd. and FMA Heritage Resources Consultants Inc. 2004. Access Management Alternatives on Public Lands. Working Group: Sustainable Ecosystems Working Group, CEMA.

<sup>185</sup> See Golder Associates Ltd. 2001. Athabasca Oil Sands Regional Resource Use Baseline. Submitted to: Petro-Canada Oil and Gas, Rio Alto Exploration Ltd, Shell Canada Limited and Suncor Energy Inc.; Golder Associates Ltd. 2005. Resource Use Environmental Setting Report for the Suncor Voyageur Project, prepared for Suncor Energy Inc.

previous five years. The authors reported that the majority of non-consumptive outdoor recreational activity was occurring within a radius of approximately 50 km of Fort McMurray (inside the ACFN Fort McMurray Proximate Zone), but also that the Six Lakes area and Richardson backcountry (part of ACFN *dzÔ tuwßze nene* and *k'es hochela nene* Homeland areas) area were the most predominantly used areas outside the major urban area.<sup>186</sup>

### 4.3.3 Public Land Designations and Plans

The majority of lands within the ACFN ESA are provincial crown lands. Thus with the exception of First Nation Reserves and Wood Buffalo park (federal lands), private titled land, and municipal lands, the GoA has planning jurisdiction throughout most of the ACFN ESA. Over the course of the past decade, the GoA has engaged in a number of land use planning processes, as well as issued numerous policy directives.<sup>187</sup> This section of the report discusses the most recent land use plan relevant to the ESA, the Lower Athabasca Regional Integrated Plan (LARP) which was approved in August, 2012.

The GoA Land Use Framework (2008) and *Alberta Land Stewardship Act* 2009, provided the impetus and legal basis, respectively, for creating the LARP. The Land-Use Framework set out the following seven key strategies to improve land use decision-making in Alberta;<sup>188</sup>

1. Develop seven regional plans based on seven new land-use regions.
2. Create a Land Use Secretariat and establish a Regional Advisory Council (RAC) for each region.
3. Cumulative effects management will be used at the regional level to manage the impacts of development on land, water and air.
4. Develop a strategy for conservation and stewardship on private and public lands.
5. Promote efficient use of land to reduce the footprint of human activities on Alberta's landscape.
6. Establish an information, monitoring and knowledge system to contribute to continuous improvement of land-use planning and decision-making.
7. Inclusion of Aboriginal peoples in land-use planning.

The regional plans are to be designed to “integrate and achieve – not hinder – the Government of Alberta’s environmental, economic and social objectives over the long-term.” Each regional plan is intended to “articulate desired outcomes for a region, which should reflect and integrate

<sup>186</sup> WorleyParsons. 2008. Spatial Representation of Recreational Use in the Regional Municipality of Wood Buffalo. Cumulative Environmental Management Association. July 28, 2008.

<sup>187</sup> For example: Government of Alberta, 2002, Fort McMurray-Athabasca Oil Sands Subregional Integrated Resource Plan. 2002, Approved by Cabinet on May 7, 1996, Amended June, 2002; Government of Alberta Oil Mineable Oil Sands Strategy, October 2005; Government of Alberta, Provincial Energy Strategy (no date); Oil Sands Consultations - Multistakeholder Committee, 2007, Final Report; Government of Alberta Land-Use Framework, 2008; Government of Alberta, Treasury Board, no date (circa 2009), Responsible Actions --A Plan for Alberta's Oil Sands; *Alberta Land Stewardship Act* 2009.

<sup>188</sup> Government of Alberta. 2009. Terms of Reference for Developing the Lower Athabasca Regional Plan. Pg. 1.

provincial policies and objectives that have been set by Cabinet.” Each plan will “demonstrate how major provincial strategies will align with each other at the regional level. Regional plans will also set thresholds to manage the cumulative effects of development at the regional level. This recognizes that a region’s airsheds, watersheds and landscapes are not limitless; this will help guide future development in the region.”<sup>189</sup>

Work on the LARP started in late 2009. A draft plan was released on April 5, 2011 and a second draft on August 29, 2011. The Final approved LARP has a 50-year horizon, and includes strategic directions for the first decade. LARP is to apply to an area referred to as the Lower Athabasca Region, an area that includes all of the RMWB, as well as portions of Lac la Biche and Bonnyville Counties. All of ACFN’s Reserves, Homelands, Proximate Zones, and Critical Waterway Zones are situated within the LARP area.

The stated purposes of LARP are (GoA, LARP, 2012:2):

- Establishes a long-term vision for the region;
- Aligns provincial policies at the regional level to balance Alberta’s economic, environmental and social goals;
- Reflects ongoing commitment to engage Albertans, including aboriginal peoples, in land-use planning;
- Uses a cumulative effects management approach to balance economic development opportunities and social and environmental considerations;
- Sets desired economic, environmental and social outcomes and objectives for the region;
- Describes the strategies, actions, approaches and tools required to achieve the desired outcomes and objectives;
- Establishes monitoring, evaluation and reporting commitments to assess progress; and
- Provides guidance to provincial and local decision-makers regarding land-use management for the region.

The balance of this section discusses aspects of the LARP, in the opinion of the writer, that have the potential to contribute to encroachment within the ACFN ESA and potentially directly or indirectly impact ACFN’s Rights, Values and Knowledge. This discussion is based upon reviewing the LARP, as well as a number of ACFN documents submitted as guidance to the LARP planning process or as critiques of the draft LARP. It is not the intention of the writer to reiterate ACFN’s comments and critique of the LARP, as these documents speak for themselves.

The overarching paradigm of the LARP is contained in its vision statement which states;

“The Lower Athabasca Region is a vibrant and dynamic region of Alberta. People, industry and government partner to support development of the region and its oil sands reserves. Economic opportunities abound in forestry, minerals, agriculture, infrastructure development, the service industry and tourism. The region’s air, water, land and biodiversity support healthy ecosystems and world

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<sup>189</sup> Government of Alberta. 2009. Terms of Reference for Developing the Lower Athabasca Regional Plan. Pg. 3.

class conservation areas. Growing communities are supported by infrastructure and people can enjoy a wide array of recreation and cultural opportunities.” (GoA, LARP, 2012:22).

One of the main strategies of LARP (GoA, LARP, 2012:41) reads;

“Growth of all energy sub-sectors is crucial for the regional and provincial economy. While oil sands is the dominant energy industry in the region, continued hydroelectrical and other electrical, natural gas development and mineral resource exploration, development and extraction will support regional, provincial and international sources of supply. Maintaining a positive investment climate is critical to the success of these industries and alignment of policy direction across regions will facilitate optimum access to these and other non-renewable resources.”

Neither of these overarching introductory statements recognizes ACFN’s, or any other First Nations or Aboriginal peoples Treaty and/or Aboriginal rights within the LARP planning area.

A main component of the LARP is the designation of new conservation and recreation and tourism areas. According to the GoA (LARP, 2012:32);

“Existing recreation and tourism opportunities in the region’s parks are not meeting demands for outdoor recreation — particularly serviced and un-serviced camping, motorized recreation and an interconnected trail system for day use and long-distance trails. Other opportunities on public lands are random, which lead to environmental impacts, land-use conflicts and public safety issues.”

In order to optimize recreation and tourism potential for residents and visitors, the LARP has approved the establishment of nine new provincial recreation areas and five new public land areas for recreation and tourism. These would be in addition to 15 existing Wildland Provincial Parks and two Ecological Reserves in the LARP area.<sup>190</sup>

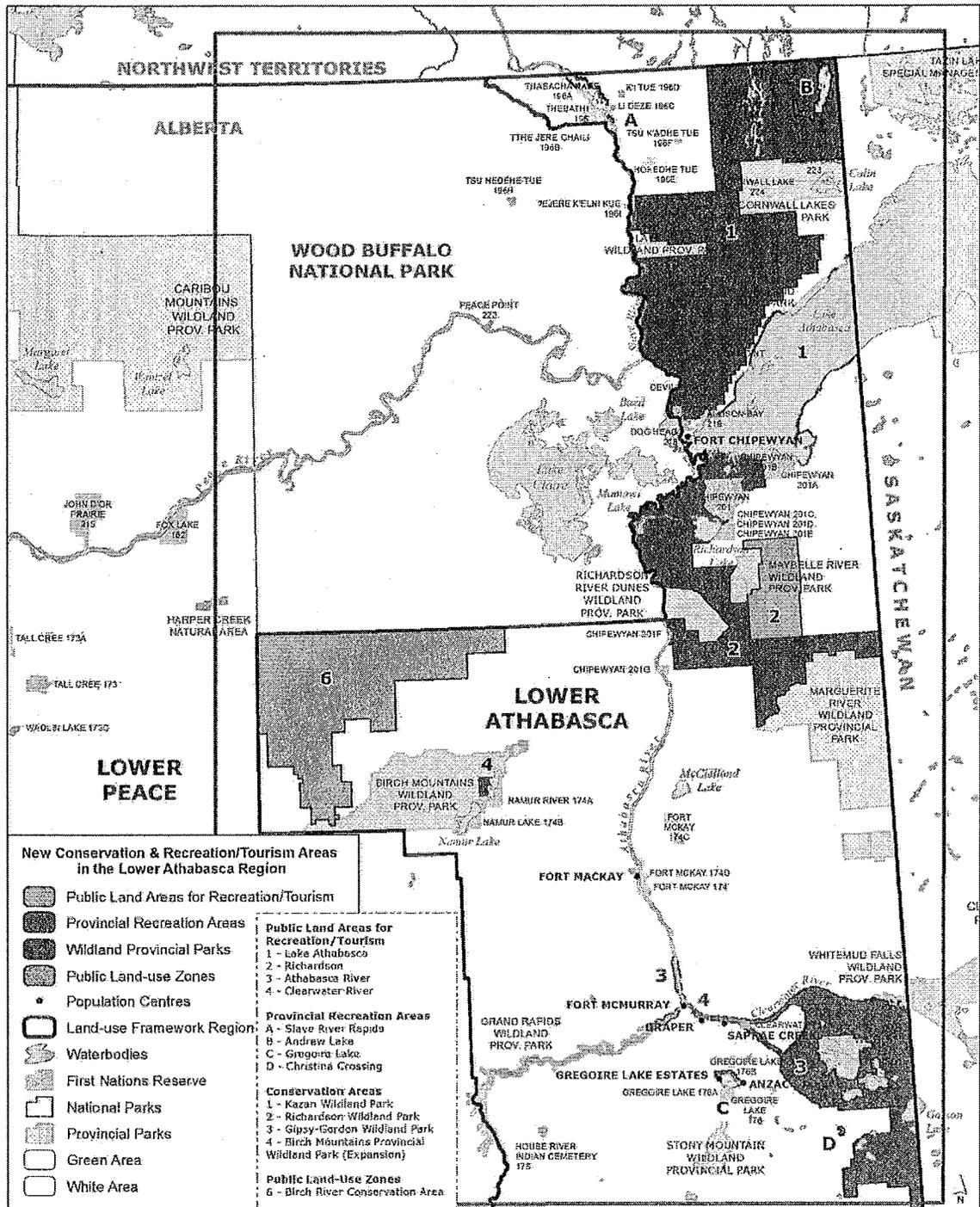
#### Existing Conservation and Recreation/Tourism Designations:

The eight existing Wildland Provincial Parks in the ACFN ESA include: Birch Mountains; Colin-Cornall Lakes; Fidler-Greywillow; Grand Rapids; Gypsy Lake; La Butte Creek; Marguerite River; Maybelle River; Richardson Dunes, and Whitemud Falls (shown on Figure 4-35). There is currently one Ecological Reserve in the ESA, Athabasca Dunes.

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<sup>190</sup> Government of Alberta. 2012. Lower Athabasca Regional Plan 2012 – 2022. Schedule F, Pg. 83.

FIGURE 4-35: Existing and Pending Conservation and Recreation-Tourism Areas in the ACFN ESA Portion of the Lower Athabasca Region



The GoA describes Wildland Provincial Parks as large, undeveloped natural landscapes that retain their primeval character, some contain trails and primitive backcountry campsites, provide significant opportunities for eco-tourism and adventure activities such as backpacking, backcountry camping, wildlife viewing, mountain climbing and trail riding, some contain designated trails for off-highway vehicle riding and snowmobiling, and hunting allowed in some parks.<sup>191</sup>

According to LARP (Schedule F) new development is not permitted in existing Wildland Provincial Parks. However, all existing oil sands, metallic, industrial or coal exploration or exploitation, commercial forestry, grazing leases tenures and/or activity, and multi-use corridors (e.g. highways, pipelines, rail, etc.) within existing Wildland Provincial Parks will be honoured. As well, applications for new surface dispositions (e.g. roads, pipelines, facility) required to access an existing subsurface commitment will be honoured, subject to normal approval processes. Hunting, fishing, trapping and motorized recreation on designated routes are permitted uses in these Wildland Provincial Parks. In the case of the Athabasca Dunes Ecological Reserve, the same rules apply with the exception that recreational and sport hunting, fishing, trapping and motorized recreation are not permitted.

#### New Conservation Areas in the ESA – Wildland Provincial Parks:

The LARP defines ‘conservation areas’ as; “A clearly defined geographical space dedicated and managed to achieve the long-term conservation of biological diversity and ecosystem process.” (GoA, LARP, 2012:30). Under the category ‘conservation areas’, the following new areas within the ESA are proposed in the LARP:

Four new ‘wildland provincial parks’;

- Kazan Wildland Park (#1) – located on the north side of Lake Athabasca, east of Wood Buffalo National Park. This park is situated within ACFN’s Fort Chipewyan Proximate Zone;
- Richardson Wildland Park (#2) – extending north and west of the existing Marguerite River Wildland Park, north along the eastern boundary of Wood Buffalo National Park, to the southwestern end of Lake Athabasca. This park is situated within ACFN’s *dzÔ tuwßze nene* and *k'es hochela nene* Homelands;
- Gipsy-Gordon Wildland Park (#3) – located east of Fort McMurray surrounding Gordon Lake and including portions of the Clearwater River. This park is situated within ACFN’s Fort McMurray Proximate Zone; and
- Birch Mountains Provincial Wildland Park Expansion (#4) - adjacent to the eastern boundary of the existing park. This park is situated within ACFN’s *k'es hochela nene* Homeland.

One ‘public land use zone’

- Birch River Conservation Area (#6) – located west of Birch Mountains Wildland Provincial Park and north to the southern boundary of Wood Buffalo National Park. This designated area includes the northwestern part of ACFN’s *k'es hochela nene* Homeland.

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<sup>191</sup> <http://www.albertaparks.ca/aboutparks.aspx>

In the five areas identified above, the LARP indicates the following permitted uses:

- Existing petroleum or natural gas tenures will be honoured, including surface and subsurface disposition renewals;
- Applications for new surface dispositions (e.g. well, road, pipeline or facility) required to access existing tenures, are permitted subject to approval processes;
- Existing surface materials leases (sand, gravel, clay etc.) will be honoured;
- Grazing use is permitted subject to a grazing suitability assessment;
- Motorized recreation on designated routes only;
- Hunting, fishing and trapping (including Aboriginal peoples), including commercial guiding and outfitting; and
- Dedicated multi-use corridors, as identified by government, for co-location of linear infrastructure that supports critical economic linkages to markets (e.g. highways, electric transmission, high speed rail, pipelines, telecommunications, water management, and recreation trails).
- Excepting the Birch River Conservation Area (#6), forest activity will be restricted to wildfire, insect and disease management. Ecosystem forestry practices will be permitted in this new designated area.

#### New Public Land Areas for Recreation and Tourism:

According to the LARP, new public land areas for recreation and tourism are intended “to provide additional recreation opportunities and attract tourism investment” and “address the growing demand for recreational opportunities and provide an attractive land base for tourism investment.” (GoA, LARP, 2012:32,60). Under the category ‘Recreation/Tourism Areas’ three new ‘public land areas for recreation and tourism’ are proposed (see Figure 4-36):

Lake Athabasca – situated on the north and south shorelines of Lake Athabasca. The Lake Athabasca ‘public land area’ on the north shore of the lake is situated within ACFN’s Fort Chipewyan Proximate Zone and the portion on the south shore is situated within ACFN’s *t’bnu nene* Homeland.

Richardson – east of the existing Maybelle River Wildland Provincial Park and just south of ACFN’s Reserve 201E. This ‘public land area’ is located within ACFN’s *k’es hochela nene* Homeland.

Athabasca River - along both shores of the Athabasca River from Fort McMurray east to the existing Grand Rapids Wildland Provincial Park and north approximately one-third of the distance to Fort McKay. This ‘public land use area’ is situated within ACFN’s Fort McMurray Proximate Zone.

Unlike the above noted ‘conservation areas’, the LARP (2012:33, 80) provides that new industrial development activities are permitted in these three areas designated as ‘public land areas’, while impacts on identified recreation and tourism features will be minimized. In

particular, the LARP (2012:33) states; “If approvals are granted in the future for a mining development in the new Richardson PLART, the boundaries for this area will be re-examined, if deemed necessary and acceptable as a result of the regulatory review for the mining development.”

The designation of new conservation and public purpose areas within the ACFN ESA has the potential to create conditions for additional and incremental encroachment on ACFN’s Rights, Values and Knowledge in a number of ways. As discussed in the previous section (4.3.2), ACFN is already experiencing encroachment by an ever increasing number of sport and commercial hunters and fishers, as well as increasing numbers of recreational snowmobile, all-terrain vehicle and other backcountry transportation users in Homeland areas. The new Wildland Provincial Parks created by the LARP may encourage further consumptive and non-consumptive sport harvesting, recreational activity and commercial tourism development. Although access to these new Wildland Provincial Parks is currently quite difficult, if the proposed road and trail networks discussed in Section 4.2.5 come to fruition, access will be greatly improved.

As noted above, the Lake Athabasca and Richardson Recreation/Tourism areas are situated in the heartland of ACFN’s *t’βnu nene* and *dz’Ô tuwβze nene* Homelands. These are areas identified by ACFN (2010) as being “of critical importance to past, present, and future practice of ACFN use and rights....where ACFN history, culture, and livelihood are most firmly rooted”; as places where “there is not only a cultural connection, but also a familial and spiritual connection that is integral to one’s identity as ACFN and Dené sūline.” ACFN members consider the homelands sacred as they are necessary to the rights, identity, and ultimately, the cultural survival of ACFN. ACFN members, above all else, wish to protect these lands as sanctuaries for their current use and that of future generations.” Conversely, the GoA’s LARP (2012:33,60) goal for these areas is “to provide additional recreation opportunities and attract tourism investment” and “address the growing demand for recreational opportunities and provide an attractive land base for tourism investment.” There is a high potential that the LARP land use designations will attract tourism-based investment and/or government induced infrastructure (e.g. trails, campgrounds) which could proactively encourage incremental and new sport and recreational use in ACFN’s Homeland areas. Impacts of this form of encroachment are discussed in Section 5.3.1.

Lastly, as discussed above, the proposed new parks and public use areas within ACFN’s Homelands will not preclude certain types of industrial development, and therefore may not provide for the protection of lands, waters and resources ACFN relies upon and likely will need on an increasing basis in the future. To illustrate, almost all of the area identified for the Richardson Wildland Provincial Park has existing metallic and industrial mineral tenures in the form of permits. The entire proposed Richardson Public Land Area for Recreation/Tourism public use area has existing metallic and industrial minerals permits and one lease (see Section 4.2.2.3 and Figure 4-19). As well, a number of permit and lease applications are pending. The extent of existing metallic and industrial mineral tenures within these new areas

is illustrated on Figure 4\_36.<sup>192</sup> Thus, despite the designations of parks or public use areas, these areas, which form part of the ACFN's Homelands, will continue to be available to existing industrial tenure holders. While holding a permit or lease to explore for metallic or other minerals may not ultimately translate into one or more full-scale developments, as discussed in Section 4.2.2, a number of tenure holders are engaged in uranium exploration at this time. The fact that the GoA LARP (2012:33) indicates "If approvals are granted in the future for a mining development in the new Richardson PLART [public land area for recreation/tourism], the boundaries for this area will be re-examined, if deemed necessary and acceptable as a result of the regulatory review for the mining development" suggests that this may not be an altogether abstract possibility.

#### 4.3.4 Water Resources

It is the view of ACFN that their current and future exercise of rights depends to a great extent on the existence of adequate flows, water quantity and quality of the Athabasca River, which they consider the lifeblood of their Traditional Lands (ACFN, 2010:1).<sup>193</sup> The lower Athabasca River watershed, including Lake Athabasca and the Peace-Athabasca Delta has long been of critical importance to ACFN's way of life.

ACFN's Rights, Values and Knowledge are dependent upon adequate water quantity and flow in the lower Athabasca River watershed for the following reasons;

- The Athabasca River is the preferred and economical means of access between Reserves and Fort Chipewyan and to Fort McKay and Fort McMurray for purposes of obtaining goods and services and for maintaining social connections with ACFN Members and others living in these locations, during the open water and ice cover seasons;
- The Athabasca River and shoreline areas have been a primary corridor for engaging in harvesting activities;
- The Athabasca River is the main 'highway' for accessing smaller tributaries and inland places, including harvesting, cabin and campsites, and other culturally important sites or places;

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<sup>192</sup> [http://gis.energy.gov.ab.ca/redirect\\_imf\\_metallic/imf.jsp?site=Metallic](http://gis.energy.gov.ab.ca/redirect_imf_metallic/imf.jsp?site=Metallic) Author has annotated sourced map by adding numbers and names to existing protected areas and the boundaries and names of the Richardson Public Land Area and Richardson Wildland Provincial Park areas recently approved in the final LARP, for illustration purposes.

<sup>193</sup> Athabasca Chipewyan First Nation Industry Relations Corporation and Mikisew Cree First Nation Industry Relations Corporation. 2010. The Relationship Between the Lower Athabasca River and the Traditional Uses and Rights of the Athabasca Chipewyan First Nation and Mikisew Cree First Nation. Submitted to B. Mackowecki, Department of Fisheries and Oceans. August 20, 2010. Pg. iii.



- Periodic flooding of the Peace-Athabasca Delta area is necessary to vitalize this albeit hydro-electric development-impacted unique ecosystem;
- The watershed sustains wildlife, fish and plant resources which support ACFN's Rights, Values and Knowledge.

Water quality in the ESA is important to ACFN for a number of reasons, including but not limited to:

- Athabasca River is the source for potable water (treated) for ACFN Members residing in Fort McKay and Fort McMurray;
- Lake Athabasca is the source for potable water (treated) for ACFN Members residing in Fort Chipewyan;
- Athabasca River, its tributaries, and Lake Athabasca had been the dominant water source (non-treated) for ACFN Members residing on their Reserves for purposes of drinking water, garden irrigation, bathing, washing clothes, and processing harvested goods at permanent residences, cabins, and camp sites. Currently, when ACFN members spend time on the Reserves they either transport water from their residence or go to Grayling and Maybelle Creek for water supply;
- Athabasca River, its tributaries, and Lake Athabasca have been the dominant potable water source for ACFN Members while engaged traditional activities. In many cases, ACFN members now bring potable water with them rather than relying on these waterways;
- Athabasca River, its tributaries, and Lake Athabasca have been the dominant water bodies supporting fish populations harvested by ACFN for food purposes; and
- Athabasca River, its tributaries, and Lake Athabasca are utilized as drinking water sources by wildlife populations harvested by ACFN members for food purposes.

#### 4.3.4.1 Quantity

The GoA, under the auspices of the Water Act and associated regulations, allocates surface water from the Athabasca River for municipal, commercial, agriculture and industrial uses. Since 2000, water allocations from the Athabasca River basin have nearly doubled, mostly due to the development of the oil sands. The largest sector use of water in the Athabasca River basin is for oil and gas, representing about 74.5 per cent of total allocations in 2010. The next largest uses are for commercial (16 per cent), municipal water supply (5 per cent) and other use-water management (2.5 per cent).<sup>194</sup>

In 2003, an outcome of the Alberta Energy and Utilities Board hearings on the Canadian Natural Resources Limited (CNRL) and Shell projects, was a directive to the Cumulative Environmental Management Association (CEMA) to prepare a recommendation for year-round instream flow

<sup>194</sup> <http://environment.alberta.ca/01750.html>

needs (IFN) for the Athabasca River by December of 2005.<sup>195</sup> The Joint Panel Report for CNRL's Horizon project specifically directed "DFO [Department of Fisheries and Oceans], in cooperation with Alberta Environment, establish an IFN for the Athabasca River in the event that CEMA is unable to do so by the end of 2005."<sup>196</sup> For various reasons, CEMA did not meet the late 2005 deadline and thus DFO and Alberta Environment prepared draft IFN's during 2006.<sup>197</sup>

DFO and Alberta Environment's water management scheme, referred to as the Phase 1 Water Management Framework, was released in 2007 to guide regulatory decision-making in upcoming applications. Specifically the document stated; "Phase 1 provides protection during the Phase 2 review period given current water demands. The Framework incorporates the large body of work that the CEMA group facilitated and it will be used for managing water withdrawals in the immediate future. It fulfills the requirement of the joint Federal/Provincial panel, considers current demand and available water management options, and balances these with the current scientific work on IFN." (Alberta Environment and Fisheries and Oceans Canada, 2007:6).<sup>198</sup>

The Phase 2 Framework was submitted by the CEMA to provincial and federal regulators in February of 2010 and was based upon the work of a multi-stakeholder committee. CEMA recommended that the Phase 2 framework come into effect on January 1, 2011; however this framework has not been finalized or adopted as of the date of this report.

ACFN's reviews of the Phase 2 Water Management Framework identified a number of concerns. Concerns relating specifically to direct impacts on traditional use of lands and resources included a failure to consider ACFN's waterway navigation interests in terms of accessing tributaries, the impact of low flow in light of the type and cargo weight of boats utilized by ACFN members, and the link between low flows and concerns about water quality (Candler, 2010). ACFN has expressed in a variety of forums and documents a very high level of concern regarding existing levels of disruption of the quality, quantity and timing of flow of waters in the Athabasca River and delta. Some of the key issues identified by ACFN have included:<sup>199</sup>

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<sup>195</sup> In: University of Alberta Environmental Research and Studies Centre and University of Toronto Munk Centre for International Studies. 2007. Running out of Steam? Oil Sands Development and Water Use in the Athabasca River-Watershed: Science and Market based Solutions. May 2007:5.

<sup>196</sup> EUB/CEAA Joint Review Panel Report. 2004. Horizon Oil Sands Project Joint Review Panel. Canadian Natural Resources Limited application for an oil sands mine, bitumen extraction plant, and bitumen upgrading plant in the Fort McMurray area. Application No. 1273113. <http://www.ercb.ca/docs/Documents/decisions/2004/2004-005.pdf>

<sup>197</sup> Alberta Environment and Fisheries and Oceans Canada. 2007. Alberta Environment – Fisheries and Oceans Canada Water Management Framework: Instream Flow Needs and Water Management System for the Lower Athabasca River. Appendix 3. February 2007.

<sup>198</sup> Alberta Environment and Fisheries and Oceans Canada. 2007. Alberta Environment – Fisheries and Oceans Canada Water Management Framework: Instream Flow Needs and Water Management System for the Lower Athabasca River. February 2007:6.

<sup>199</sup> Candler, C. 2010. Review of the Athabasca Phase II Framework Committee (P2FC) Report, January 2010-Aboriginal knowledge, use interests and rights. Submitted to Mikisew Cree First Nation, Government and Industry Relations (MCFN GIR) and Athabasca Chipewyan First Nation, Industry Relations Corporation, July 30, 2010. The author cautions that "This list should not be considered complete or authoritative, and may be amended, added to, or refined, through additional work."

- loss and degradation of the Athabasca River as a resource essential to the practice of rights under Treaty No. 8.
- declining fish and wildlife habitat and populations, including waterfowl, along the Athabasca River, and particularly in the delta area. Elders and expert river users link this to low water levels on the Athabasca River and its tributaries and the continued drying in the Peace-Athabasca Delta.
- low water levels create barriers to boat travel (e.g., mud flats, sand bars, log jams), particularly into side channels and up smaller rivers near where they join the lower Athabasca River and barriers to accessing Athabasca River tributaries (e.g. Richardson, Firebag, Embarras and others) and Peace-Athabasca Delta tributaries necessary for accessing preferred traditional lands for purposes of harvesting and other traditional activities.
- effects on ecosystem function and delta maintenance, including ice formation and related spring flooding (including removal of log jams) and vegetation changes, including transition from grass and herbaceous plant species to willow shrubs along river edges and into the delta, where these affect traditional use and access to traditional lands.
- contamination of waters and declining water quality, including frequent indications of avoidance of traditional resources (including fish, moose, and medicines) in the Athabasca River watershed due to psychosocial factors associated with proximity to oil sands and related contaminants.
- adverse effects on, or in the vicinity of, cultural sites, cabins, burial sites, and other places, as well as on distributed, quality-specific interests (aesthetics, privacy, sense of place, values attributed to pristine landscapes) that are important to practice of cultural and spiritual values.

Both ACFN and MCFN (Athabasca Chipewyan First Nation Industry Relations Corporation and Mikisew Cree First Nation Industry Relations Corporation. 2010:iii) insist that developing a First Nation “in-stream flow need” is necessary to fully explore the potential impacts of any alternative flow regime scenario proposed in the Framework and to inform the assessment of predicted impacts.<sup>200</sup>

### 3.2.2.2 Quality

A complex system of legislation, regulations, guidelines, policies and strategies govern municipal and industrial releases into Alberta surface waters. Water resources are managed under the provincial *Water Act* which includes provisions to address activities that can affect watercourses, the *Alberta Land Stewardship Act*, and the *Environmental Protection and Enhancement Act*.<sup>201</sup> Surface water quality monitoring in the lower Athabasca River watershed

<sup>200</sup> Athabasca Chipewyan First Nation Industry Relations Corporation and Mikisew Cree First Nation Industry Relations Corporation. 2010. *The Relationship Between the Lower Athabasca River and the Traditional Uses and Rights of the Athabasca Chipewyan First Nation and Mikisew Cree First Nation*. Submitted to B. Mackowecki, Department of Fisheries and Oceans. August 20, 2010. Pg. iii.

<sup>201</sup> See for example: <http://environment.alberta.ca/02645.html>; <http://www.albertawater.com/index.php/water-facts-info/legislation>

is conducted by a multitude of provincial, federal, academic, and other agencies. A comprehensive description of these entities and their mandate and roles can be found in Oilsands Advisory Panel (2010).<sup>202</sup>

Athabasca River and Lake Athabasca water quality and potential effects of oil sands and other development activity on quality has been the subject of much research in the past decade. As noted above, there are a number of provincial and federal water quality monitoring initiatives ongoing and there have been a number of independent reviews of the efficacy of these programs (e.g. 2010 Regional Aquatics Monitoring Program Scientific Review by Integrated Water Management Program, Alberta Innovates-Technology Futures, 2011; Office of the Auditor General of Canada, 2010). Environment Canada summarizes the collective views of the various reviewers as follows; “the current monitoring system did not deliver data of sufficient quantity or quality to detect or quantify the effects of oil sands development. In addition, current oil sands monitoring of air, groundwater and surface water have not been integrated in a source, transport and fate construct.”<sup>203</sup>

There does not appear to be any general consensus within the scientific community regarding whether or not oil sands development has impacted water quality. For example the Royal Society of Canada (2010) has concluded that water quality impacts from oils sands development is not a current threat to aquatic ecosystem viability. On the other hand, Kelly et al. (2010) and Timoney and Lee (2011) conclude that industrial development-related airborne and/or waterborne emissions are linked to elevated concentrations in certain pollutants in water and sediment, respectively.

ACFN has significant concerns about water quality (described in Section 5). The First Nation and its members are concerned about the safety of surface water (treated and untreated) for human consumption, bathing, and washing of cloths and foods. They are also highly concerned about the safety of consuming fish from waterways downstream of oil sands development, as well as municipal and other industrial (primarily forestry-related) waste water releases. Finally, they are also concerned about the safety of consuming waterfowl, aquatic furbearers and other wildlife species that may consume or otherwise spend part of their life history within surface waters and about plant foods and medicines that may be contaminated by dry (e.g. dust) and/or wet (in precipitation) airborne emissions.

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<sup>202</sup> Oilsands Advisory Panel. 2010. A Foundation for the Future: Building an Environmental Monitoring System for the Oils Sands. A Report Submitted to the Minister of Environment (Canada). December, 2010. [http://www.ec.gc.ca/pollution/E9ABC93B-A2F4-4D4B-A06D-BF5E0315C7A8/1359\\_Oilsands\\_Advisory\\_Panel\\_report\\_09.pdf](http://www.ec.gc.ca/pollution/E9ABC93B-A2F4-4D4B-A06D-BF5E0315C7A8/1359_Oilsands_Advisory_Panel_report_09.pdf)

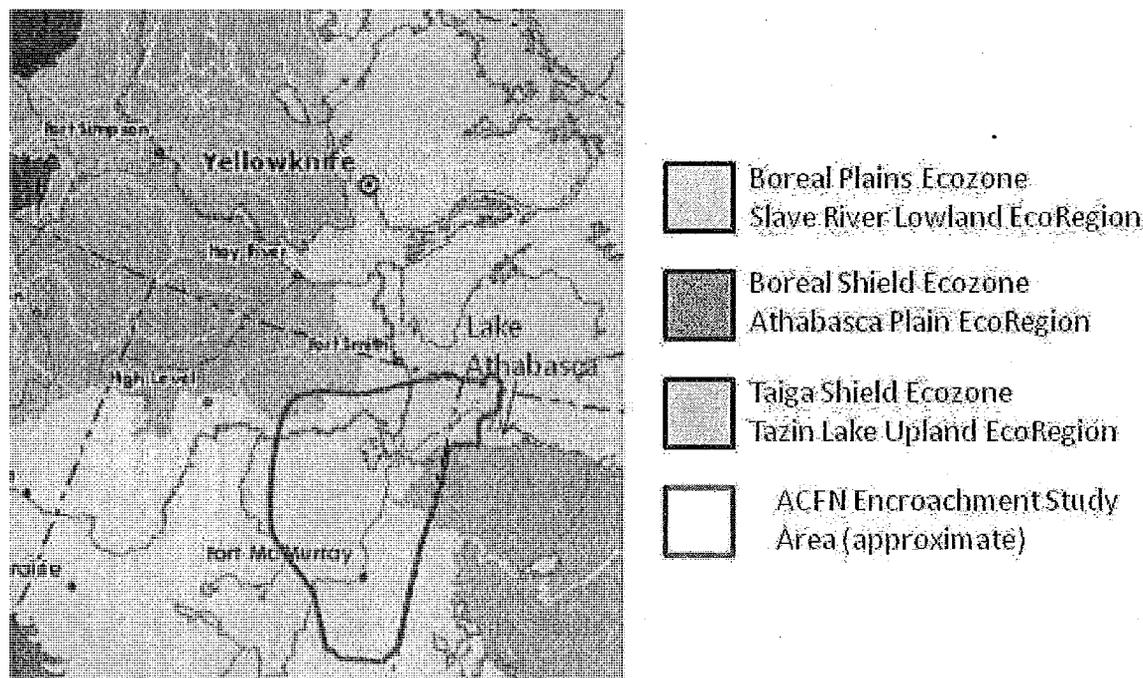
<sup>203</sup> Environment Canada. Lower Athabasca Water Quality Monitoring Program, PHASE 1 Athabasca River Mainstem and Major Tributaries. 22 March 2011. Editors: F. J. Wrona and P. di Cenzo. [http://www.ec.gc.ca/doc/publications/pollution/COM1396/index-eng.htm#RefHeading\\_33\\_1645499143](http://www.ec.gc.ca/doc/publications/pollution/COM1396/index-eng.htm#RefHeading_33_1645499143)

## 4.4 Climate Change

Throughout the past three to four decades, there has been substantial research at a global and national scale with respect to forecasting future climate conditions and understanding current and future climate change impacts on terrestrial and aquatic ecosystems, and direct and indirect impacts on human society. The Intergovernmental Panel on Climate Change (2007:30) reported that our planet is warming at a rate much faster than would be expected because of natural causes. “Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level. The temperature increase is widespread over the globe and is greater at higher northern latitudes. Average Arctic temperatures have increased at almost twice the global average rate in the past 100 years.”<sup>204</sup>

The ESA lies largely within the Boreal Plains Ecozone shown on Figure 4-37. However the area just south of Lake Athabasca and east of the Athabasca River lies within the Boreal Shield Ecozone and the area north of the lake and east of the Slave River falls within the Taiga Shield Ecozone

FIGURE 4-37: Terrestrial Ecozones and Encroachment Study Area<sup>205</sup>



<sup>204</sup> Intergovernmental Panel on Climate Change. 2007. Climate Change 2007: Synthesis Report. Pg. 30.

<sup>205</sup> Natural Resources Canada. Terrestrial Ecozones Map.

<http://atlas.nrcan.gc.ca/site/english/maps/environment/forest/forestcanada/terrestrialecozones>. Figure annotated by showing rough boundaries of the ACFN ESA.

Barrow and Yu (2005:48-51) estimated future temperature and precipitation rates for Fort McMurray based upon a number of climate change scenarios and observed climate data from 1961-1990. Annual mean temperature was forecast to increase from 0.1°C to 1.0°C in the 2020's, to 2.4°C in the 2050's and to 3.4°C by the 2080's. Increased mean temperatures during the winter and spring months, particularly during the period from the 2050's to the 2080's are forecast. Annual precipitation is forecast to increase over baseline conditions by 7% by the 2020's and by 15% by the 2080's.<sup>206</sup>

The University of Alberta's Environmental Research and Studies Centre and the University of Toronto Program on Water Issues at the Munk Centre for International Studies (2007:8) report that the average annual temperature at Fort McMurray increased by 2° C between 1945 and 2005, while at Fort Chipewyan the increase was over 3° C. The authors forecast that the average annual temperature at Fort Chipewyan is projected to increase another 4.8 ° C by the year 2100.

Williamson et.al. (2009:xiv) report; "A significant portion of the western Canadian boreal forest could become exposed to drier climate, similar to that in the present aspen parkland zone. Forest fires are also expected to be more frequent, to be of higher intensity on average, and to burn over larger areas. Also, the fire season will become longer. Insect outbreaks are also expected to be more frequent and more severe. The combined effect of increases in forest fire, drought, and insect disturbances will lead to increased tree mortality, a younger forest, a shift toward pioneer tree species, and a loss of some forest areas."<sup>207</sup> The authors note that climate change impacts on Canada's forests will be most noticeable and pronounced at ecotone locations (areas of transition from one major ecological unit to another).<sup>208</sup> As illustrated in Figure 4-38, three ecozones converge at Lake Athabasca.

Research under the auspices of the Northern Rivers Ecosystem Initiative examined future climatic conditions in the Peace-Athabasca Delta for the period 2070 to 2099. The results suggested that the ice season in the delta would be reduced by three weeks (one week in the autumn, two weeks in the spring), which would in turn extend the open water season and permit greater evaporation, leading to further drying out of the delta.<sup>209</sup>

The Centre for Indigenous Environmental Resources Inc. and the University of British Columbia, (2011:5) indicate that "Climate change impacts are often not given high priority in Aboriginal communities, primarily due to other, competing stressors and problems that cannot be ignored....Many also adhere to the notion that Aboriginal peoples are "naturally" adaptable because their historical experience, especially in the last couple of centuries, has been one of

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<sup>206</sup> Barrow, E. and Yu, G. 2005. Climate Change Scenarios for Alberta, A Report Prepared for the Prairie Adaptation Research Collaborative. Government of Alberta and Praire Adaptation Research Collaborative. Pgs. 48-51.

<sup>207</sup> Williamson, T., Colombo, S. Duinker, P., Gray, P., Hennessey, R., Houle, D., Johnston, M., Odgen, A. and Spittlehouse, D. 2009. Sustainable Forest Management Network. Government of Canada. Change and Canada's Forests, From Impacts to Adaptation. Pg. xiv.

<sup>208</sup> Williamson, T., Colombo, S. Duinker, P., Gray, P., Hennessey, R., Houle, D., Johnston, M., Odgen, A. and Spittlehouse, D. 2009. Sustainable Forest Management Network. Government of Canada. Change and Canada's Forests, From Impacts to Adaptation. Pg. 23.

<sup>209</sup> Environment Canada, Government of Alberta and Government of Northwest Territories. No Date. Northern Rivers Ecosystem Initiative. Synthesis Report. Pg. 59.

constant and profound changes and subsequent adaptations to the social-ecological systems in which they live. Nevertheless, pre-existing vulnerabilities put communities more at risk to climate change in terms of both greater exposure and greater sensitivity. The impacts of climate change in turn are expected to compound and exacerbate existing risks and stressors that are already affecting the land, waters and activities of these communities and their traditional territories. Some compounding effects will be felt in terms of added costs (travel, maintenance, repair, etc.), others will add to existing pressures on resources (development, overharvesting/ population pressure, loss of habitat), still others will elevate the risks of existing hazards (floods, drought, forest fires).<sup>210</sup>

Based upon the writer's review of current and projected climate change scenarios for the ACFN ESA, reviewed literature and first hand professional knowledge, the impacts of climate change on ACFN Rights, Values and Knowledge may be expected to include:

- Decreased temporal availability of ice-travel routes due to earlier ice-melt in the spring and later fall freeze-up. This means that the time-frame in which safe ice is available for travel to access harvesting areas will be decreased. In particular, this may translate into a shorter operational period for the Fort Chipewyan winter road. Conversely, the time-frame for open water travel will increase.
- The forecast of increased precipitation during the ice-free season may increase water levels thereby improving water-based navigation access; however this may be negated by predicted lower flows and levels in the Athabasca and Peace Rivers due to temperature increases in headwater zones;
- Increased habitat losses due projected increases in forest fire occurrence may result in reductions or changes in species types and abundance (e.g. increased moose browse at the expense of caribou habitat);
- Perma frost melting in areas north of Lake Athabasca leading to increased vegetation succession and potentially creating habitat for species not typically habituating this ecozone;
- Increased river and lake temperatures leading to reduction of fish populations, changes in species composition, and/or reduced quality of fish for consumption purposes.

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<sup>210</sup> Centre for Indigenous Environmental Resources Inc. and the University of British Columbia. 2011. Final Report / Climate Change and Adaptive Capacity in Aboriginal Communities South of 60. Pg. 5.  
<http://cier.ca/WorkArea/showcontent.aspx?id=2054>

## 4.5 Chronology and Spatial Pattern of Encroachment Drivers

As outlined in this section and Section 3.0, there have been a multitude of actions and activities within the ACFN ESA that have resulted in changes or disturbances in the overall environment where ACFN members practice and enjoy their Rights, Values and Knowledge. Drivers of encroachment have altered and disturbed the environment, supported or promoted third party use of the lands, waters and resources, and increased competition for resources that support ACFN's Rights, Values and Knowledge. As discussed below, encroachment has occurred in the ESA for a long time and by all accounts will continue for many decades. The geographic extent of encroachment is expansive and the evidence suggests that it will continue in all cardinal directions.

The chronological sequencing of encroachment into the ACFN ESA is generally depicted in Figure 4-38. Encroachment began in earnest in the late 1800's with government regulation of ACFN harvesting and access followed shortly thereafter by the creation of Wood Buffalo National Park in the mid 1920's, and uranium mining in the mid to late 1940's. By the 1950's and 1960's, the federal government residential school system began to be implemented amongst ACFN members. The impact of residential school on First Nation culture, traditional activities and skills and traditional knowledge learning and inter-generation transmission has been widely documented. The 1960's introduced the regulation of the Peace River and the beginnings of the oil sands mining era. By the 1980's and 1990's, population growth, forestry, quarries, and oil sands exploration and development had begun to pre-dominate land use and land use policy in the ESA. The 2000's saw an explosion of oil sands exploration and mining, and attendant population growth and associated infrastructure development. Oil sands projects in existence today will be operating for decades to come and the reclamation phases will last many more. As discussed in the various sections in chapter four of this report, there are a significant number of planned and proposed developments, including numerous surface and in-situ oil sands projects, uranium and other metallic mineral exploration, park designations, linear features, possibly new communities, and continued rapid population growth.

Encroachment in the ACFN ESA has occurred from all directions as depicted on Figure 4-39. In the late 1880's competition by non-Aboriginal trappers was focused in the furbearer rich areas around Lake Athabasca and the Delta. Government actions to protect bison resulted in the creation of Wood Buffalo National Park, a land designation which severely altered ACFN access to land and resources for approximately 80 years (depicted on Figure 4-39 as "Park Alienation"). Uranium mining on the north shore of Lake Athabasca brought more people into the ESA for a period, but the environmental concerns of ACFN of the abandoned mines continues to this day (depicted on Figure 4-39 as "Abandoned Uranium Mines"). Regulation of the Peace River altered and continues to alter the Delta ecosystem (Depicted on Figure 4-39) as "Peace River Regulation"). Oil sands exploration and development and commercial forestry has been progressing in a northerly direction and likely will continue this pattern throughout the areas designated and allocated for such purposes by government. The combination of oil sands related water usage, Peace River regulation and climate change impacts on water quantity and quality are likely to continue to adversely affect navigability and access to areas that ACFN relies upon to support their Rights, Values and Knowledge. There has been recent metallic mineral

exploration activity in ACFN's Homelands and the GoA has just approved the designation of new areas for public use purposes in these Homeland areas as well. All of this activity has facilitated a rapidly increasing population in the ESA stimulating the need to encumber further lands for residential, commercial, institutional, transportation and recreational purposes. Amid all of this activity and land, water and resource use, ACFN and other First Nation and Aboriginal populations are growing and will continue, and perhaps increasingly need access to healthy and abundant lands, waters and resources in the preferred and culturally appropriate ways and means they wish to support their Rights, Values and Knowledge.

FIGURE 4-38: Temporal Summary of Encroachment Drivers

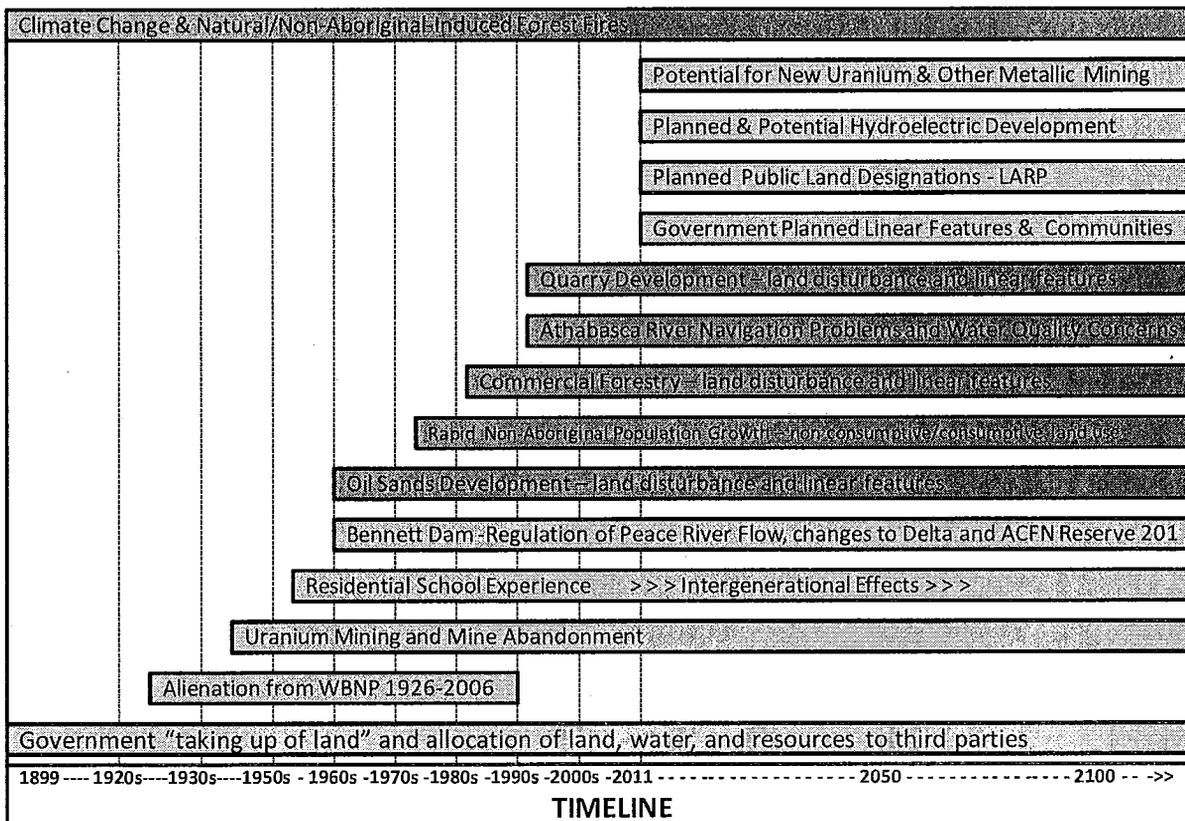
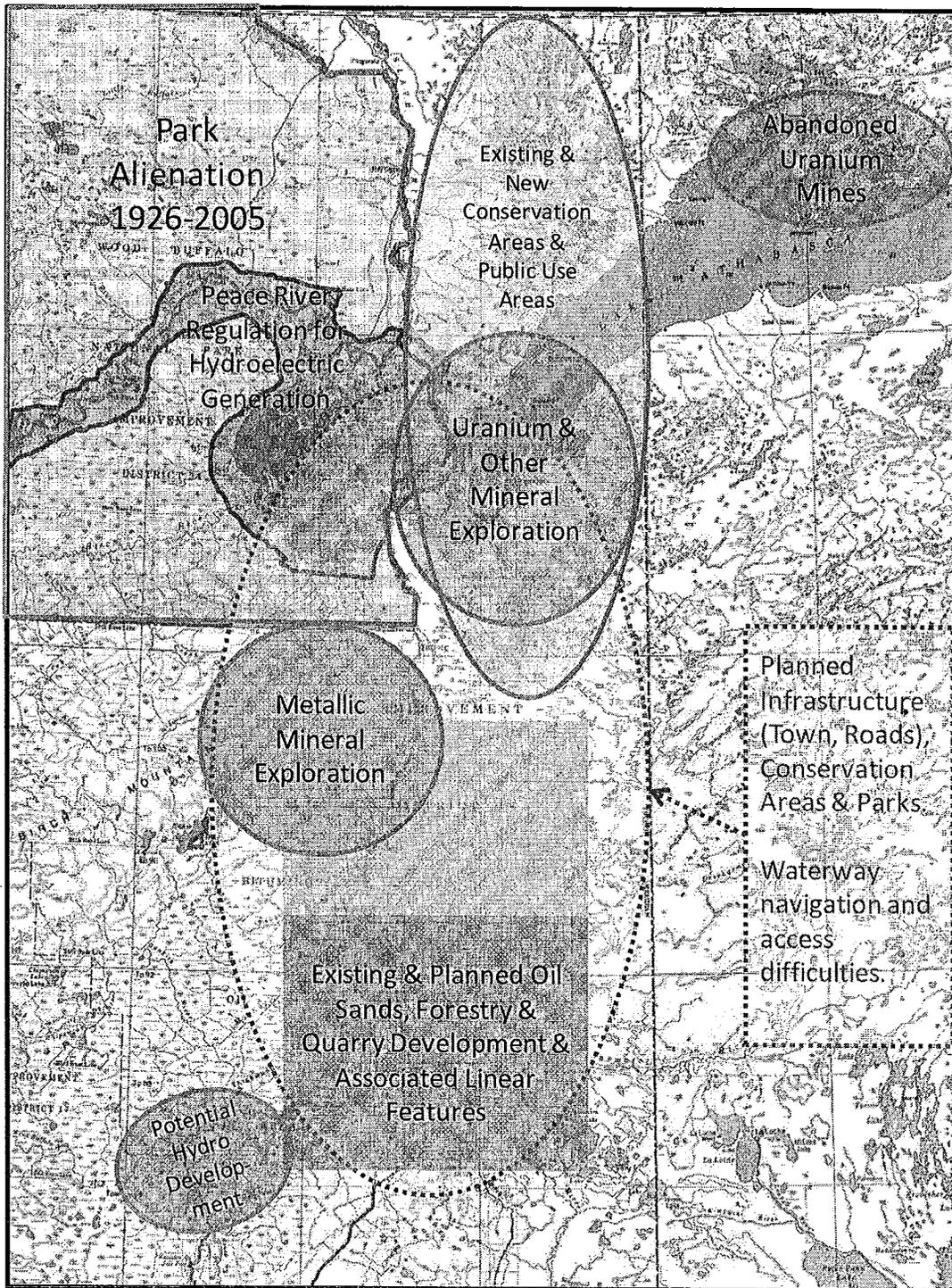


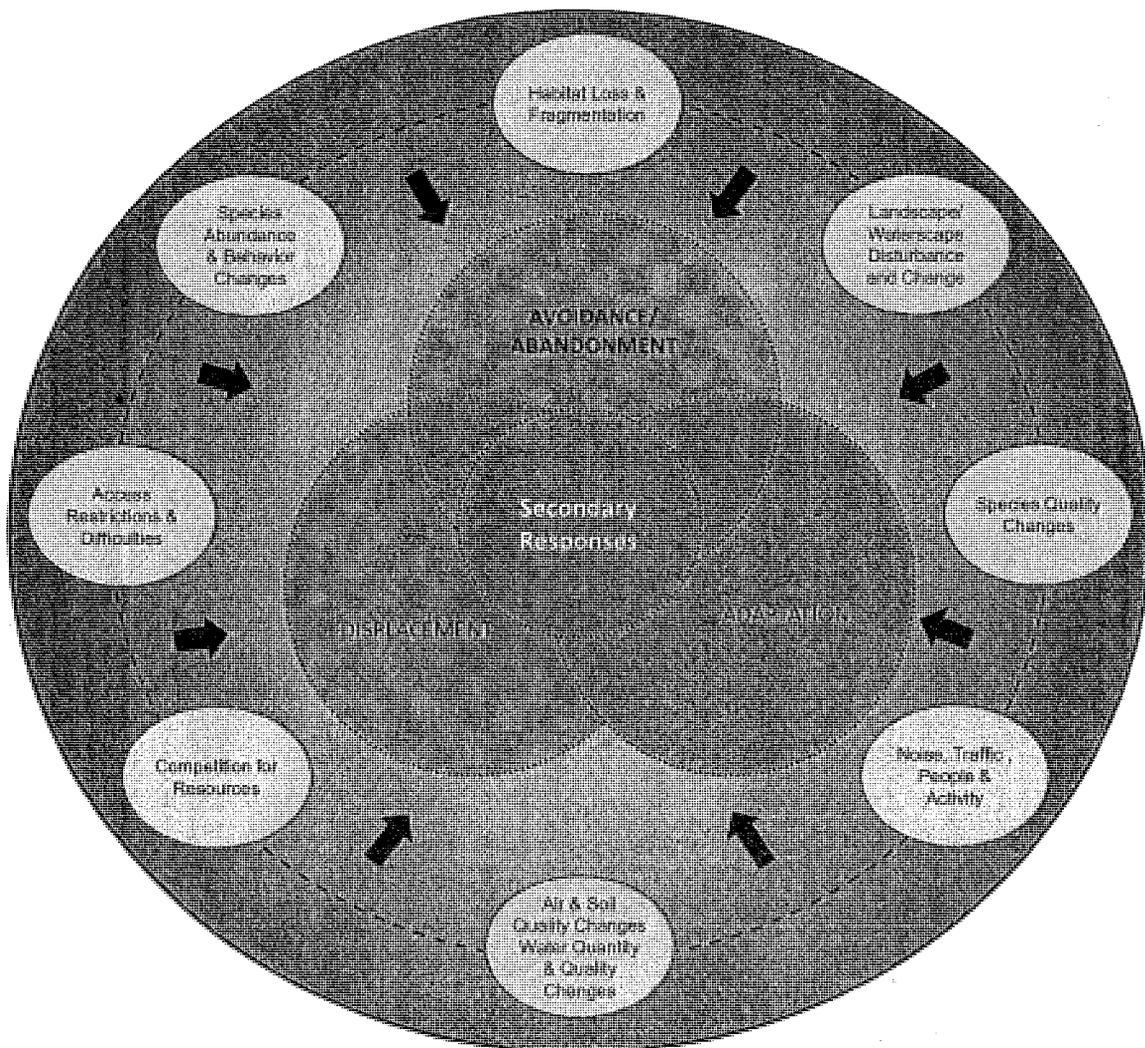
FIGURE 4-39: Spatial View of Encroachment Drivers



## 5.0 DIRECT EFFECTS OF ENCROACHMENT

Many of the encroachment drivers discussed in Sections 3 and 4 have directly or indirectly altered or disturbed the landscape and/or changed landscape accessibility options, resulting in encroachment on ACFN's Rights, Values and Knowledge. The nature of primary alterations and disturbances are depicted in the outer ring in Figure 5-1 below. How ACFN Members have responded, and can be expected to continue to respond to encroachment driver-related environmental changes are categorized into three main themes: displacement, avoidance and/or abandonment, and adaptation. Secondary responses or impacts are discussed in Section 6 of this report.

FIGURE 5-1: Direct Effects of Encroachment



Primary or first order outcomes or responses to encroachment are organized into three main categories as follows:

- (1) Displacement
  - Means ACFN Members are prohibited from or cannot feasibly access a geographic area and/or are prohibited from harvesting one or more species within the ESA. This category also includes circumstances where the productivity of land/waterscape has been diminished to the extent that the area no longer has utility for Rights, Values and Knowledge.
- (2) Avoidance or Abandonment
  - Means ACFN Members stop utilizing a particular place or geographic area and/or a particular resource due to concerns about the quality and/or quantity of the resource and/or because of health and safety concerns or enjoyment reasons.
- (3) Adaptation
  - Means ACFN Members have found ways to mitigate encroachment and/or environmental changes by altering the locations, types or composition of resources, and/or methods of realizing their Rights, Values and Knowledge.

## 5.1 Displacement

### 5.1.1 Displacement from Wood Buffalo Park

It appears that the earliest major form of displacement experienced by ACFN Members from the ESA occurred in 1926 with the designation of the south end portion of Wood Buffalo National Park. As described in Section 3.2, ACFN Members who were not residing in the park annex area in 1926 were suddenly and absolutely prohibited from using the lands, waters and resources for Rights, Values and Knowledge purposes. As previously discussed in Section 3.2, the park regulations were so strict that ACFN Members were not even permitted to travel into the park to visit with relatives. As illustrated in the quotes below, ACFN Elders refer to the alienation from the park annex area as being 'relocated.'

*The [families] I remember are Adams, Piches, Maderia, also many people from Point Brule, Popular Point [sic], Big Point and Old Fort had hunted and trapped*

*in Birch River area. Most of the people had home steaded and raised their families in their respected areas for many years, but because of the WBNP they all had to relocate and move from the area. [Interview with Victoria Mercredi, no date, translated by Alex Bruno]*

*Many families were given no choice but leave the WBNP area, people like the Bouchers, Trip de Roche, Fletts, L'hommecourts, Cypriens, once all had lived and trapped in the Birch River and later relocated to Athabasca River, like Jackfish Lake, Old Fort, Big Point, Point Brule, and Popular Point. [Interview with Rene Bruno, no date, translated by Alex Bruno]*

*Many of the Dene people relocated to other areas like Jackfish Lake, Old Fort, Big Point, Point Brule, Popular Point. Many others just left the country and tried elsewhere, Fort McMurray, Fort Smith, etc. [Interview with Albert Voyageaur, no date, translated by Alex Bruno]*

*People lost access to their traditional trapping and hunting grounds, even today we are not allowed to travel or hunt in Wood Buffalo National Park. [Interview with Madeline Marcel, no date, translated by Alex Bruno]<sup>211</sup>*

The Peace-Athabasca Delta is one of the world's largest freshwater deltas, encompassing 4,500 km<sup>2</sup>. Four-fifths of the delta lies within Wood Buffalo National Park. Only about 1/20<sup>th</sup> of the delta lies within the boundaries of ACFN Reserve 201.<sup>212</sup> The area that ACFN Members were displaced from was an exceptionally rich and accessible environment. The delta was ACFN's local 'grocery store' and place of employment; providing an abundance and diversity of food items and at the time, a base to earn substantial income from trapping. According to ACFN, some Members have returned to utilizing the park, primarily for waterfowl harvesting purposes, and are planning to once again have cabins in the park as bases for harvesting activities.<sup>213</sup>

Alienation of ACFN families resulted in a long term, multiple generational loss of opportunity to exercise and enjoy their Rights, Values and Knowledge. As noted in Section 3.2 of this report, it has only been since 2005 that ACFN Members, after some 80 years of alienation, are once again able to exercise most of their Treaty 8 rights throughout the extent of the park without fear of prosecution. Currently some ACFN members are utilizing the park area again, primarily for waterfowl harvesting purposes.

While Wood Buffalo National Park is one of the few places in the ESA that is protected from industrial land disturbance, the delta area within the park has been and continues to be impacted by regulation of the Peace River for hydroelectric generation purposes. Thus, although ACFN members once again have access to the park, the productivity and accessibility of this geographic area for Rights, Values and Knowledge has been compromised. It important to note that the park has not only become recently available to ACFN Members, but all Treaty 8 First Nations. This

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<sup>211</sup> Interview likely predates the more recent change in park policy.

<sup>212</sup> Stuart Adams and Associates. 1998. Fort Chipewyan Way of Life Study. Summary Report.

<sup>213</sup> Pers.Com. Lisa King, ACFN Member, August 31, 2012. According to Ms. King, Parks Canada has recently met with ACFN Members to discuss the agency's policies regarding construction of cabins.

means that other First Nations, who may be experiencing encroachment in and outside of the ESA, are able, if they choose, to exercise their Treaty 8 rights in the park as well. Spring, summer and fall access to the southeast delta area of the park from the southern part of the ESA is a lengthy boat ride. Winter access is possible via the Fort Chipewyan winter road and then by snowmobile. If the GoA proceeds with its planned all-weather road connection to Fort Chipewyan, improved access may stimulate increased use of the delta area of the park by Treaty 8 First Nations and other Aboriginal people as well.

### 5.1.2 Displacement from Peace-Athabasca Delta

The second major displacement event occurred as a consequence of the regulation of the Peace River. As discussed in Section 4.2.1 of this report, regulation of the Peace River (Bennett Dam) for purposes of hydroelectric energy generation started in 1967 and continues to present. Numerous technical assessments of the changes and damage to the delta have been undertaken by federal and provincial agencies; all studies indicating significant adverse effects to the Peace-Athabasca Delta ecosystem including waterways, water body levels, wetlands, aquatic and terrestrial species habitats, and declines and/or changes in fish, animal and plant populations.<sup>214</sup> Green's (1992) study for ACFN to assess the impact on Rights, Values and Knowledge identified the following primary categories of adverse impacts:<sup>215</sup>

- Reduced availability of aquatic plants for food, medicinal and spiritual purposes;
- Reduced availability of ungulate, small mammal, and waterfowl for food purposes;
- Reduced availability of furbearer species for food and income generation purposes;
- Reduced availability of fish for food and income generation purposes; and
- Reduced accessibility to important harvesting areas.

Due to the above, an unknown number of ACFN Members were displaced and continue to be displaced from the non-park portion of the delta, including Reserve 201. That is, low productivity of the area combined with difficult access, means the area lacks the utility it once held for ACFN Members to pursue or benefit from their Rights, Values and Knowledge.

Testimony before the Indian Claims Commissioner in 1996 by ACFN Elders is telling, and illustrates the reasons why the utility of Reserve 201 diminished;

*“Reserve 201 was our main source of income for our families, for me and my family. Not only did we trap muskrats [sic] but we also trapped fine fur elsewhere. But our main source was for trapping and for our livelihood was muskrat on Reserve 201. Back then Reserve 201 had lots of water. ...And by that*

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<sup>214</sup> See for example: Peace-Athabasca Delta Project Group (1971) created by governments of Canada, Alberta and Saskatchewan; Peace-Athabasca Delta Technical Studies, established in 1993 through a memorandum of understanding by representatives of Canada, Alberta, BC Hydro and Power Authority, ACFN, Mikisew Cree First Nation and Fort Chipewyan Metis Association; The Northern Rivers Study Basin Report (1996);

<sup>215</sup> Green, J.E. 1992. A Preliminary Assessment of the Effects of the W.A.C. Bennett Dam on the Athabasca River Delta and the Athabasca Chipewyan Band. In Indian Claims Commission, Commissioners Briefing Kit, Community/Expert Session, October 10, 1996.

*we had a lot of security. This Reserve 201 and all the muskrat one day started to decline. At that time people were not aware of what was causing the declining of the muskrat in the water because nobody came to tell them what was happening. This went on until finally there was no water left on the Reserve 201. And when the lakes dried out, it done away with all the muskrats, the waterfowl, the fish. And on top this, when the oil sands came into the picture, what little water we were getting from the river was polluted. Because of the Bennett Dam, our main source of income like trapping for muskrats on the delta, because of the Bennett Dam we lost all that security” [Elder Mrs. Victorine Mercredi, aged 79 at the time]<sup>216</sup>*

*“For the last few years, for a number of years now we are unable to go back to go back to reserve [201] to trap because there is nothing to trap due to the shortage of water ... there is nothing there to trap and nothing to go back to.” She further explained that even though she and her husband knew there was nothing to do at Reserve 201 any longer, her husband still went back each year just to see if anything had changed. She indicated he goes alone “So we don’t go as a family anymore with my husband. Just the husband goes every now and then to see what is there. I don’t bother going out there anymore.” [Elder Mrs. Mary Bruno, aged 60 at the time]<sup>217</sup>*

Former Chief Tony Mercredi presenting evidence to the Indian Claims Commission stated the reason ACFN had selected Reserve 201 on the delta was precisely because it was a rich and productive hunting, fishing and trapping area. He reported that the Bennett Dam resulted in the “degradation and erosion” of his people’s culture and traditional lifestyle. This translated into unemployment as ACFN members could not engage in hunting, fishing and trapping, and this in turn resulted in “a lot of social and economic ills” in the community.<sup>218</sup> He further explained that income from muskrat trapping on Reserve 201 provided the means for most ACFN Members to purchase the equipment and provisions needed to engage in other harvesting activities which provided for food supplies throughout the year. Green (1992) reported that changes in moose numbers and distribution, in addition to water access difficulties, were severe enough that ACFN members discontinued efforts to harvest this species in the delta and focused their efforts in geographic areas away from the delta.<sup>219</sup>

Displacement from Reserve 201 and the balance of the delta outside of Wood Buffalo National Park was relatively sudden and impacted ACFN members at large. ACFN Members lost their only exclusive use area in the delta. There is no geographic area within the ESA or reasonably close to the ESA that contains the type of rich ecosystem that existed in the delta. It is noted that ACFN and B.C. Hydro signed an agreement in December of 2002 for full and final settlement of ACFN’s grievance for losses and damages for Reserve 201 in exchange for ACFN discontinuing

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<sup>216</sup> Indian Claims Commission, Transcript of Community Session/Expert Session into the Athabasca Chipewyan First Nation Specific Claim: I.R. 201 and the W.A.C. Bennett Dam. October 10, 1996. Exhibit 15, pg. 39.

<sup>217</sup> Ibid. Exhibit 15, pg. 64-65.

<sup>218</sup> Ibid. Exhibit 15, pg. 13.

<sup>219</sup> Green, J.E. 1992. A Preliminary Assessment of the Effects of the W.A.C. Bennett Dam on the Athabasca River Delta and the Athabasca Chipewyan Band. In Indian Claims Commission, Commissioners Briefing Kit, Community/Expert Session, October 10, 1996. Paragraph 6.

court action against the utility. ACFN's claim against Canada has not been settled. Based on the writer's experience with settlements for impacts associated with hydroelectric projects, the B.C. Hydro settlement amount was extremely low. Regulation of the Peace River is expected to continue for the foreseeable future and thus ACFN members will continue to be displaced from the Delta area and Reserve 201 for generations, if not forever.

Muskrat pelt prices have varied widely over the past six decades as illustrated in Table 5-1. In 2010 dollars, prices fell drastically in the 1960s and 1970s and peaked again in the 1980, followed by another drastic decrease in the 1990s and 2000s. During the past five years (2004-2010) prices have increased, ranging in Alberta from a low of \$3.20 in 2008 to a high of \$9.42 in 2006. Although muskrat prices have fluctuated over the past six decades, in the absence of the impacts on Reserve 201 and the remainder of the delta area, an opportunity for ACFN Members to engage in trapping activity and transfer associated skills to youth would have existed. Despite lowered returns from trapping, the activity continues to be important for First Nation and Aboriginal people. A Nation-wide survey of trappers conducted by Insight Canada Research (1996) found that over half (51%) of Aboriginal trappers said that maintaining a traditional way of life is the most important reason why they trap and 41% said the most important reason was to earn income. The Government of the Northwest Territories (2012) reports that the number of persons aged 15 years or older (includes Aboriginal and non-Aboriginal people) in the South Slave region only declined by 3.8% between 1989 and 2009.<sup>220</sup>

### **5.1.3 Displacement as a Consequence of Industrial Development**

The third major episode of displacement experienced by ACFN to date within the ESA is associated with contemporary oil sands development. The following discussion is based on the author's review of evidence assembled by ACFN through various interview processes and studies, the factual information provided in Sections 4.2.4 and 4.2.5 of this report, and professional experience. The evidence suggests that ACFN members have been displaced in a number of ways.

ACFN members have been displaced from portions of the ESA, most notably the area south of *k'es hochela nene*, by virtue of oil sands companies exercising exclusive surface rights to prohibit access. ACFN members report they are prohibited from engaging in all or some Rights, Values and Knowledge in certain geographic areas, as illustrated in the quotes below. Industry 'no trespassing' and 'no hunting' postings and gated roads are reportedly common. While it is understood that such restrictions of access and use is for safety reasons, this nevertheless constitutes absolute alienation.

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<sup>220</sup> Northwest Territories Bureau of Statistics. Traditional Activities. Participation in Trapping 1989-2009. <http://www.statsnwt.ca/Traditional%20Activities/>. South Slave region includes the communities of Enterprise, Fort Resolution, Fort Smith, Hay River, Kakisa and Lutselk'e. This region chosen for example as it is geographically the closest to ACFN ESA. It is noted that the % of trappers at Fort Smith [has large Dene population] and Lutselk'e [a Dene community] declined by 1% during the ten year period.

TABLE 5-1: Muskrat Values During Past 60 Years

Trapping Season	Avg. \$/Muskrat Pelt in Canada (nominal dollars)	Data Source	Consumer Price Index 2002=100	Avg. \$/Muskrat Pelt in Canada (\$2010 dollars)
1949-1950	\$2.04	1	12.5	\$19.01
1959-1960	\$0.83	1	15.5	\$6.24
1969-1970	\$1.19	2	20.3	\$6.83
1979-1980	\$7.19	2	44	\$19.04
1989-1990	\$2.20	3	78.4	\$3.27
1999-2000	\$2.90	4	95.4	\$3.54
2009-2010	\$7.11	5	116.5	\$7.11

**Data Sources:**

1 Dominion Bureau of Statistics. Fur Production Season 1949-1950. Table 2: Number and Value of Pelts Produced, by Kinds, by Provinces.
2 Statistics Canada. Fur Production. Catalogue No. 23-207. Table 3: Number and Value of Production of Principal Raw Furs, by Kind, Seasons 1957-58 to 1988-89.
3 Statistics Canada. Livestock Statistics. Table 2: Furs, Number and Value of Pelts Sold, by Type, by Province, Territory and Canada, 1989-1990. Catalogue No. 23-603-E.
4 Statistics Canada. Livestock Statistics. Table 2: Furs, Number and Value of Pelts Sold, by Type, by Province, Territory and Canada, 1999-2000. Catalogue No. 23-603-UPE.
5 Statistics Canada. Fur Statistics - 2010. Table 2-4: Furs, Number and Value of Wildlife Pelts Sold, by Type, and Province and Territory. Catalogue No. 23-013-X. Average muskrat pelt price for Alberta between 2004-2010 has ranged from \$3.20 to \$9.42, averaging \$5.24.
CPI - Statistics Canada, Consumer Price Index, Historical Summary 1918-2011, 2002=100.

*On Fort McKay side of the Athabasca River, I used to be able to travel all the way up the west side. I used to be able to go with the truck part of the way. Since CNRL, it's all gates. You can't take the truck up anymore. Now it's just quads. Petro Canada has a gate. There are gates on the bridges. The oil sands companies put up gates and big signs that say "No Hunting" and "No Trespassing."* [Affidavit of Raymond Cardinal, January 30, 2009, Paragraph 45. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].

*Anytime the government, provincial government allows Industry to come develop something on the land like that and the Industry puts out regulation that you're not allowed to go on that site, he has permission to go on that site, and if you know there's fur bearing animals there, you need to feed your family, you know you could kill moose or caribou in that area and they don't allow you, what are they doing to you?* [ACFN Land Use Planning Elders Focus Group Interviews, October 15, 2009, Group Code PA-1].

*I like going there in the spring [to Trapline], but there's too much people there. You can't really hunt. There's signs out there, "no hunting."* [ACFN Land Use Planning Elders Focus Group Interviews, October 18, 2009, Group Code PA-2].

*Around Kearl Lake you cannot practice your Treaty Rights, because they got every road, they got a no trespassing sign. Where you used to walk freely one time, now you can't.* [Elders Focus Group Interviews, October 20, 2009, Group Code PA-5].

In some cases ACFN members are allowed access through oil sand project areas, but are required to sign in and in some cases are restricted from carrying firearms.

*When I go there it's lot of traffic of course, but then I get pissed off, I get depressed even, seeing all this here, you got to go through four mines just to get to the god darn cabin site there. [Another Interviewee added] And then you got to sign in so they make you feel like your [sic] from the outside, that you don't belong there.* [ACFN Land Use Planning Elders Focus Group Interviews, October 18, 2009, Group Code PA-2].

*Imperial Oil put up a security gate, with a guard, and sign that say "No Hunting" right by my cabin. I have to give the guard my name and he writes down my license plate, in order to pass. He knows me now. I have to go through there to get to my cabin. I can't bring my guns through the security gates, so I can't take my guns to my cabin.* [Affidavit of Marvin L'Hommecourt, January 30, 2009, Paragraphs 48-49. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].

*Now you can't, there's no privacy there. Last time I was there, there was a security guard at the road and the security guard was sleeping. Why do I have to go through security to go out on the land?* [Elders Focus Group Interviews, October 21, 2009, Group Code PA-10].

Displacement due to mine-related waterway diversion and rerouting has also occurred. ACFN reports that certain tributaries relied upon to access inland areas for Rights, Values and Knowledge purposes have been or are about to be altered in a manner that will prevent boat access.<sup>221,222</sup>

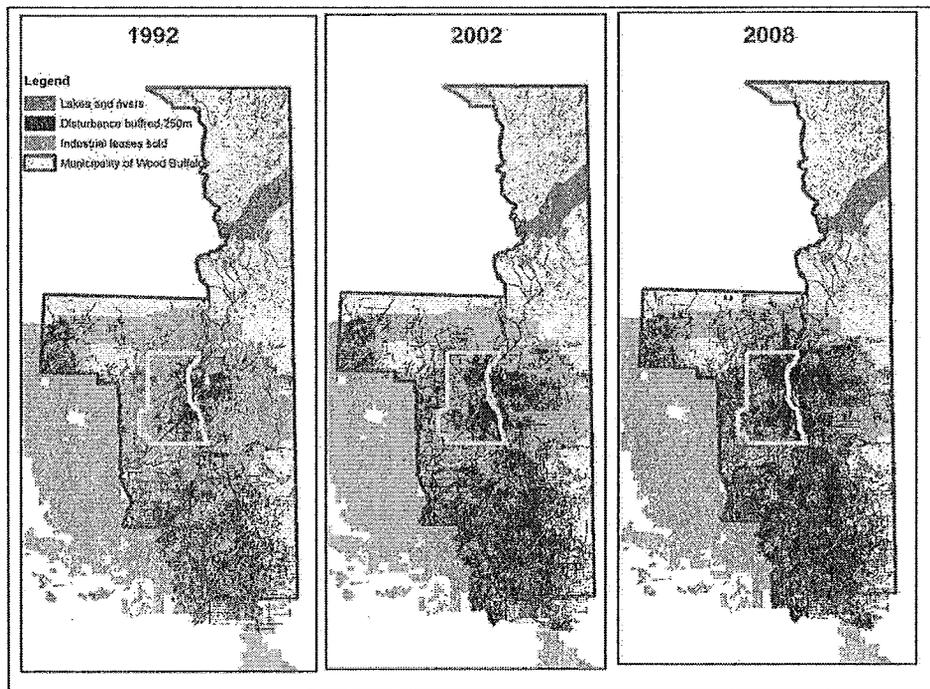
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<sup>221</sup> Candler, C.; Olson, R., DeRoy, S. and the Firelight Group Research Cooperative, with Athabasca Chipewyan First Nation. 2010. As Long as the Rivers Flow: Athabasca River Use, Knowledge and Change. August 16, 2010. A report based upon limited research to provide an evidence-based, written submission to effectively inform consultation with the Crown regarding plans for managing industrial withdrawals from the Athabasca River. Authors note the research was based upon interviews with 14 ACFN members.

<sup>222</sup> Athabasca Chipewyan First Nation Industry Relations Corporation and Mikisew Cree First Nation Industry Relations Corporation. 2010. The Relationship Between the Lower Athabasca River and the Traditional Uses and Rights of the Athabasca Chipewyan First Nation and Mikisew Cree First Nation. Submitted to B. Mackowecki, Department of Fisheries and Oceans. August 20, 2010. Pg. 2.

As discussed in Section 4.2.4, a substantial terrestrial area on the east, west and south sides of the Athabasca River, primarily south of Firebag River, has been disturbed by oil sands development. The GoA reports that as of December 2009, 1,518 km<sup>2</sup> or just under a third of the total 4,800 km<sup>2</sup> surface mineable was under active development.<sup>223</sup> By way of more detailed illustration, Management and Solutions in Environmental Science (2010) quantified the amount of disturbed land within a regional study area identified for the Joslyn Mine environmental impact statement (yellow boundary area shown on Figure 5-2). This regional study area falls within ACFN's Fort McKay and Fort McMurray Proximate Zones. A key finding was during the period from 1992-2008 development activities had disturbed 56% of the land base within this area. The authors concluded if the rate of conversion experienced to 2008 continued, by the year 2021 there will be no undisturbed area left (i.e. an area that was not within 250 m of an industrial feature). When the authors looked at existing and publically disclosed oil sand projects, rather than the historic conversion rate, they conservatively estimated that 61% of that regional study area would be disturbed by the year 2028.<sup>224</sup>

FIGURE 5-2: Progression of Disturbance in Oil Sands Area and Location of Joslyn Mine Regional Study Area<sup>225</sup>



<sup>223</sup> [http://www.oilsands.alberta.ca/FactSheets/About Albertas oil sands.pdf](http://www.oilsands.alberta.ca/FactSheets/About%20Albertas%20oil%20sands.pdf)

<sup>224</sup> Management and Solutions in Environmental Science. 2010. Effects on Traditional Resources of the Athabasca Chipewyan First Nation: The Joslyn Creek Project Specific and Cumulative Effects in the Oil Sands Region. Prepared for Athabasca Chipewyan First Nation. Pg. 2, 4-5. Authors indicate that the calculation of disturbed area includes a 250 m buffer around each disturbance footprint or feature.

<sup>225</sup> Ibid. Figure 2.1-6. Yellow outlined area is the 'regional study area' identified by the authors of the Joslyn Creek project environmental impact statement.

Even if accessible, heavily disturbed terrestrial areas such as depicted in Figure 5-2 above are generally no longer viable for Rights, Values and Knowledge. Disturbed areas reduce the carrying capacity of the landscape, through habitat elimination and fragmentation, which in turn displaces or disbursts many of the animal species important to ACFN, eliminates plant habitat and abundance, and generally lowers the overall productive capability of the ESA. Disturbed areas cease to have utility for ACFN Members because the animals and plants are not in the locations they were formerly known to be found or they are not in sufficient numbers to support efficient and successful harvesting activity.

*I can't go anywhere where there's oil sands activity. It disrupts us. I used to hunt all the way up the Firebag River, but now it's only good up to a certain point. Suncor is there, with an in-situ plant and all the connected activity, forestry, exploration, drilling. Anywhere there's development, you can't go back there. There are restrictions on access and use, there's a decrease in animals, and there are health concerns with some of these activities, like the oil sands. The Athabasca River has been affected by this. The areas used by Suncor used to be trees and animals. I used to fish and hunt all the way to Fort McMurray, and I can't do that anymore. The animals have disappeared. They shy away from all the activity. [Affidavit of Archie Cyprien, January 30, 2009, Paragraph 39. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

The total area within the ESA that ACFN Members are currently alienated from as a consequence of oil sand operators exercising rights to restrict land access and due to tributary river diversion and re-routing is not known. To illustrate, however, according to ACFN (2011, April 20) Registered Fur Management Area (RFMA or Trapline) 1714 is the closest ACFN area (trapline or reserve) accessible by road from Fort McMurray and Fort MacKay. The RFMA and surrounding area has historically been an area for the practice of livelihood use and knowledge by many ACFN members living in the Fort McMurray and Fort MacKay area, and was considered relatively undisturbed until intensification of oil sands activities in the area in the late 1990s.<sup>226</sup> Shell Canada's environmental assessment for the proposed Jackpine Mine Expansion indicates that its project will increase the area of disturbance in Trapline 1714 from 46% to 60%. According to ACFN, the project would mine to within 250 m of historically and currently used L'Homme-court cabins, and would permanently eliminate cultural landscape features including trails, other cabins, harvesting areas, streams, rivers, and high value wildlife habitat upon which use of the cabins and trapline, and practice of treaty rights, depends. Due to existing impacts over the past five to ten years, many ACFN members have reported they currently avoid the area of RFMA 1714, leading ACFN to conclude "a tacit, or implicit threshold of disturbance of use resulting in widespread loss of use by ACFN members seems to have already been reached."<sup>227</sup>

Critically, industry has and continues to disturb the very geographic areas that are the most important for ACFN Member - those that are accessible and productive. Riparian areas are rich

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<sup>226</sup> ACFN. 2011 (April 20). Integrated Knowledge and Land Use Report for Shell Canada's proposed Jackpine Mine Expansion and Pierre River Mine. Pg. 52.

<sup>227</sup> Ibid. Pg. 62.

and diverse in animals and plants, and access to and from them provides the opportunity to engage in fishing as well. For purposes of engaging in Rights, Value and Knowledge during the ice free period, the use of boats to access important resources and places is the preferred and cost-effective choice for ACFN Members. Water access allows ACFN Members the opportunity to use boats to transport people, goods and equipment, and importantly transport harvested goods home. Access to these rich inland riparian areas is limited by the seasonal and yearly navigation conditions in Athabasca River tributaries, and the main river itself. Thus the most consistently accessible and productive areas are those adjacent to the Athabasca River and the lower reaches of its many tributaries.

South of the delta area, these are also the same areas that are in the Surface Mineable Area and almost completed leased by the GoA to oil sands companies. As discussed in Section 4.2.4, there are a substantial number of new oil sands mines and in-situ oil projects and expansions of existing mines/projects under construction, approved, in the regulatory review process or announced, within the ESA. Notably, Shell Canada's Pierre River Mine and Redclay fish compensation 'lake' and Teck Resources Frontier Mine project, currently under regulatory review, are all situated within ACFN's *k'es hochela nene* Homeland. As noted in Section Figure 4.2.4 and shown on Figure 4-29, the Surface Mineable Area was recently expanded to include numerous townships on the west side of the Athabasca River and northeast of the Firebag River and a majority of this expanded area has been leased. These expanded areas are within ACFN's *k'es hochela nene* and *dzÔ tuwßze nene* Homelands.

Development of all or a portion of the long list of pending/potential oil sands projects, in combination with associated cutlines, pipelines, access roads, and transmission lines, can be expected to create further alienation of ACFN Members and remove additional habitat of animals and plants relied upon for Rights, Values and Knowledge. While it may be the case that some animals may disperse to less disturbed areas in the ESA, many of the less disturbed areas are simply not accessible to ACFN Members by boat and the cost of air charters and additional time involved getting to more remote locales can be prohibitive for some families. In this respect, it is noted that the First Nations Food, Nutrition and Environment studies report that among B.C. First Nations survey participants, 91% indicated they would like to eat more traditional foods and that the main barriers preventing this are: a lack of appropriate hunting and fishing equipment, as well as transportation to and from harvesting sites (Chan et al. 2011:20). The Manitoba study indicates that about two-thirds of First Nation participants in that province reported that they would like to have more traditional food. Absence of a hunter in the family, lack of equipment or transportation and lack of time were the key household barriers to obtaining more traditional food (Chan et al. 2012:1).

If the GoA carries out its planned new town and transportation network (described in Sections 4.3.1 and 4.2.5) this will cause further displacement. The land base taken up for a town will be removed from use by ACFN and there will be accompanying safety-related hunting restrictions on adjacent areas. Further, hunting restrictions will be applied to each new public transportation corridor.<sup>228</sup>

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<sup>228</sup> Paragraph 8 of the GoA Hunting Regulations (2011) states; discharge a weapon is not permitted 'within 183 m (200 yards) or causing a projectile from a weapon to pass within 183 m (200 yards) of any occupied building. Owners, occupants, or persons authorized by the owner or occupant are excepted, subject to local bylaws. Paragraph

As discussed in Section 4.2.2, there is substantial uranium and other metallic mineral exploration going on north of the Firebag River, in all three of ACFN's Homeland Areas. This suggests there is potential for one or more mines to be developed in these Homeland Areas at some point in the future. If one or more mines are developed, this will contribute to further alienation and possibly avoidance behavior by ACFN.

#### **5.1.4 Displacement Due to Loss of Waterway Navigability**

The fourth major form of displacement concerns loss of access to parts of the ESA due to water navigational problems. As discussed in Sections 4.2.1 and 4.3.4, water levels in the Athabasca River, the Athabasca-Peace River delta, and many of the associated tributaries have declined over the past several decades.

*"When we were younger the Athabasca River was ... a wild beast. In other words, because it was alive, it had tremendous amount of water, it fed all the tributaries, lakes and everything. When the spring flood and that occurred ... it brings life to the delta and when it brought life to the delta it also kept our people healthy, our population stable and, in other words, it sustained our way of life for our people for the existence of who we are today." (A06)*

*"Travelling on the river since I remember, used to travel on the river with my dad when I was just a little kid right up to Fort McMurray, I remember even that. I used to work on the tugboats on the river in the olden days, even when I was married I worked there, summers after that. So I'm still using that river. I don't like it anymore though, it's getting too bad, shallow. Towards the fall time, I don't feel like going to Fort McKay even with a boat. Don't feel safe on the water." [A04].*

*"If you got no water you can't travel, or it makes it pretty tough going. Gotta have that water, like I wanted to hunt last week here and many a place I wanted to go I couldn't, not enough water." (A07)<sup>229</sup>*

In 2010, ACFN conducted its Athabasca River Use and Traditional Ecological Knowledge Study, which among other things examined effects of river changes. A key finding of that study was:<sup>230</sup>

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9 states the 'discharge a firearm from or cause a projectile from a firearm to pass along or across: a) a provincial highway (this designation applies to all former primary and secondary highways), b) a road that is paved, oiled, graded or regularly maintained, unless; the road is held under any active disposition under the *Public Lands Act* or under an order under the *Surface Rights Act*.' is not permitted.

<sup>229</sup> Candler, C.; Olson, R., DeRoy, S. and the Firelight Group Research Cooperative, with Athabasca Chipewyan First Nation. 2010. *As Long as the Rivers Flow: Athabasca River Use, Knowledge and Change*. August 16, 2010. Pg. 23.

<sup>230</sup> Ibid. Authors note the research was based upon interviews with 14 ACFN members.

“One of the key issues raised by ACFN participants was the difficulty of accessing traditional lands at low river levels because of challenges in navigating the main stream of the Athabasca River between Fort Chipewyan and Fort McMurray, or because of an inability to access smaller creeks and rivers running into the Athabasca due to shallow water. As one participant explains:

*...and there's sandbars like I said everywhere. It's dangerous. Like all these little shortcuts we were able to use to cut off time, right here, you come through here, all these little islands, you used to be able to navigate through all of them ... See, there's a shortcut here, sometimes you got to go all the way round here, come all the way back like that, it depends on how the current is, the sandbars are always moving. And it's dangerous. Some places here you could walk right across on the Athabasca River.” (A08)<sup>231</sup>*

Important streams and lakes reported inaccessible at extreme low water conditions include, but are not limited to:<sup>232</sup>

- Richardson River (flows into the Athabasca River upstream of Jackfish Lake). Low water conditions at the confluence results in lost or limited access to inland territories, including cabins and trap lines, within a large area referred to as the Richardson Backcountry.
- Jackfish Creek (drains from Jackfish Lake into Athabasca River). Low water near the creek outlet results in lost access to hunting, fishing, and cultural sites, including burials, located within IR Chipewyan 201E.
- Richardson (Jackfish) Lake, located adjacent to IR Chipewyan 201E. Access to the lake via Athabasca River becomes inaccessible at low flow levels at its outlet into Jackfish Creek resulting in lost access to very important hunting, fishing, and cultural sites located within and adjacent to IR Chipewyan 201E.
- Various waterways in the delta, including within Indian Reserves (particularly IRs Chipewyan 201, 201B, 201C, 201D, and 201E) and extensive areas of Wood Buffalo National Park, including Lake Claire and surrounding area (see Mamawi Lake) become inaccessible at low flow levels.
- Mamawi Lake in the delta is inaccessible at very low flow levels resulting in loss of access to a very large territory within Wood Buffalo National Park, including Lake Claire, Birch River and McIvor River.
- Numerous side channels of the Athabasca River itself become inaccessible at low flows resulting in lost or impeded access to cabins, trap lines, important hunting areas, and other values, including areas within IR Old Fort 217, IR Chipewyan201F, and IR Chipewyan 201G.
- Firebag River becomes inaccessible at low flow levels where it joins the main stream of the Athabasca resulting in loss of access to hunting areas and other values along this tributary.

<sup>231</sup> In Candler, C.; Olson, R., DeRoy, S. and the Firelight Group Research Cooperative, with Athabasca Chipewyan First Nation. 2010. As Long as the Rivers Flow: Athabasca River Use, Knowledge and Change. August 16, 2010. Pg. 18.

<sup>232</sup> Candler, C.; Olson, R., DeRoy, S. and the Firelight Group Research Cooperative, with Athabasca Chipewyan First Nation. 2010. As Long as the Rivers Flow: Athabasca River Use, Knowledge and Change. August 16, 2010. Pg. 22. The authors caution that the absence of reported hazards or incidents south of Fort McKay is because the primary ‘take out’ location for ACFN users is Shell Landing, on the east side of the Athabasca near Fort McKay. As well, the sample of interviewees in the study did not include ACFN Members who reside in Fort McMurray.

- Other tributaries draining into the Athabasca, including Muskeg River, Ells River, and Dover/McKay Rivers.

Regardless of cause(s), lowered water levels in the lower Athabasca watershed in the past few decades has, and continues to have, an adverse impact on the ability of ACFN Members to access important areas of the ESA by boat. As discussed in Section 4.3.4, water quantity issues in the ESA have been the subject of considerable attention. While the Phase 2 Water Framework tabled by CEMA (not approved at time of writing) has recommended maximum water withdrawal criteria, as ACFN points out, this framework does not specifically address minimum flow requirements to ensure boat navigability to preferred areas for traditional activities. The cumulative effect of climate change on the lower ends of both the Peace and Athabasca watersheds, Peace River regulation for hydroelectricity generation, and industrial water withdrawals have a high potential to continue to and further displace ACFN members from accessing critical areas that give meaning to Rights, Values and Knowledge.

Based on the writer's review of various ACFN reports and documents, as well as knowledge acquired through interviewing numerous First Nation harvesters across Canada affected by changes in lake and/or river flows and levels due to hydroelectric development, the effects of reduced waterway navigability include:

- In low water years the delta and inland areas (e.g. Richardson Backcountry area) become difficult, if not impossible to access. This reduces the geographic landscape available to ACFN Members to engage in harvesting activity resulting in diminished social, cultural and economic benefits;
- Concerns about safety are influencing ACFN Member choices and decisions about whether or not to attempt to travel on certain waterways and this influences where they feel safe and comfortable engaging in traditional activity, whom they involve in traditional activity, and whether or not water level conditions are amenable to harvesting and retrieving a large animal (e.g. can they navigate their way home with the weight of a moose in the boat?);
- Increased risk of damage to boats and motors (e.g. "bottoming out", hitting propellers on rocks or sand bars), as well as other equipment loss due to capsizing or having to leave equipment behind to lessen weight on the boat under circumstances of stranding;
- Increased time spent getting to/from intended destinations resulting in less time available to pursue harvesting activity and less time to teach youth, socialize and share stories and knowledge. Knowledge that there may increased chance of travel difficulties requires packing additional food and water which adds weight to the boat;

## 5.2 Avoidance or Abandonment Due to Concerns About Resource Quality

Concerns about the health of animals, fish, plants and water is manifesting in avoidance and abandonment behavior by ACFN Members. Avoidance refers to cessation of harvesting a particular type of resource (e.g. fish or berries) in a specific location (e.g. a river or lake) or across a broad geographic area. Abandonment refers to cessation of harvesting of all resources in a geographic area.

### 5.2.1 Animals and Plants

The following quotes explain why ACFN Members are concerned about the quality of animal and plant resources, demonstrate the nature and depth of concern, and indicate how ACFN Members are responding to their concerns.

*If you're eating berries next to a mine, you don't know if the berries have sulfur, nitrogen or other contamination, pollution, in the berries. We don't even know if it's safe to eat. If the moose we're killing are harvested close to the mine sites, we don't know if the moose was in a tailings pond, or getting water – they're a water species and they eat wetlands. So, we don't know if the wetlands they are consuming are safe. Therefore, we don't know if the moose we're eating are safe. I prefer to harvest, take my kids, to where I know the food is safe and the medicines, berries, wildlife are safe to eat. Now it's getting harder and harder to find those places. It's getting harder to travel the Athabasca River because of the water levels. It's getting harder to travel in the back roads because there's more and more hunters and on Canterra Road, it's just not safe to bring the kids there. [Elders Focus Group Interviews, October 21, 2009, Group Code PA-10].*

*Some people when they go berry-picking, they are scared to eat the berries, they are scared they will be contaminated. I don't blame them. [ACFN Land Use Planning Elders Focus Group Interviews, October 19, 2009, Group Code PA-1].*

*I don't take fish from anywhere south of the Firebag River, because of the development that has gone on there. Anything close to those plants, I don't want. We rely more on the inland lakes for our fishing now, Ronald Lake, all the inland lakes east of Poplar Point, Pearson Lake. We also harvest berries, plants and medicine from these same areas. I have no problem taking traditional foods from those areas because I know it's not coming in contact with the water from the Athabasca River. Anything coming from that river, I have a hard time with it. I stay away from that water. [Affidavit of Raymond Cardinal, January 30, 2009, Paragraph 39. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

*I used to hunt in the areas south of McClelland Lake, but I don't anymore because it's been disturbed by industry coming in and doing their projects to determine just how rich that area is. Five years ago I used to hunt north of Fort McKay, and on both side of the Fort McKay River, but I can't do it because of development. There are still a few moose in the areas around the tailings ponds and in the clearings around the oil sands plants, but I'm leery because I don't know what they're exposed to. There are a lot of gathering grounds all the way down the Athabasca River, on both sides, all the way from Fort McKay to Fort Chipewyan, even up the Firebag River as well. Anything north of CNRL, located on the west side of the Athabasca River, just north of Fort McKay, is still pretty good traditional land. I wouldn't take the traditional medicines anymore from anywhere south of CRNL, because there's so much activity happening there. I have to go further north. Leases have been granted in the Firebag area now. It used to be that anything past the mouth of the Firebag River was good hunting, because industry wasn't in there, but now Firebag has been developed, so now it has to be farther north. I now start hunting past McClelland Lake, go into Poplar Point area, and behind Poplar Point into the inland lakes area on the east side of the Athabasca River, all the way up to Fort Chipewyan. I have to get up around Poplar Point Reserve before I feel comfortable again doing the traditional hunt. It would be more expensive and inconvenient if they develop Poplar Point, because I would have to go that much further north for the traditional foods and medicines for my family and community. [Affidavit of Raymond Cardinal, January 30, 2009, Paragraphs 12, 30 and 40. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

Candler et al. (2010) surveyed a small sample of ACFN members regarding their comfort level with feeding their families harvested goods from the Athabasca River and its shores. Their findings were that 72% indicated they are comfortable feeding their families moose harvested near the Athabasca River, while only 14% said the same for berries and other plant foods.<sup>233</sup>

### 5.2.2 Fish

ACFN Members comments regarding fish quality and behavioral changes in fishing locations are indicated in the following quotes;

*I still go to Firebag... Sometimes there are half a dozen boats at the mouth of the [Firebag] river, with non-First Nations people fishing. I just fish for fun now, not for food. The fish don't taste as good anymore. I wouldn't give away that fish that I get out of Firebag. I wouldn't want to poison anyone. I don't fish out of the Athabasca River anymore. There's foam on the river on the sides, stuff floating in there, debris, garbage. I don't eat the fish out of the Athabasca River, because of the pollution. Some of my friends, ACFN members that live in Fort Chipewyan, they have to go out moose hunting and fishing because groceries are so expensive there. I bring them fish, because they're scared of the fish in Lake Athabasca. No one eats the fish out there anymore. [Affidavit of Marvin*

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<sup>233</sup> Candler, C.; Olson, R., DeRoy, S. and the Firelight Group Research Cooperative, with Athabasca Chipewyan First Nation. 2010. As Long as the Rivers Flow: Athabasca River Use, Knowledge and Change. August 16, 2010. Pg. 18-19.

L'Hommecourt, January 30, 2009, Paragraphs 18, 19 and 33. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].

*The Athabasca River is a very important part of our life, and the lives of all ACFN members. We relied on it for water, drinking, fishing and transportation. People still rely on it, although you can't drink from it or eat the fish anymore. [Affidavit of Archie Cyprien, January 30, 2009, Paragraph 38. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

*Do you fish from Athabasca river? Not as much as I used to. Catch and release. Don't eat them "for the reason of the amount of pollution in the area, plus the amount of things I see floating down the river." Like black mucus – like an oil that bubbles and is foamy and black and iridescent. [Elders Focus Group Interviews, October 21, 2009, Group Code PA-9].*

*I don't take fish from anywhere south of the Firebag River, because of the development that has gone on there. Anything close to those plants, I don't want. We rely more on the inland lakes for our fishing now, Ronald Lake, all the inland lakes east of Poplar Point, Pearson Lake. We also harvest berries, plants and medicine from these same areas. I have no problem taking traditional foods from those areas because I know it's not coming in contact with the water from the Athabasca River. Anything coming from that river, I have a hard time with it. I stay away from that water. [Affidavit of Raymond Cardinal, January 30, 2009, Paragraph 39. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

Candler et.al (2010) surveyed a small sample of ACFN members regarding their comfort level with feeding their families harvested goods from the Athabasca River and its shores. Their findings were that 64% indicated they would not be comfortable feeding their families fish from the Athabasca River.<sup>234</sup>

Fish consumption advisories have been in place for the Athabasca River and Lake Athabasca since at least 2003. ACFN members were informed about high mercury levels in larger sized pickerel and low levels in whitefish from the Athabasca River by the Regional Aquatics Monitoring Program (RAMP) in 2002 and again in 2009.<sup>235</sup> In 2003, the GoA advised that women of child bearing age and children under the age of 15 should not eat walleye from the Athabasca River and all others should not eat more than one meal per week (Regional Aquatics Monitoring Program, 2003).<sup>236</sup>

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<sup>234</sup> Candler, C.; Olson, R., DeRoy, S. and the Firelight Group Research Cooperative, with Athabasca Chipewyan First Nation. 2010. As Long as the Rivers Flow: Athabasca River Use, Knowledge and Change. August 16, 2010. Pg. 18-19.

<sup>235</sup> [http://www.ramp-alberta.org/UserFiles/File/CommunityReports/2009/Fort%20Chip%20meeting\\_presentation%20for%20website.pdf](http://www.ramp-alberta.org/UserFiles/File/CommunityReports/2009/Fort%20Chip%20meeting_presentation%20for%20website.pdf)

<sup>236</sup> Regional Aquatics Monitoring Program. 2003. Community Reports and Presentations. 2002 RAMP Summary. <http://www.ramp-alberta.org/ramp/results/community.aspx>

Hatfield (2006) investigated mercury concentrations in fish from Richardson Lake (known as Jackfish Lake by ACFN Members) and in the Old Fort Area (on Lake Athabasca). According to Green (1992:10) Jackfish Lake used to be fed by the Jackfish River and had no ordinary inflow from the Athabasca River, however the author reports that towards the end of the 1800's non Aboriginal trappers rechanneled the lake outlet to the Athabasca River to enhance muskrat production, resulting in backflooding into Jackfish Lake under high water conditions. Old Fort is situated on the southeast shore of Lake Athabasca where the Athabasca River enters the lake. Hatfield's (2006) research indicated;

- Average mercury concentrations in fish muscle tissue (fillets) were highest in walleye, followed by northern pike, goldeye and whitefish.
- For all species, mercury concentrations were higher in fish from the Old Fort area than those from Richardson Lake, and larger individuals contained more mercury in their tissues than smaller individuals.
- Muscle mercury concentrations in whitefish of all sizes were below Health Canada advisory levels for general or subsistence consumers of fish.
- Goldeye from Richardson Lake exhibited mercury concentrations below advisory levels of general consumers but frequently above the subsistence advisory level.
- Walleye exhibited a range of mercury concentrations, but most individuals contained more mercury than suggested for subsistence fishers., and most fish over 40 cm fork length had concentrations over the general advisory level.
- Northern pike exhibited a wide range of mercury concentrations, with most individuals in Richardson Lake over 70 cm exhibiting mercury concentrations over the subsistence fisher guideline. Nearly all pike over 80 cm in Old Fort River/Bay had mercury concentrations over general consumer levels. Two fish sampled from Old Fort contained muscle tissue concentrations over 800 ng/g total mercury.<sup>237</sup>

Based on the above reported results, the Hatfield (2006) recommended to ACFN that;

“members follow Alberta government suggestions for the Athabasca River generally, that women of child-bearing age and young children (under 15 years of age) limit their consumption of walleye from Richardson Lake and the Old Fort area. This recommendation also should apply to northern pike from these areas, especially from Old Fort, and generally is good advice for all consumers of these fish. However, given wild-caught fish have high nutritional, cultural and economic value to ACFN members, other strategies may be pursued to reduce mercury consumption without reducing fishing or fish consumption. Where possible, smaller fish should be eaten in preference to larger fish, given smaller fish contain lower concentrations of mercury. Of all species examined, lake whitefish contained the lowest mercury concentrations in both areas, and therefore are the safest choice for consumption from this perspective.”<sup>238</sup>

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<sup>237</sup> Hatfield Consultants Ltd. 2006. Fish Health of Richardson (Jackfish) Lake and the Old Fort River.

Prepared for Athabasca Chipewyan First Nation and Canadian Natural Resources Ltd. Pg. vii.

<sup>238</sup> Ibid. Pg. viii.

In summary, ACFN members are generally avoiding consumption of fish from the Athabasca River as a result of both mercury advisories and general concern about oil sands contamination. They are also generally avoiding consumption of fish from Lake Athabasca, due to a combination of concerns related to mercury, former uranium mining, and oil sands development. Until recently, the Fire Bag River was considered a safe place to harvest fish. It appears that some ACFN Members are now starting to avoid this river due to oil sands development in this tributary. There appears to be an adaptive trend towards reliance on accessible inland lakes for food fishing. Although whitefish have not been found to have unsafe mercury levels in any of the rivers and lakes important to ACFN, it is difficult (culturally inappropriate) for fishers who use nets as the preferred method of fishing to 'throw out' certain species caught in the net. Food wastage is considered highly disrespectful in most First Nation cultures. There is also the issue that it is psychologically difficult to have faith that certain fish species within a particular waterbody are safe to eat, while others are not. Based on a review of conditions and ACFN avoidance behaviours, it would appear they are running out of options for places to acquire fish that are considered safe to eat.

### 5.2.3 Water

ACFN has expressed concerns about the quality of treated water at Fort Chipewyan and the quality of water relied upon by Members when resident at cabins, campsites and in transit while engaged in Right, Values and Knowledge activities. While the Ft. Chipewyan water supply is treated, ACFN and MCFN members are expressing increasing concern about the link between contaminants in the water and rates of disease (especially cancer) in the community of Ft. Chipewyan.<sup>239</sup>

ACFN reports that it is likely that there are a variety of impacts (psychosocial, economic and health) that will emerge as concerns increase. According to ACFN (2011:iii) "...the Athabasca River and Lake Athabasca were used as the primary sources of drinking water for Fort Chipewyan residents and other traditional land users. Nowadays, however, drinking from the River or Lake is considered a last resort because of the decline in water quality since the 1960s. Concerns have also been expressed about the cost of accessing clean sources of drinking water and the human uptake of contaminants through food washed or grown with water from the Athabasca River."<sup>240</sup>

In the past, ACFN Members didn't haul drinking water when staying at their cabins, camps or while in transit. They knew places where good water could be obtained. Now ACFN Members have significant concerns about the quality of water they formerly relied upon when out on the land. The nature of this concern and how it impacts on Rights, Values and Knowledge is illustrated in the following ACFN Member quotes;

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<sup>239</sup> Athabasca Chipewyan First Nation Industry Relations Corporation and Mikisew Cree First Nation Government and Industry Relations. 2010. The Relationship between the Lower Athabasca River and the Traditional Uses and Rights of the Athabasca Chipewyan First Nation and Mikisew Cree First Nation. Summary Report. Report to Brian Mackowecki, Department of Fisheries and Oceans, Canada. August 20, 2010. Pg. 24.

<sup>240</sup> Ibid.

*What's it like out at Poplar Point? It's good. The only thing is that you can't drink the river water. You can't even bath in the damn thing. You have to haul all your own water from Grayling Creek. You have to boil all your own water. I boil it – drink coffee or tea. Sometimes we use rain water but, when a cloud is coming from the south we never collect that water because of the acid rain crap from the plants.* [Elders Focus Group Interviews, October 21, 2009, Group Code PA-8].

*The Athabasca River is a very important part of our life, and the lives of all ACFN members. We relied on it for water, drinking, fishing and transportation. People still rely on it, although you can't drink from it or eat the fish anymore.* [Affidavit of Archie Cyprien, January 30, 2009, Paragraph 38. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].

Candler et al.'s (2010) survey of ACFN Members found that 85% indicated they would not be comfortable giving their family members drinking water [untreated] from the Athabasca River and surrounding area.<sup>241</sup>

ACFN research has found “perceptions of declining environmental quality are often explicitly connected to concern regarding oil sands related emissions, and linked to both received risk knowledge from government authorities and other ‘experts’, as well as local or traditional ecological knowledge related to perceived environmental change. Frequently reported water quality indicators included change in the taste and smell of Athabasca River water, presence of unusual foams, or films on the water, and the absence or decline of particular species, including insects, along the Athabasca River.”<sup>242</sup>

Individual and community responses to real or perceived food security concerns is highly variable. Risk experience and tolerance, faith in scientific reporting, methods in which information about contamination are disseminated, intactness of traditional knowledge, age and gender, and economic circumstances all factor into an individual's decision about whether or not to harvest certain types of country foods and which locations are deemed to have safe resources. Often, the perceived benefits of consuming country foods outweighs concerns about contaminants (see Van Oostdam et al. 2005; O'Neil et al. 1997; and Furgal and Rochette, 2004).<sup>243</sup> For these reasons, there may not be a definitive response common to all ACFN Members.

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<sup>241</sup> Candler, C.; Olson, R., DeRoy, S. and the Firelight Group Research Cooperative, with Athabasca Chipewyan First Nation. 2010. As Long as the Rivers Flow: Athabasca River Use, Knowledge and Change. August 16, 2010. Pg. 18-19.

<sup>242</sup> Ibid. Pg. 20.

<sup>243</sup> See for example: Van Oostdam, J. et.al. 2005. Human Health Implications of Environmental Contaminants in Arctic Canada: A Review. *Science of the Total Environment* 351-352 (2005) 165-246; O'Neil, J. et.al. 1997. A Study of the Social and Cultural Construction of Environmental Health Risks in Aboriginal Communities. Centre for Aboriginal Health Research; and Furgal, C. and Rochette, L. 2004. Perception of Contaminants, Participation in Hunting and Fishing Activities, and Potential Impacts of Climate Change. Nunavik Regional Board of Health and Social Services, Nunavik Inuit Health Survey 2004.

In general, avoidance and abandonment behaviours associated with industrial developments are common responses by Aboriginal peoples. For example Furgal and Rochette's (2004) research in Nunavik found that 25% of the study population had changed some aspect of their country food diet since hearing about chemical contaminants in the food chain. Similarly, Wolfe (1996:2) reported drastic declines (33-77%) in country food harvesting by Alaskan aboriginal communities right after the Exxon Valdez oil spill in 1989. Post spill data indicated that some communities resumed harvesting to pre spill levels within approximately five years, while others had not returned to pre spill levels.<sup>244</sup> More recently, Dr. Alleyne of Health Canada testified before the Federal Review Panel for the Prosperity Mine near Williams Lake, B.C. "I have seen in other communities where there was such a level of perception that the food source was contaminated that they would totally avoid foods from a certain area. Coastal First Nations rely quite heavily on salmon. If there's industrial activity close by, they may suspect that it would become contaminated from that. And it is not uncommon for First Nations to totally avoid harvesting from areas that they suspect."<sup>245</sup>

Given the sheer number of oil sands projects and their long term operating and reclamation lifespans, it can be expected that ACFN Member concerns about the quality of animal, fish, plant, water and air will persist for a long time, and perhaps indefinitely. Loss of confidence in the quality of resources can be expected to be exacerbated in future years given the likelihood that new oil sands projects will be developed. Some of these newer potential projects are situated in the northerly part of the ESA in close proximity to or within ACFN Homeland areas. Currently, ACFN Members have indicated they still feel comfortable harvesting certain resources north of Firebag River, however, there is a high likelihood that should these newer northern projects be approved, Members may also start avoiding the area north of this river as well. Over the long term, given the nature of ACFN Members concerns about the health of the environment in general, and resources fundamental to Rights, Values and Knowledge, it is quite possible that even once oil sand project areas are reclaimed these areas will not be considered safe and useful.

*So, what's going to happen after 75 years with Shell, CNRL, Suncor, all them. Even if they produce all the oil and gas the world needs, when they're done, they'll pack up and leave, and we'll still be here, if we're still alive then. If they leave, then they will leave the land back in the natural state that it was before they started. They said they will. But how do we know that? And what can we really look for on that land after it's been done, been dug up, torn, you know. The stuff that they use, all the chemicals that they use to extract oil from the sand, and then turn it to gas and whatever, that's what's polluting everything in this country, the chemicals that they use. So, as it is today, everything is different from forty years ago. What's it going to be like another 75 years down the road. What can children hope for? Grandchildren and their children? [1A, ACFN Land Use Plan Preservation Areas Study. October 15, 2009, Old Fort Elders Focus Group]*

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<sup>244</sup> Wolfe, R.J. 1996. Subsistence Food Harvests in Rural Alaska, and Food Safety Issues. Paper presented to the Institute of Medicine, National Academy of Sciences Committee on Environmental Justice, Spokane, Washington, August 13, 1996. Pg. 2.

<sup>245</sup> Federal Panel Review – Prosperity Mine, Public Hearing Transcripts Volume 5, March 24/10, Pg. 704.

Geographic areas that are upstream of oil sands development within the ESA where ACFN Members may have higher confidence in the quality of resources are difficult to access and can add expense to harvesting activity. For example, for Members who reside in Fort Chipewyan or on the Reserves part of the year, access to areas south and west of Fort McMurray involves boat access on the Athabasca River or flying into the city during the open water season (i.e. no summer road access between Fort Chipewyan and Fort McKay). As previously noted, “inland” areas, such as the landscape to the eastern side of the ESA, are not always accessible by boat and thus access may be restricted to winter only or by air charter during ice-free seasons. Thus, an adaptive response of focusing harvesting effort in areas deemed ‘off-stream’ and ‘safe’, is difficult both logistically and economically.

## **5.3 Avoidance or Abandonment Due to Activity, Interference and Competition**

### **5.3.1 Competition by Sport and Commercial Users**

As discussed in Section 4.3.2, the numbers of animals reported by the GoA harvested by sport hunters in Wildlife Management Units that are situated partially or wholly in the ESA appear to have decreased over the past several decades.<sup>246</sup> However, data concerning the number of sport hunters in each Wildlife Management Unit is not available for the period after 1999, nor is data available regarding the number of sport fishers or the sport fish harvest. Notwithstanding these GoA records, some ACFN Members report that they are running into more sport hunters and fishers in areas they frequent for purposes of Rights, Values and Knowledge, as demonstrated in the following quotes;

*Non-First Nations people are all out hunting in our traditional territories. It creates competition for food, and it's a safety issue. People are using all the inland lakes areas for recreation. They leave behind garbage and beer cans. So I have to go to a different location. [Affidavit of Raymond Cardinal, January 30, 2009, Paragraph 46. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

*It seems like there are non-First Nations people in every cutline hunting moose. That's partially why there's less moose, there's more competition. [Affidavit of Marvin L'Hommecourt, January 30, 2009, Paragraph 50. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

*I still go to Firebag [river]... Sometimes there are half a dozen boats at the mouth of the [Firebag] river, with non-First Nations people fishing. It's not safe on my trapline, because there are too many people out hunting. It seems like there are non-First Nations people in every cutline hunting moose. That's partially why there's less moose, there's more competition. [Affidavit of Marvin*

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<sup>246</sup> These data are based on annual tag returns and a voluntary harvester survey.

L'Hommecourt, January 30, 2009, Paragraph 18 and 50. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].

ACFN and Mikisew Cree First Nation recently advised the Department of Fisheries and Oceans;

*MCFN and ACFN harvesters have expressed concern about unregulated hunting by non-Aboriginal sports hunters. In addition, proposed and approved oil sands mines (e.g., UTS/Teck Frontier and Equinox Projects, Shell Pierre River Project, CNRL Horizon, and possibly others) may stand to, or may already be impacting bison habitat and/or increasing the ability of non-Aboriginal sports hunters to access the bison herd(s). ACFN and MCFN harvesters have found partially butchered bison carcasses (where only the choice cuts were taken by the hunter) in their customary harvesting areas and have expressed profound dismay at what they consider to be a disrespectful and wasteful practice.<sup>247</sup>*

With respect to the discussion of encroachment, it is not only that sport hunting results in competition for wildlife, ACFN members have expressed concern about the numbers of sport hunters on the land creates safety concerns. For example;

*Non-First Nations people are all out hunting in our traditional territories. It creates competition for food, and it's a safety issue. ... So I have to go to a different location. [Affidavit of Raymond Cardinal, January 30, 2009, Paragraph 46. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

*It's not safe on my trapline, because there are too many people out hunting. [Affidavit of Marvin L'Hommecourt, January 30, 2009, Paragraph 50. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

*Development is making it impossible to live off the land at Eleanor Lake or Point Brule like in the old days. The increased use and access by non-First Nations people means there are safety issues for hunting, decreased opportunities for harvesting, and increased competition for resources. If people aren't disturbing the traps, they're scaring off game. [Affidavit of Archie Cyprien, January 30, 2009, Paragraph 35 and 42. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

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<sup>247</sup> Athabasca Chipewyan First Nation Industry Relations Corporation and Mikisew Cree First Nation Industry Relations Corporation. 2010. The Relationship Between the Lower Athabasca River and the Traditional Uses and Rights of the Athabasca Chipewyan First Nation and Mikisew Cree First Nation. Submitted to B. Mackowecki, Department of Fisheries and Oceans. August 20, 2010. Pg. 18.

### 5.3.2 Interference, Noise, and Activity

Areas relied upon by ACFN Members have become increasingly busy over the past few decades. The landscape is occupied by sport hunters, mineral exploration crews, oil sand project workers and contractors, forestry workers, people engaged in a host of environmental monitoring activities, and there are also an increasing number of recreationists. Additionally, traffic, noise, lights from mine operations, smells, and dust are interfering with ACFN enjoyment of their Rights, Values and Knowledge. The severity of these issues and how ACFN Members are coping with the impacts is evident in the following quotes;

*Back when I started going .. to the trapline with my mom, there was just a little trail. We'd walk in or go in the jeep. Now there's a paved, two-lane highway, just like Highway 63. Syncrude, Shell, Albion Sands, Husky, Suncor, Imperial Oil and Exxon Mobil all have projects here. There's an airport right on the border of my trapline. There's been forestry activity and road building. There are cut lines and drilling all over. You can't swing a frozen rabbit without hitting them. [Affidavit of Marvin L'Homme-court, January 30, 2009, Paragraphs 42-43. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

*Industry has changed the way I hunt. There are too many people in there now. It disturbs the animals, and it's not safe. I'm scared when I go there, there are so many people. There are so many projects happening. All the drilling, logging, people going in there and testing, has pushed my traditional hunts farther back, farther north. That's what industry has done so far. They've pushed. They've taken everything out that they want, and they've pushed the animals farther away. [Affidavit of Raymond Cardinal, January 30, 2009, Paragraphs 42-43. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

*The recreation activity needs to be monitored. Some areas where I used to trap, there are no tracks now, no animal activity at all. There are so many trails crossing my trapline now. There are less marten, foxes and lynx on my trapline. I haven't seen a mink or mink trail in a long time. The activity is distracting. Any kind of disturbance affects the animals in some way. You don't have the freedom to wander around without seeing anyone. Now you'll be out in the middle of the bush and run into somebody. [Affidavit of Archie Cyprien, January 30, 2009, Paragraphs 36-37. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

*Home isn't what it used to be, that's for sure. Recreational activity is the major form of development in the inland lakes area....and the forestry companies have logged a part of it as well. The area is full of skidoo and quad trails. Most of the recreational users aren't First Nations. People are around for ice fishing in winter, and hunting and camping all year around. The government has been ignoring the people that have been there forever. We can't do what we want there*

*anymore. Sometimes it doesn't even make sense to go there anymore, because there are so many visitors. [Affidavit of Archie Cyprien, January 30, 2009, Paragraph 35 and 42. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

*Referring to the lights from oil sand operations at night; It's not like before, you go in the bush, you sit around and you're there by yourself. You and your family and whoever else. It's not that, when you see the lights coming like that, everything's gone. You got your night and you got your day, now it's just pure day, pretty much. [Elders Focus Group Interviews, October 20, 2009, Group Code PA-6].*

*There are about 200 quads a weekend coming into the sand hill area through XXX traplines and to the sand dunes on the south shore. Almost every long weekend the area is full of quadders. They have bear blinds/tree stands and empty barrels. Leave quad parts all over the place, "broken down parts and wagons". [Elders Focus Group Interviews, October 20, 2009, Group Code PA-7, XXX – personal names removed by writer].*

*The people of Fort McMurray think the Richardson Backcountry is their playground and there are hundreds of snowmobiles in the winter and quads the rest of the year. This disturbs the caribou as well. [Affidavit of Patrick Marcel, October 1, 2010, Paragraph 25. Federal Court No. T-1437-10].*

*It's not necessarily development but sure a lot of people out there hunting, fishing, quadding, ice fishing, and hunting, building trails. Got more trails now than ever seen in my lifetime. Who gives permission to build trails? I can't even build trails in my trapline without getting shit, but everyone else is doing it, wherever, whenever, anytime. It's gotta be controlled in terms of access to traditional territories. [Elders Focus Group Interviews, October 19, 2009, Group Code PA-3].*

*There's a big camp with 500 men across the creek from my cabin. When I go to my cabin they're all rubbernecking, staring and watching me. It bothers me to no end. The camps are dry, so they go to my cabin to party and they wreck it. They wrecked my mom's cabin. [Affidavit of Marvin L'Hommecourt, January 30, 2009, Paragraphs 48-49. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

*...used to be chickens right on the road, they eat gravel, that's what they eat...I don't see any of that now, not like before. I used to be able to kill them with a slingshot...I used to pick berries ... going to that trapline, there's a good spot there... there would be lots of blueberries there, but I guess there is so much traffic now, all the dust is getting all over those berries and stuff. You can't really go walk way in the bush. I used to take my granny there and she'd sit in one spot and just pick around her, and she'd move around and sit in another spot, pick*

*around that area...And once they're in operation, you might as well say goodbye to the hunting and stuff around there, you'll have to go somewhere else (A02 interview transcript, July 28, 2007).*<sup>248</sup>

*I used to camp at McClelland Lake on the other side... on the north side of it. One of my friends owns a trapline there and we used to hunt there. Up into the Fort Hills, there's places in there that I used to hunt that I can't hunt anymore because of too much construction going on. At first it started off with the drilling projects and now there's just all kinds of movement in there, as far as heavy equipment, there's all kinds in there...(A06 interview transcript, July 31, 2007)*

*... the landscape sure looks pretty sad with all those trees gone ... first it was burned, then a whole bunch of trees were gone and now there's a big pit there like a moonscape. And it's hard to feel happy and excited to go in the bush when you have to drive through the mine and the pits and everything to get there and once your there you feel like, you know, they're moving in, they're getting closer, they're right there, they're coming, they're at your door. It kind of takes away the excitement and the fun and adventure of being out there in the bush in the wild when all of that's going on. I mean you see it, you could smell it, you could taste it, you could feel it, you know, that's what they're doing, you could hear it. So it effects all of your senses so of course it's going to effect you right? Unless you totally don't care, then. Maybe that's why people just drink so they don't have to think about it (A01 interview transcript, July 27, 2007).*<sup>249</sup>

The number of airfields and take offs and landings in ACFN's Territory has the potential to disturb wildlife as well as ACFN members while they are on the land. The following quote from an ACFN member illustrates this situation;

*"They're scaring the moose away. I'm calling a moose, all of a sudden a moose comes out and he's coming towards me and I don't want to kill him in just any spot. I want to wait for the right spot, because I don't want to work, you know, there's no need for that. So you call him out, and he's coming, and I'm getting ready in the right spot, and he's coming, and all of a sudden [sound effects] a chopper flies over and the moose is gone. Now, I'm choked now, and I'm yelling at these guys, and they finally look at me and "oh, \*\*\*!", you know, now they're all gone, they jump in the chopper and take off. They landed, yah, they were taking out their bags and everything and then they took off. That was a nice moose. That could have fed my family for the whole winter."*<sup>250</sup>

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<sup>248</sup> In: Candler, C. and the Firelight Group Research Cooperative with Athabasca Chipewyan First Nation. Athabasca Chipewyan First Nation Integrated Knowledge and Land Use Report Assessment for Shell Canada's Proposed Jackpine Mine Expansion and Pierre River Mine. April 20, 2011. Pg. 52.

<sup>249</sup> Ibid. Pg. 65.

<sup>250</sup> ACFN, Elders Focus Group Interviews, October 20, 2009, Group Code PA-6.

Based on the evidence above, it is clear that the ability of ACFN Members to practice their Rights, Values and Knowledge is being impacted by industry noise, light and activity and consumptive and non-consumptive recreational land users. The evidence indicates that ACFN Members are responding to this encroachment by avoiding or abandoning traditionally used areas.

Recreational users, sport fishers and hunters, as well as other First Nation and Aboriginal groups are also being displaced from the oil sands development area and appear to be concentrating in the remaining undisturbed landscapes in the ESA. As discussed in Section 4.1, the forecast is for continued rapid population growth in the ESA over the next 40-50 years. This growing non-Aboriginal population will increasingly put demands on undisturbed landscapes for recreational and sport harvesting and result in even larger numbers of people spending time on the remaining lands that have utility for ACFN's Rights, Values and Knowledge. Importantly, ACFN's population, as well as other First Nations and Aboriginal groups are also growing, and this means that the landscapes and resources to support their respective Rights, Values and Knowledge may also be increasingly taxed.

Currently, access to geographic areas in the ESA that are undisturbed by industrial development, and in particular ACFN's Homeland areas, is the primary constraining factor preventing more intense recreational and sport harvesting activity. If the GoA proceeds with its planned transportation network, new industry town, and encourages tourism/recreation in the new LARP public park areas (as discussed in Sections 4.3.1, 4.2.5, and 4.3.3), potential for greater disturbance and competition will occur. Opening up all-weather roads into the area north of the Fire Bag River will make ACFN's Homeland areas readily accessible to Fort McMurray and other urban centre residents.

If a new industry town is developed just south of ACFN Reserve 201G (see Section 4.3.1), this will mean that oil sands workers, and perhaps their families as well, will become permanent residents of the area; i.e. instead of working their shift and returning home, they will/may stay in the proposed town on a year-round basis. If non-Alberta residents take up residency in the proposed town for six months or more, they will become Alberta residents, with access to Resident sport fishing and hunting privileges. Living and working from such a town will create opportunity for town residents to utilize boats, skidoos, etc. for consumptive and/or non-consumptive recreational activities within or in close proximity to ACFN's Homeland areas, thereby creating the potential for increased presence and competition or disturbance to Rights, Values and Knowledge.

## **5.4 Summary**

The areas of the ESA that have supported and are needed to support ACFN's Rights, Values and Knowledge in the future are rapidly becoming disturbed and/or inaccessible. The severity of displacement and avoidance behavior is evident in the following quotes made by ACFN Members;

*“We’re worried not only about the caribou herds, but also the environmental impacts of development and our very existence in this region. We the Denesuline people will not stand for it anymore. We will not be relocated into other areas. We’ve been relocated twice in the last hundred years. We’ve been displaced from our homestead. We’re worried we’ll be displaced again. If the government continues to allow these industrial sites, eventually this land will become so toxic that we won’t be able to live here anymore. We will become environmental refugees.”* [Affidavit of Allan Adam, October 1, 2010, Paragraph 20. Federal Court No. T-1437-10].<sup>251</sup>

*The Government and the development can only push us so far up in our traditional territory. We are literally being pushed up and away by the development. This winter at Jackfish and south of there they are doing exploration for uranium. If they develop the south of our traditional territory, in the Richardson Backcountry, we will not be able to feed ourselves. Lots of ACFN people go south of Lake Athabasca to get their wild meat. Life on the reserve cannot sustain itself without the wildlife in the south. There are too many of us and we will not have enough to eat.* [Affidavit of Patrick Marcel, October 1, 2010, Paragraph 29. Federal Court No. T-1437-10].

Blair Whenham, former Director of the ACFN Industry Relations Corporation summed the issue up as follows;

*“The ACFN and other regional First Nations have been asking for access management plans, including restrictions on non aboriginal ATV and other access to the back country. Alberta has been reluctant to impose such restrictions. It seems obvious to us, that not all uses can continue. This fragile landscape cannot handle the impacts of mining plus additional impacts from forestry, increased hunting, recreational and other uses. Intensive management is required, and aboriginal use must be given priority in our shrinking traditional territory.”*<sup>252</sup>

Displacement from the Athabasca-Peace delta can be expected to continue indefinitely given that regulation of the Peace River for hydro-electric development is necessary to meet growing B.C. energy requirements, as evidenced by B.C. Hydro’s proposal to construct another generating station (Site C) and the approved but not constructed Dunvegan generating station on the Alberta side of the Peace River. The added cumulative impact of climate change on water flows and levels is uncertain.

Displacement associated with existing oil sand project operator access restrictions, linear features, project footprints, etc. will continue throughout their operational phases. The spatial extent of this type of displacement can be expected to increase over time given the number of new oil sand projects that are in various stages from announcement to construction. Each and every one of these potential projects will contribute to further alienation. Importantly, many of

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<sup>251</sup> Caribou case against the Minister of Environment and Attorney General of Canada.

<sup>252</sup> Whenham, Blair. Athabasca Chipewyan First Nation Industry Relations Corporation. 2006. Submission to Oil Sands Multi-stakeholder Committee Panel, for Phase 1, Public Consultation Open House, Fort Chipewyan, Alberta, October 4, 2006. Pg. 8.

these pending projects will be situated closer to, and in some cases within, ACFN's Homeland areas. Oil sands development-related displacement will occur for many years as each project typically has an operating lifespan of 25 to 50 years. Based on the writer's review of several oil sand mine applications, full restoration of mature terrestrial vegetation will take quite some time after the closure phase of these projects and in many cases portions of the final landscape will contain remnant water features such as pit lakes, tailing ponds, water storage ponds, and fish habitat compensation lakes. As noted previously in this report, ACFN Members report significant concerns about the ability of oil sand operators to successfully return the landscape to a state where it would once again support Rights, Values and Knowledge.

As noted, ACFN Member concerns about the quality of resources which support and give meaning to Rights, Values and Knowledge are likely to persist over the long term. Each new industrial project can be expected to heighten concern, manifesting in further avoidance and abandonment behavior, particularly in the northern portion of the ESA which until now has been considered a safe place to harvest land-based resources.

The continued development of land adjacent to the built-up areas of Fort McMurray and Fort MacKay for residential, commercial, administrative, infrastructure and industrial purposes will result in more land being disturbed and rendered unusable by ACFN members residing in or near these centres. Importantly, the proposed urban growth node just east of McClelland Lake would create a resident population with relatively easy access into ACFN's Homeland areas. This could translate into higher rates of sport fishing and hunting, camping, snowmobiling and boating, thereby increasing the presence of non ACFN people on the landscape and enhancing competition for harvesting resources. Additionally, the footprint of such a community would further disturb the landscape and further displace ACFN members.

Finally, as more new roads are built in the ESA to support the oil sands industry (and other extractive industries) this creates opportunities for more people to utilize the remaining undisturbed landscape for consumptive and non-consumptive recreational purposes. Roads will be a double-edge sword for ACFN and its Members. An all-weather road linking ACFN's Reserves and Fort Chipewyan to Fort McMurray will likely reduce store-bought food and other costs, however it will also create new access for others into ACFN's Homeland Areas.

## 6.0 SECONDARY IMPACTS ON ACFN WELL-BEING

*Our Rights to use the lands and water on Traditional Lands have never been extinguished. The Traditional Lands, and our rights to use of the lands, are central to our Dené culture, identity and well-being. They are essential to the well-being of our future generations and their ability to sustain our culture in a changing world. The meaningful practice of our treaty rights depends on having sufficient lands and resources to exercise those rights. Sufficient refers to not only quantity but quality, including what is required to fulfill our cultural and spiritual needs.* ACFN Elders' Declaration on Rights to Land Use.

The previous section of this report described how various drivers of encroachment have directly impacted on ACFN's Rights, Values and Knowledge. This section discusses the realm of identified and potential secondary impacts ACFN's overall well-being. There is no definitive or commonly accepted definition of First Nations well-being. However, there appears to be general common understanding amongst Aboriginal peoples that well-being exists when there is balance and harmony within the social, cultural, economic, and spiritual dimensions of individuals, families and community; when traditional territories are healthy and productive; there are opportunities to engage in traditional activities including access to, consumption and sharing of country foods, and to transmit and receive intergenerational knowledge; and where relationships between humans and non-humans<sup>253</sup> continue to be based on respect and reciprocity.

In the words of ACFN, well-being involves;

*Dené livelihood ties people with place and culture with the land. These connections have implications for individual and community health and well-being and for maintaining the resilience of culture in the face of change. In the traditional Dené cosmology, the land is alive. The Creator imbued the land, the waters and all creatures that dwell upon or therein, with spirits and ACFN Elders remember the spirits that helped their ancestors to survive (ACFN 2010: 4-5).*

According to ACFN (2010) in the Dené understanding, livelihood is not purely, or even mainly, about economics. It is, instead:

*...about supporting the total way of making ones way in the world as a Dené individual. It is about "the way of life on the land" and how that relates to maintaining culture in the face of change. This includes the relationship between the physical acts of making a living and the spiritual and moral obligations of Dené individuals to themselves, to their community, and to the Earth and all of its creatures. It requires that physical and spiritual*

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<sup>253</sup> Non-humans includes the physical and spiritual components of animate and inanimate beings including land, water, animals, fish, plants and spiritual beings.

*needs are met in order to sustain oneself and one's community. As such, livelihood is central to individual and community well-being and to cultural continuity.*

## 6.1 Framework

In order to discuss secondary impacts it is necessary to ground the discussion within a culturally appropriate understanding of contemporary northern First Nations lifestyle or 'way of life'.

Weinstein (1997:5), commenting on the character of northern Aboriginal communities states<sup>254</sup>;

"Most distinctive about these [modern northern aboriginal] communities is the central role of hunting, fishing, and gathering. The cultures and their historical experience derive from an economic and spiritual relationship with animals and the environment which produces them.... Resource harvesting acts as a connector between environment, communities, human history and individual and family life. It is the integrating role of sustenance harvesting that makes it so important to aboriginal communities. This has always been true, but the significance is enhanced in times of rapid social change."

Similarly, Staples and Poushinsky (1997:11) have written;<sup>255</sup>

"It has been well documented that what is referred to as subsistence, sustenance or traditional use is more than a loose amalgam of discrete hunting, trapping, fishing and gathering activities. It is a complex set of social and economic relationships, based on principles of respect, responsibility, obligation and reciprocity, which guide activities associated with the domestic production, distribution and consumption of resources. The social and cultural organization linked to traditional land and resource use is also the glue that binds a community together. In this respect there are important links between community well-being, traditional land and resource use, the abundance, distribution, productivity and quality of harvested resources, and the traditional, local and state management of those resources."

Usher et al. (2003) describe the dynamic relationships common to northern Aboriginal communities with mixed wage and subsistence social systems;<sup>256</sup>

"Economic and social relations among households in a community are guided by kinship principles, which are the primary determinant of access to resources and the organization of labour for productive activities, as well as of the distribution of goods and services for consumption. Kinship is reinforced in the short term, and reproduced over generations, by the

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<sup>254</sup> Weinstein, Martin S. 1997 "Getting to Use in Traditional Use Studies." A paper presented to the Society for Applied Anthropology. March 1997.

<sup>255</sup> Staples, Lindsay and Poushinsky, Nick, North\West Resources Consulting Group. 1997. "Determining the Impact of the Tulsequah Chief Mine Project on the Traditional Land Use of the Taku River Tlingit First Nation." A Report Prepared for: Environmental Assessment Office, Province of British Columbia.

<sup>256</sup> Usher, Peter J. Gerard Duhaime, and Edmund Searles. 2003. "The Household as an Economic Unit in Arctic Aboriginal Communities, and Its Measurement by Means of a Comprehensive Survey." In: *Social Indicators Research* 61: 175-2003. Kluwer Academic Publishers. Printed in the Netherlands.

sharing of work, the learning of skills and values in the course of production, the distribution of goods and services, and the organization of consumption. In subsistence-based systems, the ends of economic activity tend to be inseparable from the social system, and are more likely to be the maintenance of the system of social relations rather than accumulation at the level of enterprise. Both subsistence activities and subsistence outputs are essential for the maintenance of the social system. Through both production and distribution, norms and virtues such as patience, sharing, and mutual aid are reinforced and reproduced. Subsistence must therefore be understood as a system of human relations involving the organization of production, distribution, and consumption, in which the reproduction of social relations is as much a concern as the production of material goods.”

On the issue of examining development related impacts on Aboriginal communities, Hugh Brody (1981) wrote;

“Environmental effects, good or bad, are inseparable from the social and individual well-being of a people whose domestic economy, historical experience, and sense of identity are focused on the land and its resources. Even though the precise links in the causal chain from environment to society are not easily spelled out, the effects upon individuals of divorce from their traditional activities are clear to see.”

This view is echoed by Staples and Poushinsky (1997);

“It cannot be assumed that the social and economic effect on a community or a household is directly proportional to the significance of the environmental effect to which it is linked. The inter-actions between the socioeconomic environment and the physical and biological environments must be carefully considered in a traditional use study, if the relationships between stressors and impacts are to be understood and their significance for those who are experiencing these impacts assessed.”

Usher et al. (2003) indicate that measuring the sensitivity of subsistence-based economies to change is problematic, because subsistence is a flexible and resilient system. Its participants can and do adapt to change, whether adverse or beneficial. However, there are clearly limits beyond which they cannot, and there are cumulative adverse effects which impair the capacity to adapt and respond.

Symbion and Usher (2002) summarize;<sup>257</sup>

“So long as (1) the natural resource base continues to be sufficiently abundant and accessible, (2) kinship continues to be the organizing principle of production, distribution, and consumption, and (3) the material and non-material needs of community members continue to be met, then a viable social system will be sustained. That is, subsistence-based systems are normally ecological sustainable, economically feasible, and socially desirable, so long as these foundations

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<sup>257</sup> Symbion Consultants and P.J. Usher Consulting. 2002. Loss of Use Study for Lac Seul First Nation, Preliminary Report, Volume A, Traditional Activities. Prepared for Lac Seul First Nation and Indian and Northern Affairs Canada, Specific Claims.

are more or less unimpaired. Like any other socio-economic system, a mixed-wage subsistence system can survive either internally or externally generated changes, even seemingly catastrophic ones, so long as the above functional requirements are not impaired. In surviving and sometimes incorporating these changes, mixed-wage subsistence systems may be significantly modified, especially in terms of some of their apparent characteristics such as material culture, activity, and behaviour of their members.

Mixed, subsistence-based economies are sensitive to industrial development and other externally generated changes -- not only direct physical and biological changes to aquatic and terrestrial environments but also competition for and restrictions on access to the resource base. Imposed changes in resource use and harvesting patterns will have a direct effect on the systems of land tenure and resource management, and the organization of production and distribution. Removal of any important species, critical habitat, or critical harvesting area from the subsistence system, whether by encroachment, regulation, or catastrophic environmental events, can be expected to have significant adverse effects on both individual harvesters and on the community as a whole. At some point, removal of a significant element of the resource base for a long enough time, and the resulting harvest disruption, will constitute cultural and social impairment, with the expected adverse effects on psychological and social integration and well-being.”

Within the impact assessment literature, social, economic, culture and health impacts are frequently intertwined. In some cases cultural impacts are grouped with or categorized as social impacts, and vice versa. In many cases, health and economic impacts are categorized as social impacts, but they appear to be equally treated as separate subject areas.

For example, Lawrence (2004) indicates that “Social impacts are about consequences to people and communities from proposed actions. They concern changes (planned or unplanned, intended or unintended) to people's lives - how they live, work, play, relate to one another and organize themselves to meet their needs and cope and function as individuals, families, groups, neighbourhoods, communities and members of society. Social impacts can relate to people's health (physical, mental, social), their heritage, their fears and aspirations, their culture (shared beliefs, customs, norms, values, lifestyle, expectations, language or dialect and religion that guide and rationalize peoples cognition of themselves and their society) and their well-being (including the distribution of well-being)”

Similarly, Vanclay (no date) identifies social impacts as changes to people's way of life, how they live, work, play and interact with one another on a day-to-day basis; their culture – shared beliefs, customs, values and language or dialect; their community – its cohesion, stability, character, services and facilities; their environment – the quality of the air and water people use; the availability and quality of the food they eat; the level of hazard or risk, dust and noise they are exposed to; the adequacy of sanitation, their physical safety, and their access to and control over resources; their health and wellbeing – where health is defined as “a complete state of mental, physical and social wellbeing, not merely the absence of disease or infirmity”, and is applied to individuals and to the society in which they live; and finally, their fears and aspirations – their perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children.

The Mackenzie Valley Environmental Impact Review Board's Socio-Economic Impact Assessment Guidelines (2006) also include all aspects of social, economic and cultural impacts. However, the Board is currently in the process of developing separate cultural impact assessment guidelines. They have defined culture as "a way of life, a system of knowledge, beliefs, values and behaviours passed down to each generations." Culture is made up of tangible and intangible elements. "Intangible elements of culture are the things that you cannot see or touch, but are essential to maintain and practice your culture. For example, intangible elements of culture include spiritual beliefs, language, traditional knowledge, oral history, and inter-generational relationship patterns."

The International Network for Cultural Diversity defines "cultural impact" as consequences to human populations of any public or private policies and actions that significantly change their norms, values, beliefs, practices, institutions as well as the way they live, work, socialize and organize themselves as part of their cultural life.<sup>258</sup>

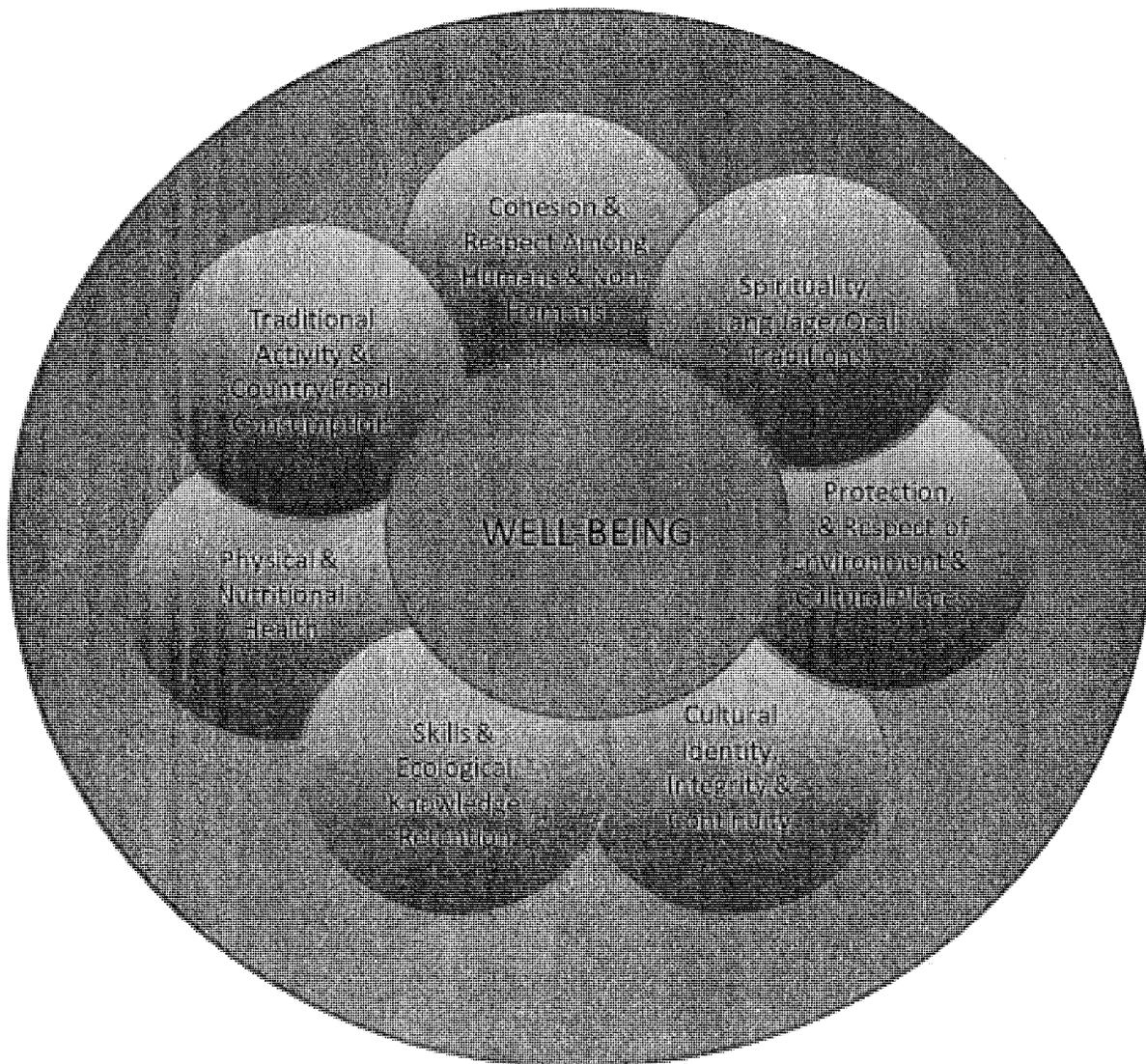
Yap (2003) has proposed the term 'human impacts' to encompass social, economic, cultural, institutional and health impacts. This author further proposes that human impacts be examined within an 'inclusive impact assessment' or an "assessment approach that systematically includes in its scope, human impacts, in addition to, and with the same level of treatment as, the biophysical impacts."

In summary, there are multiple ways of naming or categorizing the elements of, and impacts on well-being. For purposes of convenience only, the author has chosen to organize the discussion within three main themes: economic, socio-cultural and health impacts. None of these theme areas are exclusive. For example, the products of traditional use (e.g. food, medicine) have economic value, but also the activity of acquiring and consuming traditional products sustains and promotes social, cultural, health and spiritual values. Similarly, inter-generational interaction and knowledge transmission promotes social cohesion, cultural continuity, and environmental ethics. Figure 6-1 provides a perspective on some of the key inter-connected elements of well-being as they relate to Rights, Values and Knowledge.

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<sup>258</sup> International Network for Cultural Diversity. 2004. Framework for Cultural Impact Assessment. <http://www.incd.net/docs/ciaframework.htm>

FIGURE 6-1: Perspective on Inter-Connections of Rights, Values and Knowledge Well-Being Components



## 6.2 Economic Impacts

### 6.2.1 Decline in Harvest Success and Opportunity

*The community of Fort Chipewyan still heavily exercises our treaty right, our inherent right to the land and to the water resources we are surrounded by. As spoken to you yesterday in Fort Chipewyan, I said that 78% of the community still utilizes the traditional ways of life by harvesting off the land. We harvest the food off the land and from the waters. Those very animals, on a daily basis, drink from the Athabasca River and other water bodies around the area. Our people still consume the food, the wildlife that is out there, on a daily basis, to provide for their families.<sup>259</sup>*

The numbers and relative contribution of wildlife, fish and plants contemporarily harvested by ACFN Members is not known, nor have there been any studies conducted that contribute to understanding past and present harvest or consumption rates and trends over time.<sup>260</sup> Importantly, quantitative information on the actual types and quantities of resources needed and/or desired by ACFN Members now and in the future to meaningfully support the exercise of Rights, Values and Knowledge, to the fullest extent desired, is not available. What is known, as discussed in the previous section of this report, for a variety of reasons the geographic area over which ACFN Members can engage in Rights, Values and Knowledge has been reduced, and confidence in many of the resources in the ESA has been compromised and is currently manifesting as avoidance behaviour. Both of these factors have already impacted on the types and quantities of resources that ACFN Members are able to harvest. Planned and potential developments will further exacerbate displacement and avoidance, leading to further loss of opportunity to harvest preferred resources in preferred locations, by preferred means.

*Some of my friends, ACFN members that live in Fort Chipewyan, they have to go out moose hunting and fishing because groceries are so expensive there. I bring them fish, because they're scared of the fish in Lake Athabasca. No one eats the fish out there anymore. [Affidavit of Marvin L'Hommecourt, January 30, 2009, Paragraph 33. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

The contribution of harvested goods to individual, family and community economic welfare can be significant. A sampling of consumption surveys in northern First Nation and Aboriginal communities in the 1980's and 1990's indicates per capita country food consumption levels can range widely as illustrated in the following examples. It is noted these studies calculated consumption based upon reported harvest levels and whole weight to edible weight conversion factors:

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<sup>259</sup> ACFN Chief Allan Adam. 40th Parliament, 2nd Session, Standing Committee on Environment and Sustainable Development. May 12, 2009. <http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=3895450&Language=E&Mode=1&Parl=40&Ses=2>

<sup>260</sup> Wein et al. (1991) reported on consumption levels of Chipewyan, Cree, and Metis residents living in Fort Chipewyan and Fort Smith, however data specific to ACFN is not reported.

- Omushkego Cree (Hudson Bay lowlands, Ontario), 1990: 106 kgs/capita<sup>261</sup>;
- Keewatin region Inuit, 1984-85: 224 kgs/capita<sup>262</sup>;
- James Bay Cree, 1982: – 115 kgs/capita<sup>263</sup>;
- Makkovik Inuit, Labrador, 1980-81: 54-123 kgs/capita<sup>264</sup>;

Wein et al. (1991) conducted a food consumption and dietary survey in Fort Chipewyan and Fort Smith. Based on the results of the 24-hour recall survey, the authors determined that average country food consumption by the Fort Chipewyan sample (including Chipewyan, Cree and Metis families) was 0.5 kgs/week (equates to 26 kgs/year). Families in the upper quintile of the sample were reported to consume two to two and half times more country food than the average (approximately 1 to 1.25 kgs/week or 52 – 65 kgs/year). The results of this study are not comparable to the above bulleted study results due to the methodology.<sup>265</sup> The results are however comparable to two recent studies done by the First Nations Food, Nutrition and Environment Study in the provinces of B.C. and Manitoba, which largely utilized the same methodologies. A nutrition study conducted in 2008-009 with 21 First Nations in B.C. calculated the average daily consumption of country foods by 21 First Nations at 97.65 grams/capita/day [equates to approximately 35.6 kgs] (Chan et al. 2011:122). The results for the same nutrition study conducted in 2009-2010 with 9 First Nations in Manitoba determined the average daily consumption of country foods was 45.26 kgs/capita/year [equates to approximately 16.5 kgs] (Chan et al. 2012:120).

A number of the studies, although all quite dated, provide an indication of the importance of harvested food goods relative to overall community economies. The value of harvested goods, measured using the replacement cost proxy method (i.e. cost of purchasing similar nutrient value and comparable taste preference foods), ranged from 11% to 58% of total community economy, including all wage and transfer payments.<sup>266</sup> More recently, the value of country food harvests (meat and fish only) in four Decho communities for the year 2006 was estimated to have a replacement value in the order of \$880/capita, which translates to \$3,520 for a family of four (approximately \$3,930 in 2012 dollars based on the Canada consumer price index at August 2012). This value was considered conservative by the author because the study did not account for many smaller animals or plants. Additionally the annual value of fuel wood was reported to range from \$184 to \$301/capita.<sup>267</sup>

<sup>261</sup> Berkes, F., George, P.J., Preston, R.J., Hughes, A., Turner, J. and Cummins, B.D. 1994. Wildlife Harvesting and Sustainable Regional Native Economy in the Hudson and James Bay Lowland, Ontario. *Arctic*, Vol. 47, No. 4 (December 1994), pgs. 350-360.

<sup>262</sup> Gamble (1987) reported in Berkes et.al. 1994.

<sup>263</sup> James Bay Cree Native Harvest Study, reported in Berkes et al. 1994.

<sup>264</sup> Mackey, M.G.A. and Orr, R.D. 1987. An Evaluation of Household Country Food Use in Makkovik, Labrador, July 1980-June 1981. *Arctic*, Vol. 40, No. 1, (March 1987), pgs. 60-65.

<sup>265</sup> Total reported country food consumption levels were based on cooked weight and therefore the data is not comparable to the results of studies that estimate consumption by converting types and number of animals, fish, plants harvested into edible food weights.

<sup>266</sup> Berkes, F., George, P.J., Preston, R.J., Hughes, A., Turner, J. and Cummins, B.D. 1994. Wildlife Harvesting and Sustainable Regional Native Economy in the Hudson and James Bay Lowland, Ontario. *Arctic*, Vol. 47, No. 4 (December 1994), pgs. 350-360.

<sup>267</sup> IMG-Golder Corporation. 2006. Renewable Resource Assessment of the Edézhíe Candidate Protected Area. Submitted to Edézhíe Working Group. <http://www.nwtpas.ca/areas/document-2006-edhzhie-renewable.pdf>

The contribution of country foods to ACFN family economies is especially important given the higher cost of foods in Fort Chipewyan, as well as in Fort McMurray. A cost of living index for Fort Chipewyan could not be located however the GoA reports that food prices in Fort McMurray in 2010 were 5.3% higher than Edmonton (base used for comparison).<sup>268</sup> Jacques Whitford (2006) determined that food retail prices in Fort Chipewyan were on average 121% higher than Fort McMurray. Fresh produce such as lettuce and potatoes, were found to be between 200-300% higher. This 2006 information is similar to that reported by Chan et al. (2012:99) where the authors determined that food costs were on average 126% higher in the Denesuline communities in Manitoba (both of which have limited winter road access and are fly-in only for the balance of the year) compared to Winnipeg, Manitoba costs. Higher costs at Fort Chipewyan are largely associated with transportation costs where goods are transported by air or barge during the ice free season and by winter road for a few months of the year. In an effort to address high food costs, the Nuneen Health Board in Fort Chipewyan runs a “Good Food Box” program which pools resident’s money to purchase bulk fresh vegetable and fruit orders from a larger retailer in Fort McMurray. The agency reports that one out of every five dollars goes towards freight charges.<sup>269</sup>

On the issue of food costs, Chief Allan Adam reported;

*“We live in a remote community. We don't have all the luxuries of the people from down south, where they can just go to a store and buy a jug of milk for three dollars and something. We have to spend upwards of thirteen dollars for a four-litre jug of milk. On fixed incomes, our elders, our single parents, many of whom don't have any jobs to go to, have no choice but to reside on and live off the land.”<sup>270</sup>*

To provide a perspective on the gross economic value of country food to ACFN Members, rough calculations were performed using the replacement cost method which involves multiplying a retail price<sup>271</sup> for lean protein substitutes by reported average edible food weights<sup>272</sup> for various species. A number of country foods typically harvested by ACFN Members are conservatively valued as follows:

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<sup>268</sup> Government of Alberta. 2010. 2010 Alberta Spatial Price Survey. Table 3, pg 12.

[http://www.albertacanada.com/documents/SP-CS\\_2010-alberta-spatial-price-survey.pdf](http://www.albertacanada.com/documents/SP-CS_2010-alberta-spatial-price-survey.pdf)

<sup>269</sup> Slave River Journal, online edition. April 13, 2010 “Fresh fruit and veggies for Fort Chipewyan residents.”

<sup>270</sup> ACFN Chief Allan Adam. 40th Parliament, 2nd Session, Standing Committee on Environment and Sustainable Development. May 12, 2009. <http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=3895450&Language=E&Mode=1&Parl=40&Ses=2>

<sup>271</sup> Illustration uses a base replacement value of \$14.63/kg, representing the averaged price of five cuts of beef as reported by Statistics Canada. October 2011. Food and other selected items, average retail prices.

<http://www40.statcan.ca/01/cst01/econ155a-eng.htm>. Averaged retail value of round steak, sirloin steak, prime rib roast, blade roast and stewing beef is based on Canada-wide data. As discussed above, prices in Fort Chipewyan may be over 120% higher. The base replacement value of \$14.63 has been increased by 120% to \$32.18/kg.

<sup>272</sup> Edible food weights for different species per Ashley, B. 2002. Edible Weights of Wildlife Species used for Country Food in the Northwest Territories and Nunavut Northwest Territories and Nunavut. Manuscript Report No. 138. Wildlife and Fisheries Division, Department of Resources, Wildlife and Economic Development, Government of the Northwest Territories, Yellowknife, NWT.

- Moose - \$5,792 (180 kgs. x \$32.18)
- Barrenland caribou - \$1,448 (45 kgs. x \$32.18)
- Bison - \$8,689 (270 kgs. x \$32.18)
- Beaver - \$257 (8 kgs. x \$32.18)
- Goose - \$51 (1.6 kgs. x 10 x \$32.18)
- Walleye - \$16 (0.5 kgs. x 10 x \$32.18)

The contribution of country food to household economies can be substantial. By way of example, based on the above estimates, a household that acquires a moose, 2 caribou, 10 beaver, 20 geese, and 50 walleye has accumulated the equivalent of approximately \$13,700 (gross) in high quality nutritious food supplies for the year. This modest harvest example potentially adds about 61% to the 2010 median after tax family income of ACFN Members (based on a median income of \$22,528 reported for Treaty 8 First Nations by Lachance et al., 2010). The contribution of country foods to lower income individuals and families such as Elders and single mothers is even greater. For example Jacques Whitford (2006) determined the average income of working and retired ACFN Elders (aged 55 and older) in 2006 was \$13,220. Some Elders and single mothers may not be able to harvest for themselves, and thus country foods shared by other family and non-family members can make a significant impact on their economic welfare. Food items acquired by harvesting or through sharing means that cash resources can be directed at other expenses such as housing, utilities, education. Importantly country foods free up disposable income to purchase, upgrade and/or maintain equipment used in the exercise of Rights, Values and Knowledge.

## 6.2.2 Increased Costs

A second critical impact of displacement and avoidance is increased harvesting costs. The combination of access difficulties, general disturbance, increased competition, having to go further afield to attain harvest success and/or seek resources deemed safe to eat, and hauling potable water adds hours of time to harvesting activity and increases out-of-pocket costs. Increased time can mean individuals have to take more time off work, some of it perhaps unpaid vacation time, or that harvesting activity can no longer be accomplished in an evening or a weekend. Out of pocket expenses associated with travelling further afield and/or dealing with difficult waterway access conditions can include: increased fuel costs, potable water costs, increased wear on equipment such as boats and motors or skidoos, increased equipment maintenance costs. Spending longer time on the land/water also means carrying heavier loads which increases fuel costs as well.

*It would be more expensive and inconvenient if they [oil sands developers] develop Poplar Point, because I would have to go that much further for the traditional foods and medicines for my family and community. [Affidavit of Raymond Cardinal, January 30, 2009, Paragraph 30. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].*

Regarding the impact of low water levels on the Athabasca River and tributaries, as well as the Peace-Athabasca Delta, ACFN has reported;<sup>273</sup>

- increased travel time and expense due to reduced speed and need for increased care;
- increased travel time and expense due to getting stuck on sand bars (including occasional inability to find a channel through);
- increased travel time and expense due to avoidance of sand bar areas (including large areas where the Athabasca delta joins Lake Athabasca); and
- damage to boats, engines, and equipment.

To the writers knowledge, quantitative research regarding the amount of additional time required to exercise Rights, Values and Knowledge and/or additional costs (capital and operating costs) is not available.

In summary, displacement and avoidance, abandonment or adaption behaviours in response to encroachment can have significant financial impacts on ACFN individuals, families and the community at large. Reduced harvest success or opportunity, combined with increased costs can have the following economic impacts:

- Reduced income-in-kind associated with a reduction in the availability of country foods means that cash income must be directed at higher cost, and often less nutritionally healthy and culturally acceptable store bought foods. The impact is most harmful to Elders, single parent and low income families who have limited disposable cash income;
- Increased harvest costs also means that greater cash income must be directed at harvesting efforts. For some families, harvesting costs, including ownership of capital equipment may be a limiting factor, and thus any increase in costs can impact on opportunities to acquire country foods;
- Increased harvest costs, the time required to harvest and/or reduced harvest success can diminish the ability of intensive harvesters to acquire and share country foods with extended family, Elders and others such as single mother and lower income families. This is particularly significant when geographic areas relied upon by ‘super harvesters’ are rendered inaccessible or otherwise suffer a loss of utility.<sup>274</sup>

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<sup>273</sup> Candler, C.; Olson, R., DeRoy, S. and the Firelight Group Research Cooperative, with Athabasca Chipewyan First Nation. 2010. As Long as the Rivers Flow: Athabasca River Use, Knowledge and Change. August 16, 2010. Pg. 18-19.

<sup>274</sup> Wolfe (1987) refers to individuals or families that harvest extensively as “superhouseholds” and reports they are essential to the well-being of the community as a whole, precisely because they distribute their excess production widely through the kinship system.

## 6.3 Socio-Cultural Impacts

*Traditional activities are very important to ACFN's culture. We would lose our way without our survival skills, culture and traditional ways.* [Affidavit of Archie Cyprien, January 30, 2009, Paragraph 43. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].

### 6.3.1 Cultural Importance of Country Food Consumption

The harvesting, consumption and sharing of country foods has deep cultural meaning for Aboriginal peoples. It is a primary means for transmitting cultural values, skills and spirituality. According to ACFN (2010:13);

“The traditional economy of ACFN and MCFN helps to counter the high price of store-bought foods in the community of Ft. Chipewyan and contributes to food security. In addition, value-added products such as dry-meat and traditional medicines may be traded or bartered for other goods or services in the traditional economy. Handicrafts may also be sold outright and provide a source of income, especially for women. Trade and gifting plays a role in reinforcing cultural ties and networks. These networks of exchange and reciprocity are essential to culture and community resilience: they reinforce cultural identity, offer channels for exchanging cultural knowledge, and provide some security and assurance to individuals who make use of these ties in times of hardship.”<sup>275</sup>

Kuhnlein et al. (2009) reported that the Gwich'in, whom are considered to be Dene, identify practices around the harvesting and consumption of traditional foods as contributing to: healthy food, keeping people in tune with nature, sharing within the community, a way for adults to display responsibility to children, gain respect and build pride and confidence, and an essential part of culture.<sup>276</sup>

Traditional food has been referred to as the anchor for cultural and personal well-being (Van Oostdam et al. 2005). Wein and Freeman (1992), Kuhnlein and Souieda (1992) and Condon et al. (1995) all report that consuming wild foods is fundamentally important for personal and cultural well-being of Aboriginal individuals and communities. When access to country foods is impacted or lost, a subsequent effect is a loss in personal identity and deterioration in overall sense of self (see for example Wein and Freeman, 1992, Natcher, 2008). It has been well

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<sup>275</sup> Athabasca Chipewyan First Nation Industry Relations Corporation and Mikisew Cree First Nation Industry Relations Corporation. 2010. The Relationship Between the Lower Athabasca River and the Traditional Uses and Rights of the Athabasca Chipewyan First Nation and Mikisew Cree First Nation. Submitted to B. Mackowecki, Department of Fisheries and Oceans. August 20, 2010. Pg. 13.

<sup>276</sup> Kuhnlein, H.V., McDonald, M., Spigelski, D., Vittrekwa, E. and Erasmus, B. Gwich'in Traditional Food for Health, Phase I. 2009. In: Kuhnlein, H.V., Erasmus, B. and Spigelski, D. Indigenous Peoples' Food Systems: the many dimensions of culture, diversity and environment for nutrition and health. Food and Agriculture Organization of the United Nations and Centre for Indigenous Peoples' Nutrition and Environment. Rome 2009.

<http://ftp.fao.org/docrep/fao/012/i0370e/i0370e04.pdf>

documented that the acts of harvesting and consumption of country foods is not simply done to satisfy economic or nutritional needs, but also for preservation and perpetuation of cultural identity. Indigenous peoples have reported a loss of vitality and a decline in health and personal well-being when they are unable to eat country foods (Nuttall et al. 2005).

This cultural and spiritual imperative to engage in Rights, Values and Knowledge was described by an ACFN as follows;

*“...but we still go out on the land, we want to kill a moose, we want to kill some ducks or geese, or get some fish. Why? Because it’s our way of life. We can’t change. Why should we change? We can’t change because that’s what we are. We’re people of the land. The way I look at it, I understand First Nations people and the land is –if the Creator thought we should live like white people he would have put us on this earth to live like them, to live in the cities and stuff like that, but he didn’t, rather he choose to put us out on the land with the animals and the rest of creation to –for our livelihood, so that’s the way – I already believe that, I really do, I always did, when I look at the white man’s way and the First Nations way, it’s totally different. I always believe that this was done, this happened because it was meant to be that way by the Creator. There’s no other way I can explain, so once you put on the land, that’s your – to provide for your family, whatever you can get off that land. We’ll always feel that way, people will always feel that way because it’s part of their life. You know, it is.” [ACFN Land Use Planning Elders Focus Group Interviews, October 15, 2009, Group Code PA-1].*

Against this backdrop, the impact of fewer opportunities for ACFN Members to harvest country foods is likely having, and will continue to have, cultural implications. Reduced harvest activity, productivity, and consequent reductions in country food consumption levels can be expected to exacerbate socio-cultural impacts including, but not limited to:

- decline in family, extended family and community social organization and relationships surrounding traditional activities;
- decline in opportunities to share country foods and/or equipment;
- decline in cultural identity and self-esteem; and
- changes in food preference behaviours in youth.

### **6.3.2 Loss of Knowledge and Skills and Intergenerational Transmission**

*The people today have to teach the young people about their traditional way of life and their culture. They have to know all that. Once they know all that, they can work anywhere they want. What will hurt them, is when the family’s don’t teach their kids about the land and everything that goes with it. We often hear this from people, once our age group are gone, there’s a good chance that our culture, our language could be gone forever. That’s a sad thing to think about, let alone to see it happen. That’s why when we talk about land, to protect and preserve land, to help the young people learn about that our way of life and to try to maintain that way of life in the future. Protecting the land and everything. If we don’t do anything for the young generation, 50 years from now, it will be totally*

*different.* [ACFN Land Use Planning Elders Focus Group Interviews, October 19, 2009, Group Code PA-1].

Referring to birds not coming as much to traditional places hunted; *I can't hunt as much, it affects me a little bit in the hunting part for my son and that to pass on the knowledge, because it is getting very, very hard because there's less animals and birds and stuff and it's getting harder and harder to find them. It's making it harder on me to teach my son, to show him where the birds were supposed to be and then they're not there no more. And same thing as moose, last year, usually like this whole park here, our reserve, on the Athabasca River, every family get one or two moose a year but last year quite a few "" never even got one. Like I said, there's no water and places are drying up and where I was taught to go, you can't go there no more and it's kind of hard for me to teach my son.* [A08, May 20<sup>th</sup>, 2010. ACFN Athabasca River Use and TEK Project]

On the importance of continuity in knowledge transmission, Ruddle (1993:18) has stated;

“In addition to its practical aspects of ensuring sustained resource management, the transmission of traditional knowledge has fundamental socio-cultural importance to any society. During knowledge transmission over several generations, social institutions are gradually crystallized; routine or habitual ways of doing things gradually become the customary way that things are done. For children, a community's customary way eventually becomes the given-received social world, an analog of the biophysical-physical world with which it overlaps. In the process of transmitting knowledge to a new generation, the transmitter's sense of reality is strengthened. The social world, which is embodied in traditional knowledge, becomes enlarged during transmission. The rationale underlying custom, tradition, normative and actual behavior, and rules and regulations must therefore be provided to learners by teachers through a consistent and comprehensive legitimation.”

ACFN Chief Adam commenting on the loss of woodland caribou informed;

*Going out on the land is the way we pass on our culture. We can't go out on a yearly basis and practice our cultural beliefs and traditional practices toward caribou anymore.* [Affidavit of Allan Adam, October 1, 2010, No. T-1437-10, Federal Court].

ACFN has stated;

“When a bison is harvested by one member, the meat of the bison is shared amongst family and friends – this sharing is an important cultural practice linked to community cohesiveness and is a key value in Dene culture. The acts of harvesting

are important for the transmission of traditional knowledge to younger ACFN members and the continuation of the culture.”<sup>277</sup>

Knowledge transmission and development of traditional activity skills occur on the land. Information about such things as ice conditions, travel routes, overnight places, habitats of animals, fish and plants and best locations and times of the year to harvest them, methods of butchering and food preservation, and cultural norms regarding respect for animals, plants, fish, etc. are learned by children through direct observation, listening and doing with parents, grandparents, and extended family members. Cultural knowledge transmission also occurs while on the land. It is on the land that children learn about such matters as cultural stories, legends, place names, and proper protocols of respect for the non-humans. Loss of intimate contact with the land is identified as the primary reason for degradation of traditional systems (Johannes 1978; Berkes 1985; Chapin 1991; Ruddle et.al. 1992 in Berkes 1999).<sup>278</sup>

Disruption of knowledge transfer and skills development for ACFN has occurred and is likely to continue to occur for the following reasons:

- ACFN Members were displaced from Wood Buffalo National Park for almost 80 years. Many of the ACFN Members that had traditional knowledge about this once important area have now passed on. It is possible that the few remaining ACFN Elders and descendants of ACFN who transferred to Mikisew Cree Nation in the 1940's may be able to share and re-introduce traditional knowledge;
- ACFN Members have been displaced from many areas in the Athabasca River valley south of Firebag River due to industrial operator access restrictions, navigation difficulties, and concerns about contaminants. The long term operating lifespan and extended reclamation period associated with existing operations means displacement will continue to occur over multiple generations, potentially resulting in an absolute loss of knowledge of these areas. Based on a limited number of ACFN Member interview comments identified in this research, it is plausible that future generations of ACFN may not return to reclaimed areas at all due to contaminant concerns.
- ACFN Members have been displaced from the non-park area of the Peace-Athabasca Delta due to regulation of the Peace River since the mid 1960's. The utility of this area to support Rights, Values and Knowledge has been severely compromised. Due to the combination of reduced furbearer productivity and low aquatic furbearer pelt prices, few Elders and adults engage in trapping activity in the delta now. This means that younger ACFN Members have fewer opportunities and/or incentive to learn trapping skills from the older generation, as well as attendant country food harvesting skills, ecological knowledge, family and community cultural history, spiritual teachings, etc. in this historically important part of their traditional territory. Given that the Peace River is likely to continue to be regulated for an indeterminate amount of time, it is likely that

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<sup>277</sup> ACFN. April 13, 2010. Supplementary Submission of Athabasca Chipewyan First Nation to the Federal Statutory Review of the Species at Risk Act.

<sup>278</sup> In Berkes, F. 1999. Sacred Ecology: traditional ecological knowledge and resource management. Taylor and Francis, Philadelphia, U.S.A. Pg. 129.

inter-generational transmission of traditional knowledge about this area will continue to diminish;

- ACFN Members have been displaced from many areas that are accessed via the Athabasca River and its tributaries due to low water levels, particularly in the past twenty years. The combination of climate change, industrial water withdrawals, and industrial-related waterway re-configurations can be expected to continue and perhaps worsen waterway access conditions. Given that water routes are the preferred and economically feasible mode of access for ACFN Members, navigation and access problems will likely persist for an indefinite time, resulting in increasing loss of knowledge, and perhaps a total loss of knowledge for some areas;
- Low water levels of the Athabasca River and tributaries important for fishing and accessing land areas for harvesting and overnight camps means that certain areas are not consistently accessible, particularly during the important late summer/early fall harvesting season. Over time, if the frequency of years that access is inhibited increases, it is likely that knowledge of 'inland' areas will be impacted.
- Under low water level conditions in the Athabasca River and tributaries, ACFN Members must minimize the load in their boats in order to navigate the waterways. To do this, harvesters may not be able to bring along Elders, adult women and children, resulting in loss of opportunity for intergenerational interaction and gender-based teaching. According to an ACFN Member, the decision on whether or not to bring his younger children and partner in the boat is based on his assessment of water levels, the potential risk of being stranded, and knowledge of whether other ACFN harvesters are likely in the area in case assistance is required.<sup>279</sup>
- ACFN Members are already avoiding certain areas in the ESA, especially south of the Firebag River, due to concerns about industry-related noise, light and disturbance, increased sport and recreational land users, and concerns about contaminants. Continued avoidance over a long period of time can be expected to result in loss of knowledge about these areas. Projected population growth, combined with planned and potential industrial and infrastructure development will further limit the geographic extent of lands that ACFN Members feel comfortable engaging in Rights, Values and Knowledge, resulting in a continuum of loss of use and knowledge,
- ACFN Members are already avoiding harvesting fish from the Athabasca River and Lake Athabasca due to contaminant concerns. This means that the younger generation is losing the opportunity to be taught fishing skills and traditional knowledge about fish and their habitats, and engage in fish harvesting activity near their homes. The evidence suggests that ACFN Members are focusing their fishing effort on inland lakes in order to access fish that are not in contact with the Athabasca River or Lake Athabasca waters. These lakes are not readily accessible to young people and therefore do not present readily accessible opportunities for learning and doing on a regular basis.

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<sup>279</sup> Mr. Jonathan Bruno, personal communication, September 6, 2012.

In addition to the above, it is likely that there are declining opportunities for children, Elders, and even perhaps adult women to go out onto the land. Water navigation difficulties means harvesters have to be mindful of keeping boat loads to a minimum to facilitate access and for safety reasons, and this may mean fewer people on the boat, or more boats are required by the harvesting group to spread the weight load of equipment, people and harvested goods. As mentioned earlier in this section, an ACFN Member has indicated there is a general practice now of not going to places where harvesters feel they will not be able to get help from others if they are stranded. Factors such as cost and time and personal/family safety may also influence decisions about where harvesters go, with whom and how many can participate. When children, adult women and Elders are left at home this impacts on opportunities for gender-based teaching, generational-based teaching, youth role playing and interaction, and family and extended family bonding.

### 6.3.3 Loss of Continuity and Connection to Place

Where Aboriginal peoples engage in or enjoy their Rights, Values and Knowledge matters. Engaging in traditional activities in the very places that one's parents, grandparents, and earlier ancestral generations ensures continuity in traditional knowledge and transmission, and promotes and maintains social, cultural and spiritual relationships with both the human and non-human dimensions. In short, place is critical to cultural identity and cultural continuity.

Most Dene or Dené sūline communities that the writer is familiar with share a common understanding of the geography of 'Denendeh' (broad homeland of the Dene peoples). The geography of Denendeh is embedded in the narration of the story of the battle of two giants, Yakké-elt'ini and Bettsinuli. Yakké-elt'ini, the weaker of the two giants, won the fight with the assistance of a Dene man who cut the back of Bettsinuli's ankle. Bettsinuli fell backwards with his feet to west coast and his head fell in what is now northeastern Alberta, and his hair lay as far as Hudson Bay coast. The oral history explains that the lying body of Bettsinuli formed the migration route for Dene and caribou throughout Denendeh. Dene peoples of different regions of Denendeh refers to themselves by their general location of Bettsinuli's body parts. For example, the Dene of Cold Lake call themselves 'Thi-lan-ottiné or 'the people at the end of the head.'<sup>280</sup>

*It is important to me to continue these traditional ways. It's been a part of my family for hundreds and thousands of years. Hunting, fishing, camping, gathering food and medicines on our traditional lands, this is part of what it means to be ACFN. I hang on to my traditional ways because they are important to me. It's a connection to previous generations, and it's how we pass on and protect our traditional knowledge, culture and ways of being. I want to pass it on to my children so that it continues on. This land is what we use to fulfill ourselves, what I use to fulfill myself, as a human. I need the connection to the land, the*

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<sup>280</sup> In Coutu and Hoffman-Mercredi (2002:16-17)

*traditional foods, the spiritual aspects of the land around Poplar Point.* [Affidavit of Raymond Cardinal, January 30, 2009, Paragraphs 33-34. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].

*Passing on traditional ways to my children, their children and their children's children, is slowly coming to an end. I can go to other places, but I can't take them to those places and say, "This is where we went to fish. This where we went to trap, hunt and pick berries. This is where we camped. This is where our cabins were."* [Affidavit of Archie Cyprien, January 30, 2009, Paragraph 45. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].

*We're losing contact with the land. It seems like the government doesn't want us to have contact with the land. Our culture is being on the land.* [Affidavit of Patrick Marcel, October 1, 2010, Paragraph 35 and 37. Federal Court No. T-1437-10].

When First Nations and Aboriginal peoples are alienated or displaced, or avoid going to certain locations, they begin to lose the cultural connection to geographic places or areas that have long been part of their cultural history and landscape. The above quotes by ACFN Members suggests this process has begun. When this disconnect occurs over several generations, it is not difficult to understand how such connections can be permanently severed. This type of permanent severing has been described by other First Nations. For example, in her evidence concerning alienation from Cold Lake First Nation's traditional territory due to the Primrose Lake Air Weapons Range, Ms. Eva Grandbois told the Indian Claims Commission Inquiry; "Ever since we leased that land, it's a great loss for us. It's pitiful. All what we have learned from our forefathers, all what I have learned from my grandmother, we lost it all."<sup>281</sup> Similarly, the inquiry into the alienation of Kluane First Nation members from an important component of their traditional territory due to the establishment of the Kluane National Park and the Kluane Game Sanctuary, found; "Whether through fear or a respect for the law, the Kluane people mostly stayed out of the game sanctuary. The old trails became overgrown and difficult to find, and the stories and legends that belonged to these trails became lost as elders grew old and forgot, and then died, never able to pass on their knowledge to their children and grandchildren."<sup>282</sup>

#### **6.3.4 Changes in Sharing Norms**

As in the past, the basic purpose of sharing country foods has generally remained the same—to maximize the overall wellbeing of the community. In Aboriginal communities across the Canadian north, food sharing remains an important and widely-practiced tradition. Tait (2007), for example, found that food sharing takes place among 96% of all Inuit households. The exchange of wild foods (bush or country foods), and more recently equipment, unites families, communities, and regions on economic, social, and ideological grounds (Wheelerburg, 2008:171). This form of reciprocity not only facilitates the distribution of food as an economic

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<sup>281</sup> Indian Claims Commission. Primrose Lake Air Weapons Range Report. Ottawa. August 17, 1993. pg. 5

<sup>282</sup> Indian Claims Commission. Kluane First Nation: Kluane National Park and Kluane Game Sanctuary Inquiry, Ottawa, February 2007. pg 27.

resource, but also affirms personal relationships and the social networks that support them. Thus, by embodying both social and economic attributes, food sharing continues to represent a defining feature of the northern Aboriginal social economy. Encompassing an important spiritual dimension, food sharing and norms of reciprocity entail broader conceptions of social responsibility and account for an entirely different set of motivations that extend beyond economic rationality.<sup>283</sup>

Wein and Freeman (1992) report that for many Arctic residents consuming wildfoods is fundamentally important for personal and cultural well-being. When one loses access to country foods, a subsequent effect is the loss in personal identity and a deterioration in one's overall sense of self. Because Aboriginal cultures of northern Canada are rooted in the landscape and cultural values are perpetuated through continued land use activities, the cultural significance of subsistence pursuits cannot be quantified exclusively in economic terms. Nuttall and his colleagues (2005:654), for example, have argued that the harvesting of wildlife resources is not done to simply satisfy economic or nutritional needs, but rather to provide a fundamental basis for the social identity, cultural survival, and spiritual life of northern Aboriginal peoples. In this way, wildlife harvesting is as much an economic pursuit as it is an expression and perpetuation of cultural values.<sup>284</sup> Based on the writer's review of many ACFN documents and interview transcripts, this is also the case for ACFN.

Technology has already played a role in changing sharing norms. Factors such as freezers and quicker modes of transporting country foods from harvest sites to home means foods do not be distributed to avoid spoilage. As well, higher harvesting costs can influence sharing behaviours.

To the writers knowledge no research on sharing norms and practices and recent trends amongst ACFN Members has been conducted. However, the following evidence by an ACFN Member suggest that sharing continues to be an important practice;

*"I share all the traditional foods that I harvest with my family. Traditional foods supplement my diet. It helps financially because groceries are expensive. It's the same thing for my sisters. It helps with their grocery bills. They don't hunt, so I share with them. They need it, especially if they're not working."* [Affidavit of Marvin L'Hommecourt, January 30, 2009, Paragraphs 48-49. Action No. 080317419 Edmonton Registry, Court of Queen's Bench, Alberta].

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<sup>283</sup> In: Natcher, D.C. 2008. The Social Economy of Canada's Aboriginal North. Northern Research Forum "Seeking Balance in a Changing North" September 24-27, 2008, Anchorage, Alaska. Pg. 4.

<sup>284</sup> Natcher, D.C. 2008. The Social Economy of Canada's Aboriginal North. Northern Research Forum "Seeking Balance in a Changing North" September 24-27, 2008, Anchorage, Alaska. Pg. 4.

## **6.4 Physical and Psychological Health Impacts**

### **6.4.1 Dietary Nutrition**

There is virtually unanimous agreement within the medical field that country foods contribute to good health. Country foods contribute to good physical health for three main reasons. First, fish and animals are nutrient dense with high quality proteins, minerals and vitamins. In the case of animals, they are generally leaner than domestically raised livestock. Second, travelling and securing country foods generally involves significant physical exertion. Third, those with less access to country foods and limited disposable income often are faced with having to purchase cheaper and less healthy food alternatives (see for example: Wheatley, 1997, Van Oostdam et al 2005, Egeland et al., 2009 and Earle, L. 2010). On this third point, the National Aboriginal Health Organization (2008:7) reports;

“The dietary health of northern communities is influenced by the level of access to traditional or country foods, their dependency on southern foods, and the question of contaminants.” “A shift away from traditional foods towards southern market foods is often cited as the basis for the declining health status of Aboriginal Peoples in Canada. A diet of more processed foods high in sugar and salt increases the incidence of diabetes, obesity, heart disease, and other chronic diseases. Obesity rates among children and youth in Canada have nearly tripled in the last 25 years. Among First Nations children, the rates are two to three times higher.”

### **6.4.2 Psychological Stress**

Agriculture and Agri-Food Canada (1998:9) utilizes the following definition of food security; “Food security exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and health life.” Access to culturally acceptable food is acknowledged as an important criterion of food security. Statistics Canada (2011)<sup>285</sup> and Vozoris and Tarsuk (2002) report household food insecurity is associated with a range of poor physical and mental health outcomes, including distress and depression.

Food security may be an issue for ACFN Members on a number of fronts. As discussed in Sections 5.0 and 6.2, ACFN Members are facing declining opportunities to access traditional foods and increased costs. One of the primary reasons for declining harvest opportunities is loss of confidence in the quality of wildlife and plants, and most particularly fish, as well as significant concerns about potable water. In short, the evidence indicates that an unknown number or proportion of ACFN Members are currently avoiding harvesting traditional foods in certain parts of the ESA due to contaminant concerns.

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<sup>285</sup> Statistics Canada. 2011. Household food insecurity, 2007–2008, Canadian Community Health Survey. <http://www.statcan.gc.ca/pub/82-625-x/2010001/article/11162-eng.htm>

A decision to harvest or not harvest in the face of knowledge or even a perception of contaminants is an individual or household decision. On this matter Indian and Northern Affairs Canada (2003:222) states;

“The task of deciding what to do in relation to contaminants in traditional/country foods is for some a straightforward and simple decision and, for others, a much more complex and challenging exercise. One of the reasons for this is the fact that each individual involved in this process “sees” or “perceives” the issue differently. This difference in perception of the risks and benefits is influenced by such things as an individual’s experience and knowledge (technical, traditional and layperson), comprehension or understanding of the issue, direct involvement in the issue, social and cultural background, and/or their ability to choose to be exposed to the hazard or not, among other things.” “Due to the significant qualitative and symbolic benefits attributed to traditional/country foods in Aboriginal cultures, the perceptions and concerns related to food contamination are not simply proportional to the level of harvesting and consumption activities in communities. Reports of contamination undermine confidence in the environment and harvesting activities as sources of individual and collective well-being.” “Regardless of the knowledge of pollution or contaminants, many northerners report that they would continue to eat traditional/country foods despite the advice given by health officials, because traditional/country foods are part of their culture, lifestyle and health.”

Lambden et al. (2007:309) report that “Food security is jeopardized regardless of whether the risks to food safety are known or perceived as significant.” The National Aboriginal Health Organization (2011) points out that although Aboriginal people may continue to consume country foods even when advised of unhealthy contaminant loads, there are nevertheless psychological effects or mental wellness impacts when traditional foods are characterized as dangerous or wrong. On the one hand, not engaging in harvest activities and consuming traditional foods because of contaminant concerns is stressful because it goes against beliefs that these activities and foods contribute to cultural sustainability and good health. It also stressful because individuals, particularly parents, are then faced with having to substitute country foods with affordable alternatives, often which are of inferior nutritional quality. On the other hand, there is stress involved in eating known, or perceived to be, contaminated foods.

To the writers’ knowledge, no research has been done by or on behalf of ACFN on the issue of food security or insecurity. Based upon the nature of encroachment-driven environmental disturbance, wide-spread concern among ACFN Members about contaminants, and generally low disposable income levels, it seems possible that food insecurity could already be an issue. Given the types and long-term nature of existing and planned development in the ESA, the potential for food insecurity to exist over the long haul is not an unreasonable forecast.

Over and above psychological stress associated with food security, disturbance of lands, waters and natural resources that Aboriginal peoples are culturally connected to can cause deep psychological harm on two fronts. First, feelings of having no control in decision-making about how the environment is allocated, used, disturbed can result in individual and collective feelings of hurt, frustration and anger. Secondly, the worldview or cosmology of most indigenous peoples dictates that humans are related on a level basis with the animate and inanimate components of the environment. Humans are expected to treat all human and non-human

relatives equally and with respect, including a moral code of not harming the environment necessary for survival and being proactive in ensuring the safety and survival of not just humans, but all relations.

Clarkson, Morrissette and Régallet (1992:12) describe this overarching law of responsibility as follows;

“There is a teaching passed down from our ancestors that crystallizes our sense of responsibility and our relationship to the earth that arises out of the original law. It is said that we are placed on the earth (our Mother) to be the caretakers of all that is here. We are instructed to deal with the plants, animals, minerals, human beings and all life, as if they were a part of ourselves. Because we are a part of Creation, we cannot differentiate or separate ourselves from the rest of the earth. The way in which we interact with the earth, how we utilize the plants, animals and the mineral gifts, should be carried out with the seventh generation in mind. We cannot simply think of ourselves and our survival; each generation has a responsibility to "ensure the survival for the seventh generation".

Wolfe (1996:3) explains; “For northern peoples, trust in natural systems is grounded in indigenous knowledge, in the collective wisdom of oral tradition. The survival of northern peoples is linked with healthy natural ecosystems. Indigenous traditions commonly understand linkages between humans and animals to be more tightly webbed than do academic traditions. Natural ecosystems are infused with sentience. The animals are responsive to human abuse, in a kind of moral reciprocity. If people respectfully use wild animals, the animals will be available for harvest. In the experience of northern peoples, when humans abuse the ecosystem, problems follow, such as famine, sickness, failure.”

Similarly, Verschuuren (2006:315) describe the views of the Jawoyn peoples of Australia concerning mining reports; “The Jawoyn, traditional owners of Sickness Country [Buladjang], this time publically voiced their concerns about mining development taking place. It was believed that any harm done to Sickness Country would upset the ancestral spirits and by allowing this to happen, taboos would be broken and ancestral spirits upset. Great sickness and terror of immeasurable dimensions was predicted to fall upon those who upset the country and consequently all of humanity.”

This belief system is also described in Coutu and Hoffman-Mercredi's (2002:153-155) ethnographic study of Northeastern Alberta's Aboriginal history indicates;

“In Dene mythology, caribou never die, but chose to be killed by the hunter, and their spirit is immediately reborn or reincarnated as a new born calf. Consistent with the Dene concept of reciprocity in the nature world, the absence of caribou herds, a life-threatening event, was attributed to the maltreatment of these animals by humans. To chase or beat a caribou to death with sticks [a teaching conveyed in the oral story *Bé-tsuné-yénelchian*] was a violation of ancient hunting rituals which the Ethen-eldéli believed would be communicated by the spirit of the caribou back to the other members of the great herds.”

According to Coutu and Hoffman-Mercredi (2002:3); “In Dene cosmology, upsetting the balance of life, whether through carelessness, conflict or unrestrained harvesting practices, always leads to retribution in the natural world.”

According to ACFN (2010:4);

“In the traditional Dené cosmology, the land is alive. The Creator imbued the land, the waters and all creatures that dwell upon or therein, with spirits and ACFN Elders remember the spirits that helped their ancestors survive. The spirit of the people is linked inextricably with the spirit of the land.”

The Dene Kede, an official educational curriculum created by Dene and supported by the Department of Education, Culture and Employment, Government of the N.W.T includes the following teaching;

“Spiritual brothers were sent to the earth to bring laws to the land and to people. These laws were meant to help the Dene so that we could live with the animal creatures and with each other more peacefully. Messages have been left in the form of landmarks throughout our land to remind us of the sacredness of the land and the Dene laws which are to guide our lives. The prophets are people who have received messages for the Dene people from the Creator. The prophets have communicated that changes will put great pressures upon Dene. The Dene are required to: recognize that there is a power greater than themselves, protect and care for the land and the waters, continue to use the land and be sustained by it, and live good healthy lives.”<sup>286</sup>

Witnessing environmental degradation can be stressful. Emotions can include deep spiritual fear of repercussion such as noted by above. Working with First Nations who have been impacted by mining and hydroelectric development over many decades, many Aboriginal people have shared with the writer that they feel shame for not being able to protect their human and non-human relations, they feel shame about the losses that will be experienced by the younger generation and the generations yet to be born. First Nations people, especially Elders, have also shared with the writer that they feel emotions including anxiousness, frustration, depression and fear that their generation cannot fulfill its responsibilities to transfer the cultural knowledge necessary for the health and sustainability of their culture and the environment.

In comments on the Mackenzie Valley Pipeline environmental assessment, Health Canada (Van Kemanade, 2007) stated; “...evidence indicates that cultural and social impacts are long term impacts deeply affecting community and individual identity, self-esteem, and well-being. Evidence also shows that increased levels of stress and frustration related to loss of culture or land weaken people’s resilience and their ability to cope and increase morbidity and mortality rates.”

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<sup>286</sup> Dene Kede, Grade 9 Module Three: Spirit of the Land [http://www.ece.gov.nt.ca/PDF\\_File/Dene%20Kede/Grade%209/Curriculum%20Document%20Grade%209-Part%204%20Spirit%20of%20the%20Land.pdf](http://www.ece.gov.nt.ca/PDF_File/Dene%20Kede/Grade%209/Curriculum%20Document%20Grade%209-Part%204%20Spirit%20of%20the%20Land.pdf)

The following words of an ACFN Member describing his concerns about proposed oil sands development near Poplar Point provides an indication of how environmental disturbance is viewed and the confliction of not wanting to engage in Rights, Values and Knowledge in disturbed areas but having a cultural “duty” to maintain connections with the land.

*There will be more people there, I won't be able to go there, and be by myself with my family. There will be more disturbance, more garbage...I wouldn't want to go there and do my cultural practices, like hunting. It is very important to me to be able to hunt in that area. If I don't do it, I'll go crazy. It's good to be on the land, that's where the spirit is. If Industry digs a big hole in the ground, they'll destroy the spirit of the land...they destroy the spirit of the land and then I won't want to go there. But I have to go there anyway, because it's part of me, part of my heritage (Marvin L'Hommecourt affidavit, sworn January 30, 2009: 13).*

## 7.0 CONCLUSIONS

As described throughout this report, there has been substantial encroachment in the ESA. The voices of ACFN and its Members are clear that encroachment has and continues to directly and indirectly affect their ability to pursue and enjoy their Rights, Values and Knowledge. Research completed by ACFN, or on their behalf, also indicates the same. The types of impacts and responses to encroachment being exhibited by ACFN Members are generally consistent with the writer's own research experience and findings from working with other First Nations and Aboriginal communities across Canada.

The extent and severity of encroachment-based impacts, resulting from a combination of alienation, displacement, abandonment and avoidance appears in qualitative terms to be substantial. Encroachment-based impacts being experienced by ACFN and its Members are also cumulative to other factors such as residential school impacts, decline in economic viability in the trapping industry, increased participation in the wage economy, among others. Based on existing data and evidence available, the writer cannot comment on the severity of encroachment impacts in quantitative terms.

Information that would contribute to improved understanding of the severity of encroachment-related impacts and the current state and future prospects of ACFN Rights, Values and Knowledge would include, but not be limited to:

- Comparing current traditional use participation, traditional knowledge and traditional skills and the status of inter-generational transmission of same, harvest levels, and traditional food consumption patterns with current and future cultural, social, economic and health requirements and goals, as defined by ACFN; and
- Determining if there are sufficient terrestrial and aquatic landscapes that ACFN is culturally connected to, that are undisturbed, accessible, deemed to support healthy species populations and support the abundance and mixture of resources required to meet ACFN's requirements.

Based upon a review of the various mitigation measures identified or proposed by oil sands industrial proponents operating in the ESA, specifically with respect to direct effects on ACFN 'traditional use and knowledge', it appears that they largely consist of generalized commitments such as:<sup>287</sup>

- 'agreements' with First Nations or 'mitigation, compensation and accommodation plans';
- 'access management plans' primarily focused on facilitating access for trappers through project footprints;
- ongoing 'consultation';
- progressive reclamation and 'consultation' with potentially affected 'Aboriginal communities' regarding end uses;

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<sup>287</sup> See for example: Shell Jackpine Mine Expansion and Pierre River EIS, 2007, Volume 8.1.1.3; Shell EIS Update, May 2008, Volume 5.7; Tech Resources Ltd. Frontier Mine EIS, Volume 8, Section 6.5.4.1.

and/or statements such as:

- contribution of financial resources for the conduct of traditional land use and/or knowledge studies;
- contribution of resources that support community initiatives to preserve Aboriginal culture;
- commitment to cultural diversity awareness training of employees and contractors.

The writer's opinion is that the above noted types of mitigation measures do not address adverse effects resulting from ACFN Member alienation from of oil sands development project areas. Neither do such measures mitigate additional costs and effort associated with accessing alternative areas. Nor do these measures determine if alternative areas exist that are culturally appropriate and economically practical. Finally, they do not address decreased harvest opportunities or changes in harvesting practices (e.g. greater reliance on one species over another, changes in who participates in harvesting) or changes in inter-generational skills and knowledge transmission associated with displacement, abandonment or avoidance responses. Based on my experience with other large-scale development projects, the mitigation measures identified or proposed by oil sands proponents in the ESA are vague, minimal and largely do not address the nature of impacts associated with this type of development.

The writer has not discovered any oil sands operator or government monitoring programs that specifically concern adverse effects on ACFN Rights, Values and Knowledge. Similarly, no information was located regarding monitoring of the efficacy of any of the above noted mitigation measures. Moreover it does not appear that any regulatory review body to date has recommended any monitoring program that specifically considers project specific or a more comprehensive examination of encroachment-related impacts on ACFN traditional use or traditional knowledge, including ecological knowledge.

Finally, it does not appear that any Follow-Up<sup>288</sup> program specifically designed to examine the accuracy of any environmental effects/impact predictions concerning ACFN Rights, Values and Knowledge and/or the effectiveness of any mitigation measures have been included as an approval requirement for any northeast Alberta oil sands project approved to date.<sup>289</sup> As a

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<sup>288</sup> Meaning: (1) verifying the accuracy of the environmental assessment of a designated project, and (2) determining the effectiveness of any mitigation measures, as defined in the *Canadian Environmental Assessment Act* (2012).

<sup>289</sup> The writer believes that the first Follow-Up Program in Canada was recommended in connection with the Victor Diamond Mine in northern Ontario (subject to a Federal Comprehensive Study) where the Canadian Environmental Assessment Agency required a Traditional Pursuits, Values and Skills Follow-Up Program in response to concerns about impacts on traditional use and uncertainties about the accuracy of project effects and mitigation. The Victor Diamond Mine is a single mining project in an area with no existing industrial development and no additional development planned. The objective of the mandated follow-up program is to "... monitor the effects of the proposed project on the traditional pursuits of local First Nation community members within areas potentially affected by project development, as well as to document the effects of employment at the Victor mine site on employees' traditional activities, and to ensure that information is generated and opportunities identified to facilitate the retention of traditional pursuits, knowledge and skills." CEAA. No Date, Circa 2005. Victor Diamond Project Comprehensive Study Report. Pg. 8-18. [http://www.ceaa-acee.gc.ca/80C30413-docs/report\\_e.pdf](http://www.ceaa-acee.gc.ca/80C30413-docs/report_e.pdf). More recently, the Joint Review Panel for the Lower Churchill Hydroelectric Project in Labrador recommended that if the project is approved that the proponent of the project "...involve all Aboriginal groups in the design and implementation of its proposed community land and resource use monitoring program for the duration of the construction period to ensure

consequence, there does not appear to be any credible information that would indicate whether impact predictions to date on ACFN Rights, Values and Knowledge have been accurate. The same applies to the outcomes or effectiveness of mitigation measures specifically geared towards minimizing or negating development impacts.

Accurate identification and response to impacts of existing and future development (industrial, government infrastructure, and land use and tenure allocation, designation and management) including the Jackpine Mine Expansion Project, cannot be done in isolation of an understanding of the cumulative and on-going encroachment and attendant adverse impacts on ACFN's Rights, Values and Knowledge. Further, appropriate and effective mitigation and/or accommodation measures need to be designed, vetted, implemented, monitored and evaluated by ACFN. Ideally, this would be accomplished through a comprehensive, multi-year program such as a Follow-Up program that addresses:

- the accuracy of environmental impact assessment predictions on Rights, Values and Knowledge to date to better inform future environmental assessments and/or existing and new monitoring efforts;
- the efficacy of mitigation measures employed to date to feed into adaptive management responses when necessary, and to improve effectiveness of existing or develop additional or new mitigation measures for existing and future developments;
- determining the quantity, quality and species composition of animals, plants and fish required or desired by ACFN Members now and into the future to support the social, cultural, economic, health, including traditional food nutritional preferences and food security, that give meaning to their Rights, Values and Knowledge and contribute to individual, family and community well-being;
- determining current and future landscape requirements to support the habitats and quantity and quality of animals, fish and plants required or desired by ACFN Members in locations that the Members have cultural connection and that are accessible;
- determining the additional costs and other barriers faced by ACFN Members and developing culturally acceptable and practical solutions and programs; and
- pro-active actions to preserve, protect, or enhance landscapes and resources that support ACFN Rights, Values and Knowledge.

In short, the project-by-project approach to date of assessing adverse effects on ACFN has not considered the cumulative, synergistic and on-going impact of past, current and proposed encroachment alone or in combination with other influencing factors. This lack of information severely constrains a full and accurate picture of whether ACFN's opportunity to practice and realize their Rights, Values and Knowledge in a meaningful way is close, at, or beyond a stage of short and/or long term viability.

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that parameters of importance to these groups and Traditional Knowledge are included.” Report of the Joint Review Panel. August 2011. CEAA Reference No. 07-05-26178. Lower Churchill Hydroelectric Generation Project. Page 169. <http://www.ceaa-acee.gc.ca/050/document-eng.cfm?document=53120>

## 8.0 REFERENCES

ACFN. 2010a. Athabasca Chipewyan First Nation Advice to the Government of Alberta Regarding the Lower Athabasca Regional Plan. Provided to the Land Use Secretariat. November 22, 2010.

ACFN 2010b. Letter to Sheila Risbud, Crown Consultation Coordinator, Canadian Environmental Assessment Agency, January 26, 2011, Subject: Draft Aboriginal Consultation Plan for the EA Process for the Proposed Shell JPME and PRM. Attached to letter signed by Janes Freeman Kyle Law Corporation, April 6, 2011, to Marie-France Therrien, Panel Manager. CEAA Registry document #75.

ACFN 2010c. Submission of Athabasca Chipewyan First Nation, in the matter of a Joint Panel Review by the Alberta Energy Resources Conservation Panel and the Government of Canada, etc. regarding Application No. 1445535 Joslyn North Mine Project. September 21, 2010.

ACFN 2011. Athabasca Chipewyan First Nation Integrated Knowledge and Land Use Report Assessment for Shell Canada's Proposed Jackpine Mine Expansion and Pierre River Mine. Candler, C. and the Firelight Group Research Cooperative with Athabasca Chipewyan First Nation. April 20, 2011.

Agriculture and Agri-Food Canada. 1998. Canada's Action Plan for Food Security: A Response to the World Food Summit. Ottawa.

Ashley, B. 2002. Edible Weights of Wildlife Species used for Country Food in the Northwest Territories and Nunavut Northwest Territories and Nunavut. Manuscript Report No. 138. Wildlife and Fisheries Division, Department of Resources, Wildlife and Economic Development, Government of the Northwest Territories, Yellowknife, NWT.

Athabasca Chipewyan First Nation Industry Relations Corporation and Mikisew Cree First Nation Industry Relations Corporation. 2010. The Relationship Between the Lower Athabasca River and the Traditional Uses and Rights of the Athabasca Chipewyan First Nation and Mikisew Cree First Nation. Submitted to B. Mackowecki, Department of Fisheries and Oceans. August 20, 2010.

Albian Sands Energy Incorporated. Application for Approval of the Muskeg River Mine Expansion Project. April 28, 2005.

Alberta Energy and Utilities Board. 2000. Earth Sciences Report 2000-05: Historical Overview of the Fort McMurray Area and Oil Sands Industry in Northeastern Alberta, May 2000.

Alberta Environment. 2008. Muskeg River Interim Management Framework for Water Quantity and Quality Management Guidance for Aquatic Components of the Muskeg River Watershed.

Alberta Environment. 2011. Lower Athabasca Region Surface Water Quality Management Framework for the Athabasca River Downstream of Grand Rapids to the Athabasca River Delta. March 31, 2011.

Alberta Environment and Fisheries and Oceans Canada. 2007. Alberta Environment – Fisheries and Oceans Canada Water Management Framework: Instream Flow Needs and Water Management System for the Lower Athabasca River. February 2007.

Alberta Natural Resources Conservation Board. 2005. Birch Mountain Resources Ltd. Muskeg Valley Quarry Project Decision Report (NR2005-01), June 2005. <http://www.nrcb.gov.ab.ca/nrp/Decisions.aspx?id=167>

Alberta Natural Resources Conservation Board. 2010. Hammerstone Corporation Hammerstone Quarry Project Report (NR 2010-01), June 2010. <http://www.nrcb.gov.ab.ca/Downloads/documentloader.ashx?id=12512>.

AXYS Environmental Consulting Ltd. and FMA Heritage Resources Consultants Inc. 2004. Access Management Alternatives on Public Lands. Working Group: Sustainable Ecosystems Working Group, CEMA.

Barrow, E. and Yu, G. 2005. Climate Change Scenarios for Alberta, A Report Prepared for the Prairie Adaptation Research Collaborative. Government of Alberta and Praire Adaptation Research Collaborative.

Bentein, J. September 2011. Oil Sands Review. A growing shortage of construction aggregates in the Athabasca region forces operators to branch out. <http://www.oilsandsreview.com/osr-article.asp?id=8878>

Berkes, F. 1999. Sacred Ecology: traditional ecological knowledge and resource management. Taylor and Francis, Philadelphia, U.S.A.

Berkes, F., George, P.J., Preston, R.J., Hughes, A., Turner, J. and Cummins, B.D. 1994. Wildlife Harvesting and Sustainable Regional Native Economy in the Hudson and James Bay Lowland, Ontario. Arctic, Vol. 47, No. 4 (December 1994), pgs. 350-360.

Brody, Hugh. 1981. Maps and Dreams: Indians and the British Columbia Frontier. Douglas and McIntre, Vancouver.

Calliou, Brian Louis. 2000. Losing the Game: Wildlife Conservation and the Regulation of First Nations Hunting in Alberta, 1880-1930. Master's Thesis, University of Alberta, Faculty of Law.

Canada Oil and Gas, Rio Alto Exploration Ltd, Shell Canada Limited and Suncor Energy Inc.; Golder Associates Ltd. 2005. Resource Use Environmental Setting Report for the Suncor Voyageur Project, prepared for Suncor Energy Inc.

Canadian Nuclear Safety Commission. Record of Proceedings, Including Reasons for Decision In the Matter of Applicant Cameco Corporation, Application to Renew the Beaverlodge Mine and Mill Site Waste Facility Operating Licence and to Exempt Five Decommissioned Sites. [http://www.nuclearsafety.gc.ca/eng/commission/pdf/2009-11-05-Decision-Cameco-Beaverlodge\\_Edocs3464281.pdf](http://www.nuclearsafety.gc.ca/eng/commission/pdf/2009-11-05-Decision-Cameco-Beaverlodge_Edocs3464281.pdf) and [http://www.nuclearsafety.gc.ca/eng/mediacentre/releases/news\\_release.cfm?news\\_release\\_id=361](http://www.nuclearsafety.gc.ca/eng/mediacentre/releases/news_release.cfm?news_release_id=361).

Candler, C.; Olson, R., DeRoy, S. and the Firelight Group Research Cooperative, with Athabasca Chipewyan First Nation. 2010. As Long as the Rivers Flow: Athabasca River Use, Knowledge and Change. August 16, 2010.

Candler, C. 2010. Review of the Athabasca Phase II Framework Committee (P2FC) Report, January 2010-Aboriginal knowledge, use interests and rights. Submitted to Mikisew Cree First Nation, Government and Industry Relations (MCFN GIR) and Athabasca Chipewyan First Nation, Industry Relations Corporation, July 30, 2010.

Centre for Indigenous Environmental Resources Inc. and the University of British Columbia. 2011. Final Report / Climate Change and Adaptive Capacity in Aboriginal Communities South of 60. <http://cier.ca/WorkArea/showcontent.aspx?id=2054>

Chan, L., Receveur, O., Sharp, D., Schwartz, H., Ing, A., Fediuk, K and Tikhonov, C. 2012. First Nations Food, Nutrition and Environment Study (FNFNES): Results from Manitoba (2010). Prince George: University of Northern British Columbia, 2012. Print.

Chan, L., Receveur, O., Sharp, D., Schwartz, H., Ing, A. and Tikhonov, C. 2011. First Nations Food, Nutrition and Environment Study (FNFNES): Results from British Columbia (2008/2009). Prince George: University of Northern British Columbia.

Clarkson, L., Morrissette, V. and Régallet, G. 1992. Our Responsibility to The Seventh Generation, Indigenous Peoples and Sustainable Development. International Institute for Sustainable Development, Winnipeg. [http://www.iisd.org/pdf/seventh\\_gen.pdf](http://www.iisd.org/pdf/seventh_gen.pdf)

Condon, R.G., Collings, P. and Wenzel, G. The Best Part of Life: Subsistence Hunting, Ethnicity, and Economic Adaptation among Young Adult Inuit Males. *Arctic*. Vol. 48, No. 1 (March 1995) P. 31-46.

Coutu, P.R. and Hoffman-Mercredi, L. 2002. Inknonze: The Stones of Traditional Knowledge, A Story of the Athabasca Tar Sands. Thunderwoman Ethnographics.

Cumulative Environmental Management Association. 2004. Assessment Analysis of Human Disturbance Pattern Report. Developed by the Natural Range Of Variation (NRV) Task Group For the Landscape and Biodiversity Subgroup of the Sustainable Ecosystem Working Group (SEWG), October 26, 2004.

Cumulative Environmental Management Association, Sustainable Ecosystem Working Group. 2008. Terrestrial Ecosystem Management Framework for the Regional Municipality of Wood Buffalo. Final Version, June 5, 2008.

Earle, Lynda. 2010. Traditional Aboriginal Diets and Health. National Collaborating Centre for Aboriginal Health. [http://www.nccah.ca/docs/nccah%20reports/1828\\_NCCAH\\_mini\\_diets\\_health\\_web.pdf](http://www.nccah.ca/docs/nccah%20reports/1828_NCCAH_mini_diets_health_web.pdf)

Egeland, G.M., Charbonneau-Roberts, G., Kuluguqtuq, J., Kilabek, J., Okalik, L., Souédia, R., and Kuhnlein, H. 2009. Back to the future: using traditional food and knowledge to promote a healthy future among Inuit. In: Indigenous Peoples' food systems: the many dimension of culture, diversity and environment for nutrition and health. Food and Agriculture Organization of the United Nations and Centre for Indigenous Peoples' Nutrition and Environment. Rome.

Energy Resources Conservation Board. 2009. ST98-2009: Alberta's Energy Reserves 2008 and Supply/Demand Outlook 2009-2018.

Environment Canada. 2011. Lower Athabasca Water Quality Monitoring Program, Phase 1, Athabasca River Mainstem and Major Tributaries. March 22, 2011. [http://www.ec.gc.ca/Content/8/A/1/8A1AB11A-1AA6-4E12-9373-60CF8CF98C76/WQMP\\_ENG.pdf](http://www.ec.gc.ca/Content/8/A/1/8A1AB11A-1AA6-4E12-9373-60CF8CF98C76/WQMP_ENG.pdf)

Environment Canada, Government of Alberta and Government of Northwest Territories. No Date. Northern Rivers Ecosystem Initiative. Synthesis Report.

Ferguson, Theresa A. 1993. "Wood Bison and the Early Fur Trade", pp. 63-79. In McCormack, Patricia A. and R. Geoffrey Ironside, eds. *The Uncovered Past: Roots of Northern Alberta Societies*. Circumpolar

Research Series No. 3. Edmonton: Canadian Circumpolar Institute (CCI) Press (formerly Boreal Institute for Northern Studies), University of Alberta; Circumpolar Research Series No. 3, 186p. <http://auspace.athabascau.ca:8080/dspace/handle/2149/1528>.

Food Safety Network. 2009. Safe Preparation and Storage of Aboriginal Traditional/Country Foods: A Review. Prepared for National Collaborating Center for Environmental Health.

Fumoleau, R. 2004. As Long as this Land Shall Last: A History of Treaty 8 and Treaty 11, 1870-1939. University of Calgary Press, Calgary, Alberta.

Furgal, C. and Rochette, L. 2004. Perception of Contaminants, Participation in Hunting and Fishing Activities, and Potential Impacts of Climate Change. Nunavik Regional Board of Health and Social Services, Nunavik Inuit Health Survey 2004.

Golder Associates Ltd. 2001. Athabasca Oil Sands Regional Resource Use Baseline. Prepared for Petro-Canada Oil and Gas, Rio Alto Exploration Ltd., Suncor Energy Inc. and Shell Canada Limited. Calgary, AB.

Golder Associated Ltd. 2007. Resource Use Environmental Setting Report for the Suncor Voyager South Project. Golder Associates Ltd. July 2007.

Government of Alberta. Alberta Sustainable Resource Development. 2002. Fort McMurray-Athabasca Oil Sands Subregional Integrated Resource Plan (1996, Amended June, 2002).

Government of Alberta. 2006. Investing in our Future: Responding to the Rapid Growth of Oil Sands Development — Final Report, December 29, 2006. <http://alberta.ca/home/395.cfm>

Government of Alberta. 2008. Environmental Impacts of Different Uranium Mining Processes. Prepared by SENES Consultants Limited, Ottawa, Ontario for Alberta Environment (May 2008).

Government of Alberta, Treasury Board. No Date, a. Responsible Actions –A Plan for Alberta's Oil Sands. [http://treasuryboard.alberta.ca/docs/GOA\\_ResponsibleActions\\_web.pdf](http://treasuryboard.alberta.ca/docs/GOA_ResponsibleActions_web.pdf).

Government of Alberta. No Date, b. Comprehensive Regional Infrastructure Sustainability Plan for the Athabasca Oil Sands Area. <http://treasuryboard.alberta.ca/1213.cfm>

Government of Alberta. 2010. Regional Economic Indicators, Wood Buffalo Region, December 2010.

Government of Alberta. 2011. Alberta Oil Sands Projects and Upgraders Map-July 12, 2011.

Government of Alberta. 2011. Draft Lower Athabasca Integrated Regional Plan 2011 – 2021, Strategic Plan/Implementation Plan. April 15, 2011.

Government of Alberta. 2012. Lower Athabasca Regional Plan 2012 – 2022. August 22, 2012.

Government of Alberta. 2012. Alberta Oil Sands Industry Quarterly Update, Summer 2012.

Government of Alberta, Finance and Enterprise. 2010. Alberta Population Projections 2011-2050 by Census Division.

Green, J.E. 1992. A Preliminary Assessment of the Effects of the W.A.C. Bennett Dam on the Athabasca River Delta and the Athabasca Chipewyan Band. In Indian Claims Commission, Commissioners Briefing Kit, Community/Expert Session, October 10, 1996.

Greystone and Westwind Resources Group Ltd. 2003. Regional Municipality of Wood Buffalo Recreational Demand Assessment. Working Group: Sustainable Ecosystems Working Group, CEMA.

Gwich'in Renewable Resources Board. 2009. Gwich'in Harvest Study, Final Report. Prepared by Ian McDonald. [http://www.grrb.nt.ca/pdf/GHS/Harvest\\_Study\\_Report\\_FINAL09Web.pdf](http://www.grrb.nt.ca/pdf/GHS/Harvest_Study_Report_FINAL09Web.pdf)

Hatch Ltd. 2010. Alberta Utilities Commission Update on Alberta's Hydroelectric Energy Resources. Prepared for Alberta Utilities Commission. Update February 26, 2010.

Hatfield Consultants Ltd. 2006. Fish Health of Richardson (Jackfish) Lake and the Old Fort River. Prepared for Athabasca Chipewyan First Nation and Canadian Natural Resources Ltd.

IMG-Golder Corporation. 2006. Renewable Resource Assessment of the Edézhzhíe Candidate Protected Area. Submitted to Edézhzhíe Working Group. <http://www.nwtpas.ca/areas/document-2006-edhzhie-renewable.pdf>

Indian and Northern Affairs Canada. 2003. Canadian Arctic Contaminants Assessment Report II, Northern Contaminants Program. Minister of Public Works and Government Services Canada, Ottawa.

Indian and Northern Affairs Canada. No Date. Registered Indian Demography, Population, Household and Family Projections, 2004-2029. [http://www.ainc-inac.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/rgd\\_1100100016839\\_eng.pdf](http://www.ainc-inac.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/rgd_1100100016839_eng.pdf) Medium Growth Scenarios for On and Off Reserve populations.

Indian Claims Commission. 1998. Athabasca Chipewyan First Nation Inquiry WAC Bennett Dam and Damage to Indian Reserve 201, March 1998.

Insight Canada Research. 1996. A Survey of Canada's Fur Trappers. Report Prepared for Congress of Aboriginal Peoples.

Intergovernmental Panel on Climate Change. 2007. Climate Change 2007: Synthesis Report.

Integrated Water Management Program, Alberta Innovates-Technology Futures. 2011. 2010 Regional Aquatics Monitoring Program Scientific Review. Main author: Catherine Main. January 6, 2011.

Jacque Whitford. 2006. The Socio-Economic Well-Being of the ACFN Elders. Prepared for Athabasca Chipewyan First Nation Industrial Relations Corporation.

Kelly, N., Schindler, D.W., Hodson, P.V., Short, J.W., Radmanovich, R., and Nielsen, C.C. 2010. Oils Sands Development Contributes Elements Toxic at Low Concentrations to the Athabasca River and its Tributaries. Proceedings of the National Academy of Sciences of the United States of America. Volume 107, No. 37, September 14, 2010.

Kuhnlein, H.V., McDonald, M., Spigelski, D., Vittrekwa, E. and Erasmus, B. Gwich'in Traditional Food for Health, Phase 1. 2009. In: Kuhnlein, H.V., Erasmus, B. and Spigelski, D. Indigenous Peoples' Food Systems: the many dimensions of culture, diversity and environment for nutrition and health. Food and Agriculture Organization of the United Nations and Centre for Indigenous Peoples' Nutrition and Environment. Rome 2009. <ftp://ftp.fao.org/docrep/fao/012/i0370e/i0370e04.pdf>

- Kuhnlein, H.V. and Soueida, R. 1992. Use and nutrient composition of traditional Baffin Inuit Foods. *Journal of Food Composition and Analysis* 5:112–126. In: Furgal, C.M., Powell, S. and Myers, H. *Digesting the Message about Contaminants and Country Foods in the Canadian North: A Review and Recommendations for Future Research and Action*. *Arctic*. Vol. 58, No. 2 (June 2005) P. 103–114.
- Lachance, N., Hossack, N., Wijayasinghe, C., Yacoub, W., Toope, T. 2010. *Health Determinants for First Nations in Alberta, 2009*. Government of Canada.  
[http://publications.gc.ca/collections/collection\\_2011/sc-hc/H34-217-2010-eng.pdf](http://publications.gc.ca/collections/collection_2011/sc-hc/H34-217-2010-eng.pdf)
- Lambden, J. Receveur, O. and Kuhnlein, H.V. 2007. Traditional Food Attributes Must be Included in Studies of Food Security in the Canadian Arctic. *International Journal of Circumpolar Health* 66:4.  
[http://ijch.fi/issues/664/664\\_Lambden.pdf](http://ijch.fi/issues/664/664_Lambden.pdf).
- Lawrence, D.P. 2004. *The Significance of Social and Economic Impacts in Environmental Assessment*. Research and Development Monograph Series, 2003. Research Supported by the Canadian Environmental Assessment Agency's Research and Development Program. <http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=CD221BCC-1&offset=1&toc=show>
- Mackenzie Valley Environmental Impact Review Board's Socio-Economic Impact Assessment Guidelines. 2006.  
[http://reviewboard.ca/upload/ref\\_library/SEIA\\_Guidelines\\_Contents\\_and\\_Chapter\\_1.pdf](http://reviewboard.ca/upload/ref_library/SEIA_Guidelines_Contents_and_Chapter_1.pdf)
- Mackenzie Valley Review Board. 2009. Status Report and Information Circular, Developing Cultural Impact Assessment Guidelines. [http://www.reviewboard.ca/upload/ref\\_library/may\\_2009\\_cultural\\_impact\\_assessment\\_guidelines\\_status\\_report\\_1242859917.pdf](http://www.reviewboard.ca/upload/ref_library/may_2009_cultural_impact_assessment_guidelines_status_report_1242859917.pdf)
- Mackey, M.G.A. and Orr, R.D. 1987. An Evaluation of Household Country Food Use in Makkovik, Labrador, July 1980-June 1981. *Arctic*, Vol. 40, No. 1, (March 1987), pgs. 60-65.
- Mathewson, P. 1974. *The Geographical Impact of Outsiders on the Community of Fort Chipewyan, Alberta*. Thesis. University of Alberta, Edmonton, Department of Geography.
- McCormack, P. 1992. The Political Economy of Bison Management in Wood Buffalo National Park. *Arctic*, Volume 45, No. 4, December.
- McCormack, P.A. 2010a. *Fort Chipewyan and the Shaping of Canadian History 1788-1920's, We like to be free in this country*. UBC Press, Vancouver.
- McCormack, P.A. 2010b. *Research Report-An Ethnohistory of the Mikisew Cree First Nation*. Prepared for Janes Freedman Kyle, legal counsel for Mikisew Cree First Nation.
- Natcher, D.C. 2008. The Social Economy of Canada's Aboriginal North. *Northern Research Forum "Seeking Balance in a Changing North"* September 24-27, 2008, Anchorage, Alaska.
- National Aboriginal Health Organization. 2011. <http://www.naho.ca/inuit/health-determinants-2/environment/>
- National Aboriginal Health Organization. 2008. *Resource Extraction and Aboriginal Communities in Northern Canada: Social Considerations*.

Nuttall, N., Berkes, F., Forbes, B., Kofinas, G., Vlassova, T. and Wenzel, G. 2005. Hunting, Herding, Fishing and Gathering: Indigenous Peoples and Renewable Resource Use in the Arctic. In, Arctic Climate Impact Assessment. Cambridge, UK: The University of Cambridge Press: 649-690.

Office of the Auditor General of Canada. 2010. Report of the Commissioner of the Environment and Sustainable Development to the House of Commons. Chapter 2, Monitoring Water Resources. Fall, 2010. [http://www.oag-bvg.gc.ca/internet/English/parl\\_cesd\\_201012\\_02\\_e\\_34425.html](http://www.oag-bvg.gc.ca/internet/English/parl_cesd_201012_02_e_34425.html)

Oilsands Advisory Panel. 2010. A Foundation for the Future: Building an Environmental Monitoring System for the Oil Sands. A report submitted to the Minister of Environment (Canada). December 2010. [http://www.ec.gc.ca/pollution/E9ABC93B-A2F4-4D4B-A06D-BF5E0315C7A8/1359\\_Oilsands\\_Advisory\\_Panel\\_report\\_09.pdf](http://www.ec.gc.ca/pollution/E9ABC93B-A2F4-4D4B-A06D-BF5E0315C7A8/1359_Oilsands_Advisory_Panel_report_09.pdf)

Oil Sands Consultations - Multistakeholder Committee. 2007. Final Report. **Error! Hyperlink reference not valid.**

O'Neil, J. Elias, B.D., Yassi, A., Fletcher, C. and Cohen, B. 1997. A Study of the Social and Cultural Construction of Environmental Health Risks in Aboriginal Communities. Issue: 6607, Publisher: Northern Health Research Unit, Dept. of Community Health Services, University of Manitoba.

Parsons, G.F. and Barsi, R. 2001. Uranium Mining in Northern Saskatchewan: A Public-Private Transition. In: Large Mines and the Community, Socio-Economic and Environmental Effects in Latin America, Canada and Spain. Editors Gary McMahon and Felix Remy. The International Development Research Centre and The World Bank.

Passelac-Ross, M. 2005. "The Trapping Rights of the Aboriginal Peoples of Alberta." Canadian Institute of Resources Law, Occasional Paper #15.

Regional Aquatics Monitoring Program. 2002. Community Reports and Presentations. 2002 RAMP Summary. <http://www.ramp-alberta.org/ramp/results/community.aspx>

Regional Municipality of Wood Buffalo, Municipal Census 1999.

Regional Municipality of Wood Buffalo. 2008. Where We Are Today.

Regional Municipality of Wood Buffalo, Municipal Census 2010.

Regional Municipality of Wood Buffalo. 2010. Commercial and Industrial Land Use Study (January, 2010).

Regional Municipality of Wood Buffalo. 2010. Population and Employment Projection Model, January 12, 2010, contained in Council Meeting Minutes of January 12, 2010.

Regional Municipality of Wood Buffalo, August 23, 2011. Municipal Development Plan, Public Draft, August 23, 2011.

Report of the Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan -Cumulative Observations. 1997. <http://www.ceaa.gc.ca/default.asp?lang=En&xml=061B3B44-CC39-4BDF-BAC8-32C084BD6D41&offset=&toc=hide>

Royal Society of Canada. 2010. The Royal Society of Canada Expert Panel: Environmental and Health Impacts of Canada's Oil Sands Industry.

Ruddle, K. 1993. The Transmission of Traditional Ecological Knowledge. In: Traditional Ecological Knowledge: concepts and cases. Ed. Julian T. Inglis. International Program on Traditional Knowledge and International Development Research Centre.

Russell, B. 1981. Report to the Chipewyan Band of Fort Chipewyan on Treaty Land Entitlement and Other Land Matters. Treaty and Aboriginal Rights Research of the Indian Association of Alberta.

Sandlos, J. 2007. Hunters at the margin: Native people and wildlife conservation in the Northwest Territories. University of British Columbia Press.

Saskatchewan Research Council. 2007. Former Gunnar Mining Limited Site Rehabilitation Project Proposal. SRC Publication No. 12194-3E07, April 2007. [http://www.saskcleans.ca/images/file/Publications/2007-068\\_project\\_proposal.pdf](http://www.saskcleans.ca/images/file/Publications/2007-068_project_proposal.pdf).

Shell Canada Limited. 2007. Application for the Approval of the Jackpine Mine Expansion Project, Volume 1: Project Description.

Staples, Lindsay and Poushinsky, Nick, North\West Resources Consulting Group. 1997. "Determining the Impact of the Tulsequah Chief Mine Project on the Traditional Land Use of the Taku River Tlingit First Nation." A Report Prepared for: Environmental Assessment Office, Province of British Columbia.

Statistics Canada. 2011. Household food insecurity, 2007–2008, Canadian Community Health Survey. <http://www.statcan.gc.ca/pub/82-625-x/2010001/article/11162-eng.htm>

Statistics Canada. 2001. Inuit in Canada: Findings from the Aboriginal Peoples Survey – Survey of Living Conditions in the Arctic. Harvesting and Country Food: Fact Sheet. Catalogue No. 89-627-XIE-No.1.

Stuart Adam and Associates. 2003. Fort Chipewyan Way of Life Study. Prepared for ACFN.

Tait, Heather. 2007. Harvesting and Country Food: Fact Sheet. Statistics Canada. Inuit in Canada: Findings from the Aboriginal Peoples Survey – Survey of Living Conditions in the Arctic.

Tanner J. and Rigney, A. 2003. Athabasca Chipewyan First Nation Traditional Land Use Study. © Athabasca Chipewyan First Nation.

Timoney, K.P. and Lee, P. 2011. Polycyclic Aromatic Hydrocarbons Increase in Athabasca River Delta Sediment: Temporal Trends and Environmental Correlates. American Chemical Society, Environmental Science and Technology. Volume 45, No. 10. April 26, 2011. <http://www.dehcho.org/documents/aaron/Timoney%20and%20Lee%202011.pdf>

University of Alberta Environmental Research and Studies Centre and University of Toronto Munk Centre for International Studies. 2007. Running out of Steam? Oil Sands Development and Water Use in the Athabasca River-Watershed: Science and Market based Solutions.

Usher, P.J., Duhaime, G., and Searles, E. 2003. The Household as an Economic Unit in Arctic Aboriginal Communities, and its Measurement by Means of a Comprehensive Survey. Social Indicators Research, 2003, Volume 61, Issue 2.

UTS Teck Cominco Joint Venture Frontier and Equinox Proposed Oil Sands Mine Projects Public Disclosure Document, March, 2008.

Vanclay, F. No Daté. Social Impact Assessment. Prepared for Thematic Review V.2: Environmental and Social Assessment for large dams. World Commission on Dams. <http://www2.wii.gov.in/eianew/eia/dams%20and%20development/kbase/contrib/ins220.pdf>

Van Kemenade, Solange. 2007. Mackenzie Gas Project Socio-economic and cultural impacts: Health Canada's perspective. Environmental Health Assessment Services, Healthy Environments & Consumer Safety Branch, Health Canada. February 2007.

Van Oostdam, J., Donaldson, S.G., Feeley, M., Darnold, D. Ayotte, P., Bondy, G., Chan, L., Dewaily, E., Furgal, C.M., Kuhnlein, H., Loring, E., Muckle, G., Myles, E., Receveur, O., Tracy, B., Gill, U., and Kalhok, S. 2005. Human Health Implications of Environmental Contaminants in Arctic Canada: A Review. *Science of the Total Environment* 351-352, pgs. 165-246.

Verschuuren, B. 2006. An Overview of Cultural and Spiritual Values in Ecosystem Management and Conservation Strategies. Endogenous Development and Bio-Cultural Diversity, Papers from the International Conference 3-5 October 2006, Geneva, Switzerland. <http://www.bioculturaldiversity.net/Downloads/Papers%20participants/Verschuuren.pdf>

Vozoris, N.T. and Tarasuk, V.S. 2002. Household Food Insufficiency is Associated with Poorer Health. *American Society for Nutrition Sciences*. <http://jn.nutrition.org/content/133/1/120.full.pdf>

Weinstein, Martin S. 1997 "Getting to *Use* in Traditional Use Studies." A paper presented to the Society for Applied Anthropology. March 1997.

Wien, E.E. and Freeman, M.M. 1992. Inuvialuit Food Use and Food Preferences in Aklavik, Northwest Territories, Canada. *Arctic Medical Research*. October 51(4): 159-172.

Wheatley, M.A. 1997. Social and Cultural Impacts of Mercury Pollution on Aboriginal Peoples in Canada. *Water, Air and Soil Pollution* 97: 85-90.

Wheelerburg, R.P. 2008. The Need to Conduct Studies of Swedish Saami Reindeer-Herder Subsistence Behaviours: A Case of Indigenous Resource-Use Rights. *The Northern Review* 28: 161-180.

Williamson, T., Colombo, S. Duinker, P., Gray, P., Hennessey, R., Houle, D., Johnston, M., Odgen, A. and Spittlehouse, D. 2009. Sustainable Forest Management Network. Government of Canada. Change and Canada's Forests, From Impacts to Adaptation.

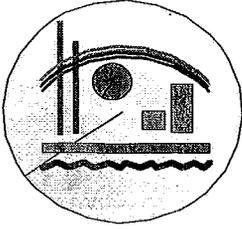
Wolfe, R.J. 1996. Subsistence Food Harvests in Rural Alaska, and Food Safety Issues. Paper presented to the Institute of Medicine, National Academy of Sciences Committee on Environmental Justice, Spokane, Washington, August 13, 1996.

Wolfe, R.J. and Walker, R.J. 1987. Subsistence Economies in Alaska: Productivity, Geography, and Development Impacts. *Arctic Anthropology*. Vol. 24, No. 2, pp 56-81.

WorleyParsons. 2008. Spatial Representation of Recreational Use in the Regional Municipality of Wood Buffalo. Cumulative Environmental Management Association. July 28, 2008.

Yap, N.T. 2003. Towards an Inclusive Framework for Environmental Impact Assessment. Research and Development Monograph Series, 2003. Research Supported by the Canadian Environmental Assessment Agency's Research and Development Program. <http://www.ceaa.gc.ca/default.asp?lang=En&n=7F3C6AF0-1#hia>

**ATTACHMENT A: Curriculum Vitae**



## **Patricia M. Larcombe - Resume** **Partner, Symbion Consultants**

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### **Education**

Masters of Science, Geography. University of North Dakota, 1985  
Bachelor of Science, Geography. University of Winnipeg, 1980

### **Present Position**

**Partner. Symbion Consultants, Winnipeg, Manitoba.**

Twenty-five years experience working in the areas of social, economic and cultural impact assessment and land claims resolution.

### **Environmental Assessment Experience**

**Athabasca Chipewyan First Nation IRC and Mikisew Cree First Nation GIR (2012).** Technical sufficiency review of Tech Resources Ltd. Frontier Mine Integrated Application relative to the terms of reference issued by the Government of Alberta dealing with subject areas concerning traditional use and knowledge and cultural resource sites/places.

**Metis Nation of Ontario (2012-Ongoing) Traditional Land Use and Knowledge Study for the Treaty 3, Lake of the Woods/Lac Seul and Rainy Lake/Rainy River Territories.** Designed and in the course of implementing a traditional use, values and knowledge study to document regional Metis use, values and knowledge as part of a region-wide baseline data gathering initiative and in connection with a proposed gold mine.

**Manitoba Metis Federation (2010-11) Berens River Road Traditional Land Use and Impact Study.** Designed and implemented a traditional use, values and knowledge study to document Manitoba Metis use, values and knowledge on the east side of Lake Winnipeg, Manitoba, in an area of influence of a proposed all-weather road to Berens River. Work included 30 detailed interviews and workshops with Manitoba Metis living in various parts of the province and a report.

**Manitoba Metis Federation (2010-11) BiPole III Traditional Land Use Study.** Designed and carried out a traditional use, values and knowledge study to document Manitoba Metis use, values and knowledge in the proposed transmission line corridor study area. Work included 50 detailed interviews, mapping and non-spatial data analysis.

**Tsilhqot'in National Government Community Impact Assessment of Prosperity Mine (2009-10).** Prepared and presented a traditional use report to the Federal Review Panel. This report examined and synthesized past traditional use studies and provided commentary on the strengths and weaknesses of the existing data collection as a basis for assessing project impacts on traditional use and values. As well, a professional opinion-based presentation on the likely impact the proposed project would have on traditional use and cultural values, was verbally presented to the Federal Panel at a technical hearing.

**Innu Nation, Labrador – Lower Churchill Hydroelectric Generation Project (2010).** Conducted a third party review of the project proponent's draft socio-economic and community profile baseline chapters, the Innu Nation scoping report, and a prepared a deficiency review report regarding the socio-economic chapters of the proponent's final environmental impact statement.

**Tsilhqot'in National Government-Deficiency Review of Taseko Mines Ltd. Prosperity Mine Environmental Impact Statement (2009-10).** Conducted a deficiency review of the socio-economic (including traditional use and traditional knowledge components) chapters of the proponent's environmental impact statement relative to the Federal Panel guidelines.

**Taku River Tlingit-Tulsequah Chief Mine Barge Proposal (2008).** Conducted a traditional land use impact assessment of the proponent's proposal to move supplies to and ore concentrate from the Tulsequah Chief Mine on the Taku River using a shallow tug and air-cushion barge technology. This assessment included documentation of Tlingit rights, interests, traditional land use and traditional knowledge, land use map production, assessment of impacts and development of mitigation measures.

**Taku River Tlingit-Ruby Creek Molybdenum Mine Environmental Assessment (2007).** Designed and implemented a traditional land use baseline and impact assessment of a proposed open-pit molybdenum mine situated within their traditional territory. This assessment included documentation of Tlingit rights, interests and land use through a traditional land use study, assessment of impacts and development of mitigation measures. Also conducted a community impact assessment and prepared a design for a community-based monitoring and adaptive management program (on-going).

**Taku River Tlingit First Nation Community Impact Assessment (2006-2007).** Assisted the First Nation in assessing the social, cultural, economic and health impacts of a proposed molybdenum mine. The study involved conducting a comprehensive literature review, interviews with TRTFN government managers, and participation as a technical team member at the BC Government's Environmental Assessment Office community impacts working group table.

**Cree Regional Authority Eastmain 1-A and Rupert River Diversion Environmental Impact Statement (EIS) Conformity Review (2005).** Retained by the Cree Regional Authority in March, 2005, to review the chapters of Quebec Hydro's EIS for the Eastmain 1-A and Rupert River Diversion project pertaining to Hunting, Fishing and Trapping against the directives issued by the Panel concerning the content and organization of the EIS.

**Innu Nation, Labrador - Voiseys Bay Nickel Company Environmental Impact Assessment (1997).** Assisted and trained a team of eight Innu Nation researchers in developing and implementing a comprehensive questionnaire to obtain demographic, social, economic, cultural, and traditional activity baseline information for the communities of Sheshatshiu and Utshimassits. The questionnaire, written and delivered by the Innu researchers in the Innu-aimun language, was administered to a sample of 300 individuals (100% household coverage). Information obtained from the survey was synthesized into a report format and incorporated into a video for presentation to the Federal/Provincial Environmental Impact Assessment Panel appointed to review the Voisey Bay Nickel Mine proposal.

**Innu Nation, Labrador - Voiseys Bay Nickel Company Environmental Impact Assessment (1997).** Critical review of the social and economic components of the Environmental Impact Statement for conformance with the Panel's Terms of Reference. Written report delivered to the Panel and summary of findings produced on an audio tape for airing on community local radio.

**Yukon Socio-Economic Effects Assessment Workshop (2005).** *The Yukon Environmental and Socio-Economic Assessment Act* requires socio-economic effects assessment in all project evaluations and reviews. In preparation for operationalising the legislation, the Yukon Government Development Impact Branch hosted a three day workshop in February, 2005, for territorial and federal government, industry and First Nations representatives. Delivered two presentations at the workshop, entitled "An Introduction to Social Effects Assessment" and "Relationships between Social and Ecological Systems."

**Aboriginal First Nations Perspectives of "Significance" of Environmental Impacts.** When working for the Centre for Indigenous Environmental Resources Inc., secured research funds from the Canadian Environmental Assessment Agency to document the differences in perspective and approach that First Nations and western scientist and government have regarding determination of the significance of environmental impacts. Study included the development of criteria for determining significance and best practice approaches to involving First Nations in determining significance.

**Strategy for the Creation of Traditional Knowledge Guidelines in Federal Environmental Assessments.** When working for the Centre for Indigenous Environmental Resources Inc., was retained by the Canadian Environmental Assessment Agency to consult with Aboriginal people and organizations concerning their interest in traditional knowledge guidelines, to identify major issues to consider in the creation of the guidelines, and how First Nations should be involved in the guidelines development.

**Five-Year Review of the Canadian Environmental Assessment Act.** When working for the Centre for Indigenous Environmental Resources Inc., was retained by the Assembly of First Nations to prepare recommendations on changes/amendments to the Act. Work involved cross-Canada workshops with First Nations groups, review of past Panel and Comprehensive Study experiences by Aboriginal peoples, and consultation with Aboriginal practitioners of environmental assessment.

## **LAND AND OTHER CLAIMS ASSESSMENT**

**Cross Lake and Norway House Community Council Hydroelectric Settlement Agreement.** Provided technical and negotiation assistance to two northern Manitoba aboriginal communities in reaching a comprehensive settlement agreement with Manitoba and Manitoba Hydro for impacts associated with the Lake Winnipeg Regulation hydro project. Settlement agreement provides for cash compensation and land, a role in resource management, on-going communications and implementation, future pre-determined compensation arrangements, and alternative dispute resolution.

**Saugeen First Nation, Quantification of Treaty Fishing Rights.** In association with Dr. Peter Usher, assisted Saugeen First Nation in developing a negotiating position concerning their fishing rights in light of the Ontario Court of Justice decision (Jones and Nadjiwon, 1993) which confirmed that the Saugeen Ojibway First Nation (including the Chippewas of Nawash and Saugeen First Nation) held a Treaty right to commercially fish. The work involved developing a negotiating position on what quantum of fish should be allocated to the First Nation for food and commercial purposes; and a proposal for First Nation management of the allocation as well as its role in the overall lake fisheries management.

**Socio-Economic Analysis for Cumberland Sound Beluga and DU8 (Great Lakes) Sturgeon.** Socio-economic analysis is required at several stages in the *Species at Risk Act* (SARA) decision-making process. Stages in SARA decision-making can be broadly categorized into pre-listing and post-listing. The first level or tier of socio-economic analysis occurs at the pre-listing stage where it contributes to the decision of whether listing should occur. Retained by Department of Fisheries and Oceans to conduct tier one analyses to assist decision-makers in determining whether to list Cumberland Sound Belugas and sturgeon in DU 8 as a 'threatened' species under SARA.

**Assessment of Country Food Losses at South Indian Lake.** In 1976, the Aboriginal community of South Indian Lake was flooded by some 3 metres by a hydroelectric project. Flooding reduced the capacity of the area to support wildlife and made shoreline hunting and fishing difficult. Assessing traditional resource use losses involved consultation/interviews with elders and resource harvesters to determine the impact of flooding on harvesting activities and harvest success. Interview results provided a basis for estimating the total value of subsistence losses over a fourteen year period.

**Fort William First Nation-Avenor Inc. Bark Dump Assessment.** As project manager for the Centre for Indigenous Environmental Resources (Winnipeg), managed a study team consisting of individuals with expertise in hydrogeology, water quality and aquatic sciences, biophysical sciences, occupational health, landscape architecture, traditional knowledge and activities. This project involved assisting the First Nation in documenting and assessing past and ongoing impacts of a solid waste landfill adjacent to the Reserve and participating in a joint planning process with Avenor's engineers to design an acceptable closure plan for the landfill.

**Sagkeeng First Nation - Loss of Land and Land Use Study (1992).** Documented impacts associated with erosion of Reserve lands bordering the Winnipeg River and Traverse Bay on Lake Winnipeg; preparation of an estimate of retroactive compensation, and development of a mitigation/remedial works program to stabilize shoreline areas. Extensive interviews with community Elders were required in order to reconstruct and document the relative importance and value of shoreline areas in comparison with the balance of the Reserve, identify and map pre-erosion shoreline based activities, and identify impacts (physical, social, cultural and aesthetic) on traditional activities normally carried out on shoreline areas in the community.

**Grand Rapids Hydro-Electric Project (1993).** Reviewed and critiqued a *post facto* assessment of impacts to trapping activities resulting from the operation of the Grand Rapids hydro project at the mouth of the Saskatchewan River. A proposal for retroactive compensation was developed utilizing a model which projected harvest levels with and without hydro impacts and estimated net annual income and income-in-kind losses.

**Norway House First Nation Trapping and Domestic Fishing Claims (1990-1993).** Assisted the local Trappers Association and Chief and Council in preparing evidence of adverse impacts on trapping and domestic fishing activities and products, reconstructing pre hydro-electric development biophysical environment, including sustainable yields of fish and furbearers, and quantifying the level of activity involved in harvesting by community members. Research involved extensive interviews with Elders and other harvesters, review of historic Department of Natural Resources diaries, data and reports, and preparation of monetary estimates for retroactive compensation and forward looking mitigation programs.

**Swampy Cree Tribal Council Traditional Territory-Valuation of Natural Resources Uses.** Conducted an economic assessment of natural resource use activities and values located within the boundaries of the Tribal Council's traditional territory. Resource uses examined included: commercial, sport and domestic fishing and hunting, commercial trapping, gathering and alternative forest products, commercial and domestic forestry, hydroelectric power, minerals and mining, agriculture, and tourism. Resource use values were estimated in absolute and relative terms by sector and user (First Nation and non-First Nation) and future potentials were examined. The study also included a review of government programs providing financial resources for development or enhancement of natural resources based industries or activities.

**The Nez-Perce - Idaho Power Corporation Negotiation.** Technical assistance provided to Dr. Hugh Brody, the mediator of a joint committee of the Nez Perce Tribe and Idaho Power Corporation. This assignment involved quantifying the monetary value of salmon losses experienced by the Nez Perce people as a result of adverse impacts to fishing opportunities and fish populations associated with regulation of the Snake River for hydro-electric generation purposes. Three models were developed to provide a range of compensation estimates. Annual and total losses were estimated for the period 1958-1995 as follows: net cash income losses from commercial harvesting operations; net cash income losses from fish wholesaling opportunities; and net income-in-kind losses from loss of subsistence fishing activities.

**Nishnawbe-Aski Nation/Grand Council Treaty #3/Teme-Augama Anishanabai Coalition.** Preparation of evidence for submission to the Ontario Environmental Assessment Board describing how Ontario Hydro's proposal to construct another transmission line through Treaty territory represented yet another of a long history of development activities. Project involved documenting the historical sequence of development activities and their progressive impact on Treaty rights. This study involved identification and review of a variety of information and data, including Hudson Bay archives files, Indian Affairs archives, historic and contemporary Ontario Ministry of Natural Resource information, Ontario Hydro data, and interviews with First Nation government representatives and Elders.

**Grassy Narrows First Nation/Ontario Hydro Joint Problem Solving Team.** Conducted a retrospective assessment concerning how development and regulation of the English River had impacted upon muskrat and wild rice resources and developed estimates of the monetary value of lost resource harvesting opportunities. Research involved interviews with community elders and Ontario Department of Natural Resource staff, examination of historical records concerning community population, fur sales records, hydrologic reports, surveyor reports, Hudson Bay Company archival documents, and federal and provincial correspondence files.

**Cross Lake Domestic Fishing.** Assisted Cross Lake First Nation with the successful 2-year negotiation of a \$5.6 million settlement to resolve past domestic fishing losses and cover implementation of a four year mitigation program. The project involved interviewing community elders and former fishermen, holding public meetings, analysing and interpreting data concerning sustainable yield, quantifying the decline in fishing activities and consumption, and developing a bush food replacement proxy to measure the loss. The mitigation program offers residents the opportunity to practice domestic fishing at alternative lakes or acquire fish from a local "country food" store.

**Lac Seul First Nation - Specific Claim, Loss of Use Study.** Jointly for Lac Seul First Nation and Canada, conducted the first phase of a Loss of Use assessment study. This claim involves the loss of use of approximately 11,000 acres of Reserve land due to flooding dating back to 1930. The loss of use assessment includes examination of losses related to agriculture, forestry, tourism and recreation, community infrastructure, and traditional activities (hunting, trapping, fishing, wild rice, and other gathering). The research involves oral testimony of community Elders, adults and youth, examination of archival documents and contemporary documents.

**Value of Treaty Land Entitlement in Manitoba on the Basis of Restitution (1994).** Examined and assessed the benefits which had accrued to the Federal and Provincial government over a period of 100 years as a consequence of having ownership of lands which should have been set aside as Reserve lands under the terms of the Treaties. The assessment involved identifying and quantifying the direct revenues which had accrued from land sales, resource rents, and revenues from taxation of private property.

**Rainy River First Nations Traditional Activities Loss of Use Study.** Retained by tri-party negotiating team composed of Rainy River First Nations, Canada and Ontario representatives to perform a loss of use assessment associated with the First Nations specific claim for improper alienation in 1915 from six Reserves totaling 46,000 acres. Study involved assembling and analyzing archival documents, conducting Elders interviews, examining the biophysical capacity of the claim lands to support fishing, hunting, trapping, wild rice harvesting, and other plant and material gathering activities as a basis for developing a model to estimate the economic value of traditional activities the First Nation would have realized had they not been alienated from the Reserve lands over the course of some eighty-six years.

## **POLICY AND ECONOMIC ASSESSMENT**

**Critical Review of Agreements between Aboriginal Groups and Government and/or Proponents of Energy Related Natural Resource Development.** Report prepared for the Moose River/James Bay Coalition (the Coalition) to inform about nine Agreements (6 in Canada and 3 in the U.S.). Contents included: the processes of negotiation and implementation, their substance, and effectiveness. The report provided the Coalition with an informed background so that they could respond effectively to proposals from Ontario Hydro or the Province of Ontario for remedial, mitigatory or compensatory measures for impacts from the proposed development of the Moose River basin.

**Inuvialuit Harvest Study Evaluation.** In association with Dr. Peter Usher conducted a comprehensive evaluation of the Inuvialuit Harvest Study (IHS). The IHS is an ongoing survey of the harvesting activities of the communities who are party to the Inuvialuit Comprehensive Land Claim Agreement. All aspects of the IHS were evaluated against the stated objectives of the program, the expectations of the Hunters and Trappers Committees, the supporting agencies, and the wildlife co-management boards, to determine whether the objectives and expectations had been met in the most cost-effective and efficient manner. Findings and recommendations for future changes in the implementation of the IHS were reported to the IHS Evaluation Administration Group, consisting of representatives of the Inuvialuit Game Council, Wildlife Management Advisory Councils, and Fisheries Joint Management Committee.

**Report to the Royal Commission on Aboriginal Peoples (1995).** As a member of a national team engaged to document the origins and success/failure of contemporary Treaties, was engaged to conduct a case study of the Northern Flood Agreement. Focussing on the land, resource and environmental provisions of the Agreement, the nature of rights and benefits provided for in the Agreement were documented, how the Agreement was implemented in practice versus how it was intended to be implemented on paper was analysed, and recommendations were made regarding content, dispute resolution mechanisms, and implementation for future agreements.

**Historic Research on the Early History of Mixed-Ancestry Populations Located in the Northern Lake Winnipeg Region (2005).** Retained by Justice Canada in October, 2004, to conduct archival research and prepare a report on the pre 1900 mixed-ancestry populations at Grand Rapids and Norway House. The research involved identifying information concerning the ethnogenesis of the populations, and possible indicators of distinctive cultural features and "effective European control." Primary data sources at the Hudson Bay Company Archives, Manitoba Archives, National Archives, and Church Archives, as well as fonds housed at various locations across Canada were investigated.

**Water Rights in Contemporary Native Land Claims Settlements (1994).** Retained by the Treaty Land Entitlement Chiefs Committee of Manitoba to advise on how to secure, protect and enhance First Nation rights and interests in water and shoreline areas. Report included a non-legal explanation of the law and theory surrounding First Nation water rights, an examination of how such rights have been addressed in selected modern day Treaties and agreements and a synthesis and comparative evaluation of the nature and extent to which First Nation water rights and interests have been defined within Agreements negotiated in the past twenty-five years. Research involved examination of 16 Agreements.

**Review of Wauzhushk Onigum Traditional Activities Loss of Use Study (1996).** Retained by First Nation to conduct a critical review of a traditional activities loss of use report prepared in connection with a Specific Claim. Review involved examining the comprehensiveness of historic and contemporary data sources relied upon to develop factual account of traditional activities and examination of methods, assumptions, and data used in quantifying both the traditional activity impacts/losses and valuing such losses.

**Nishnawbe-Aski Nation/Grand Council Treaty #3/Teme-Augama Anishanabai Coalition.** Preparation of evidence for submission to the Ontario Environmental Assessment Board describing how Ontario Hydro's proposal to construct another transmission line through Treaty territory contributed to a long history of cumulative development. Project involved documenting the historical sequence of development activities and their progressive impact on Treaty rights. This study involved identification and review of a variety of information and data, including Hudson Bay archives files, Indian Affairs archives, historic and contemporary Ontario Ministry of Natural Resource information, Ontario Hydro data, and interviews with First Nation government representatives and elders.

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**Professional Experience** 1990- : **Partner**, Symbion Consultants, Winnipeg, Manitoba  
1998-2002: **Senior Manager**, Winds & Voices Environmental Services,  
Centre for Indigenous Environmental Resources (part time)  
1987-1989: **Resource Analyst**, Symbion Consultants, Winnipeg  
1985-1987: **Planner**, Fairbanks North Star Borough, Alaska  
1982/1984: **Planning Aide**, Benton County, Corvallis, Oregon  
1981-1982: **Research Assistant**, Midwest Environmental Services  
Grand Forks, North Dakota  
1981: **Research Assistant**, Interdisciplinary Systems Ltd. (IDS),  
Winnipeg, Manitoba

# **Effects on Traditional Resources of the Athabasca Chipewyan First Nation: The Shell Jackpine Mine Expansion and Pierre River Mine Projects**

Prepared for

Athabasca Chipewyan First Nation

September 2012

Prepared by



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## Executive Summary

Shell Canada Energy (Shell) seeks approval from the Energy Resources Conservation Board (ERCB) to construct and operate the Jackpine Mine Expansion (JEMA) and Pierre River Mine (PRMA) Projects (the Projects). MSES Inc. was retained to review the likely Project impacts on the Athabasca Chipewyan First Nation's (ACFN) traditional resource use. Management and Solutions in Environmental Science (MSES) reviewed evidence about the availability of past, present and likely future key traditional resources and applied that evidence to the regional study area (RSA) as defined by the ACFN as well as the larger area of the Regional Municipality of Wood Buffalo (RMWB).

For the purpose of this report we have been asked to assume that the following traditional resources are of concern to the ACFN: remoteness, ecosystem process, bison, caribou, moose, beaver, and waterfowl.

This report consists of the following four parts:

- industrial impacts on conditions supporting traditional resources;
- industrial impacts on traditional resources;
- re-establishment of traditional resources; and
- First Nation participation in decision making.

To detect the progression of land cover disturbance we used Landsat and SPOT satellite image analyses. SPOT images are fine resolution satellite imagery but are not readily available for the area prior to 2006. Hence, we first used the Landsat imagery to gain an understanding of the relative change from 1992 to 2008, and then we used the SPOT imagery to gain an understanding of how much the Landsat imagery leaves undetected.

Our main findings are that, as of 2008, about 28% of the ACFN RSA were disturbed by industrial developments. The cumulative effects of existing and anticipated development, including the Project, will remove any undisturbed land from the ACFN RSA by about 2042. While bison and caribou have been virtually removed from the ACFN RSA already, moose will likely cease to be viable in the oil sands lease region within less than two decades and other wildlife species will continue to experience the erosion of their habitats.

To date, reclamation practices have not re-established vegetation and wildlife diversity similar to pre-disturbance conditions, and are unlikely to do so in the future. Finally, the environmental planning

process does not provide the scientifically rigorous information necessary to understand and prepare the First Nations for the erosion of traditional resources.

We list the key findings of our analyses below.

**Key Finding:** The satellite image analysis indicates that in the past 16 years, an average of 0.9% of undisturbed area has been removed each year from the RSA. At this rate there will be no undisturbed area left for the effective practice of traditional resource use in the RSA by the year 2042. The finer resolution SPOT image analysis indicates that the Landsat images underestimate the actual disturbance and that as of 2008, 28% of land cover in the ACFN RSA was disturbed as a result of land clearing and the high density of linear industrial features (0.68 km/km<sup>2</sup> linear disturbance).

**Key Finding:** The ecosystem in the ACFN RSA may have already shifted to a different state, particularly where it overlaps with Oil Sands leases: the landscape now exists of very many, small and isolated patches of natural surfaces. Further development is almost certain to push the ecosystem into a substantial and long-term reorganization which is understood as an ecosystem or regime shift.

**Key Finding:** Bison and caribou have been virtually removed from the ACFN RSA, and from most areas of the RMWB and are scarcely available for traditional resource use.

**Key Finding:** In the past 16 years, an average of 42 km<sup>2</sup> (an equivalent of up to about 10 moose home ranges) or 1.1% of moose habitat has been removed each year from the ACFN RSA. The decline in habitat directly translates in the decline of moose population density which declined from 0.4 in the 1970s to 0.1 moose per km<sup>2</sup> in the region of the oil sands leases.

**Key Finding:** In the past 16 years, beaver habitat experienced a yearly loss of 6.3 km<sup>2</sup> or 0.6% of the 1,100 km<sup>2</sup> originally available in 1992. Waterfowl habitat experienced a yearly loss of 3.6 km<sup>2</sup> or 0.2 of the 1,564 km<sup>2</sup> originally available in 1992.

**Key Finding:** The disturbed areas are unlikely to be reclaimed. There is very little similarity in terms of species composition between reclaimed sites and natural stands. Reclaimed sites show an unnaturally low diversity of species.

**Key Finding:** The environmental assessment process for Alberta Oil Sands projects does not involve any objective quantification of traditional resources. There is no evidence that the

impacts on First Nations traditional resource use are rigorously measured in any part of the assessment process.

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## ACRONYMS

ACFN	Athabasca Chipewyan First Nation
C&R	Conservation & Reclamation
EA	Environmental Assessment
EIA	Environmental Impact Assessment
ERCB	Energy Resources Conservation Board
IA	Impact Assessments
JEMA	Jackpine Mine Expansion Mine Area
LFH	Litter, Fermentation and Humus
MSES	Management and Solutions in Environmental Science
PRMA	Pierre River Mine Area
RSA	Regional Study Area
RMWB	Regional Municipality of Wood Buffalo
TLU	Traditional Land Use
ToR	Terms of Reference
ZOI	Zone of Influence

## 1.0 Introduction

Shell Canada Energy (Shell) seeks approval from the Energy Resources Conservation Board (ERCB) to construct and operate the Jackpine Mine Expansion (JEMA) and Pierre River Mine (PRMA) Projects (the Projects). Management and Solutions in Environmental Science (MSES) Inc. was retained to review the likely Project impacts on the Athabasca Chipewyan First Nation's (ACFN) traditional resource use. MSES reviewed evidence about the availability of past, present and likely future key traditional resources and applied that evidence to the regional study area (RSA) as defined by the ACFN, as well as the larger area of the Regional Municipality of Wood Buffalo (RMWB).

For the purpose of this report, we have been asked to assume that the following traditional resources are of concern to the ACFN: remoteness, ecosystem process, bison, caribou, moose, beaver, and waterfowl.

This report consists of the following four parts:

- industrial impacts on conditions supporting traditional resources;
- industrial impacts on traditional resources;
- re-establishment of traditional resources; and
- First Nation participation in decision making.

Our main findings are that, as of 2008, about 28% of the ACFN RSA were disturbed by industrial developments. The cumulative effects of existing and anticipated development, including the Project, will remove any undisturbed land from the ACFN RSA by about 2042. While bison and caribou have been virtually removed from the ACFN RSA already, moose will likely cease to be viable in the oil sands lease region within less than two decades and other wildlife species will continue to experience the erosion of their habitats.

To date, reclamation practices have not re-established vegetation and wildlife diversity similar to pre-disturbance conditions, and are unlikely to do so in the future. Finally, the environmental planning process does not provide the scientifically rigorous information necessary to understand and prepare the First Nations for the erosion of traditional resources.

## 2.0 Industry Impacts on Conditions Supporting Traditional Resources

### 2.1 Remoteness as an Ecosystem Service

**Key Finding:** The satellite image analysis indicates that in the past 16 years, an average of 0.9% of undisturbed area has been removed each year from the RSA. At this rate there will be no undisturbed area left for the effective practice of traditional resource use in the RSA by the year 2042. The finer resolution SPOT image analysis indicates that the Landsat images underestimate the actual disturbance and that as of 2008, 28% of land cover in the ACFN RSA was disturbed as a result of land clearing and the high density of linear industrial features (0.68 km/km<sup>2</sup> linear disturbance).

This section focuses on the “deprivation of traditional lands”. “Traditional lands” refers to the natural land surfaces including the vegetation and the wildlife required to exercise traditional resource use versus industrial surfaces which do not provide traditional resources. Here, we view the ability to use traditional resources as a service provided by the ecosystem to human society (see discussion by Schindler and Lee 2010).

#### 2.1.1 Past and Current Disturbances

##### 2.1.1.1 Identifying the Industrial Footprint

The rate of converting natural land surfaces to industrial ones was calculated based on satellite imagery. Using a series of satellite Landsat5 images we calculated the yearly rate of converting natural surfaces to industrial ones from 1992 to present (as captured in the satellite image of 2008). We applied a change analysis using data processing based on the image algebra method which allows one to compute the change in each pixel between two images of different dates (see Appendix A for detailed methods).

For linear disturbances that may not be detected by the 30 m resolution of Landsat images, we used cloud-free SPOT images of the same area from the years 2006 to 2009 (<http://www.geobase.ca/geobase/en/browse.do?produit=imr&decoupage=image&map=canada>). SPOT images are fine resolution satellite imagery with a resolution of about 10 m. SPOT imagery is not readily available for the area prior to 2006. Hence, we first used the Landsat imagery to gain an understanding of the relative change from 1992 to 2008, and then we used the SPOT imagery to gain an understanding of how much the Landsat imagery leaves undetected.

### 2.1.1.2 Identifying the Zone of Influence

In our ecological research and evaluations, we typically find that animals avoid the area near industrial activities. This area is typically called a “zone of influence” (ZOI). Based on our experience working with First Nations, we understand that local hunters and trappers also avoid the areas near industrial activities. Consequently, in addition to analyzing the effects of direct vegetation clearing and the simple length of linear corridors, we have applied a ZOI around each footprint and each linear industrial feature.

Both the Alberta and the British Columbia provincial resource management agencies have adopted a 250 m buffer (zone of influence) when developing land use plans relating to industrial activities (ASRD 2009a, Thiessen 2009).

The distance of 250 m was chosen for several reasons, including the following:

- hunting is not permitted within 183 m of any occupied building (ASRD 2008);
- moose presence near roads is reduced within 200 m (Rolley and Keith 1980) to 500 m (Laurian *et al.* 2008);
- moose suffer higher mortality from wolf predation near trails (median distance of kills was 209 m, compared to random sites at 470 m, Kunkel and Pletscher 2000);
- caribou avoid industrial features within about 250 m (Dyer *et al.* 2001);
- the viability of caribou populations could be compromised when more than 61% of the landscape is within 250 m of industrial features (Sorensen *et al.* 2008);
- other mammals avoid industrial features within about this distance (Forman *et al.* 2003);
- birds in woodlands avoid roads, power lines and seismic lines by up to about 300 m, depending on species and ecological context (Kroodsma 1982, Bayne *et al.* 2008, Machtans 2006); and
- comprehensive reviews of edge responses show that “abiotic and plant responses are generally reported to extend up to 50 m into patches, invertebrate responses up to 100 m, and bird responses 50–200” (Ries *et al.* 2004, p. 510).

Clearly, the ZOI differs widely between the species, the type of industrial features and related activities, and the ecological context (i.e., species, reproductive cycle, hunting or predation regimes, habitat structure and quality). However, it appears that, in absence of detailed information on any of the situations, the 250 m distance is a reasonable approximation for a zone within which the abundance of wildlife and the land use by humans may be altered (see Appendix F).

### 2.1.1.3 Results

Assuming that the sensory disturbance includes a ZOI of 250 m near any industrial feature, of the 17,749 km<sup>2</sup> in the ACFN RSA, Figure 2.1-1 shows the progression of disturbance as follows:

- as of 1992, 8% was disturbed;
- as of 2002, 13% was disturbed; and
- as of 2008, 22% was disturbed.

This analysis of change indicates that the amount of disturbance has nearly tripled over the past 16 years.

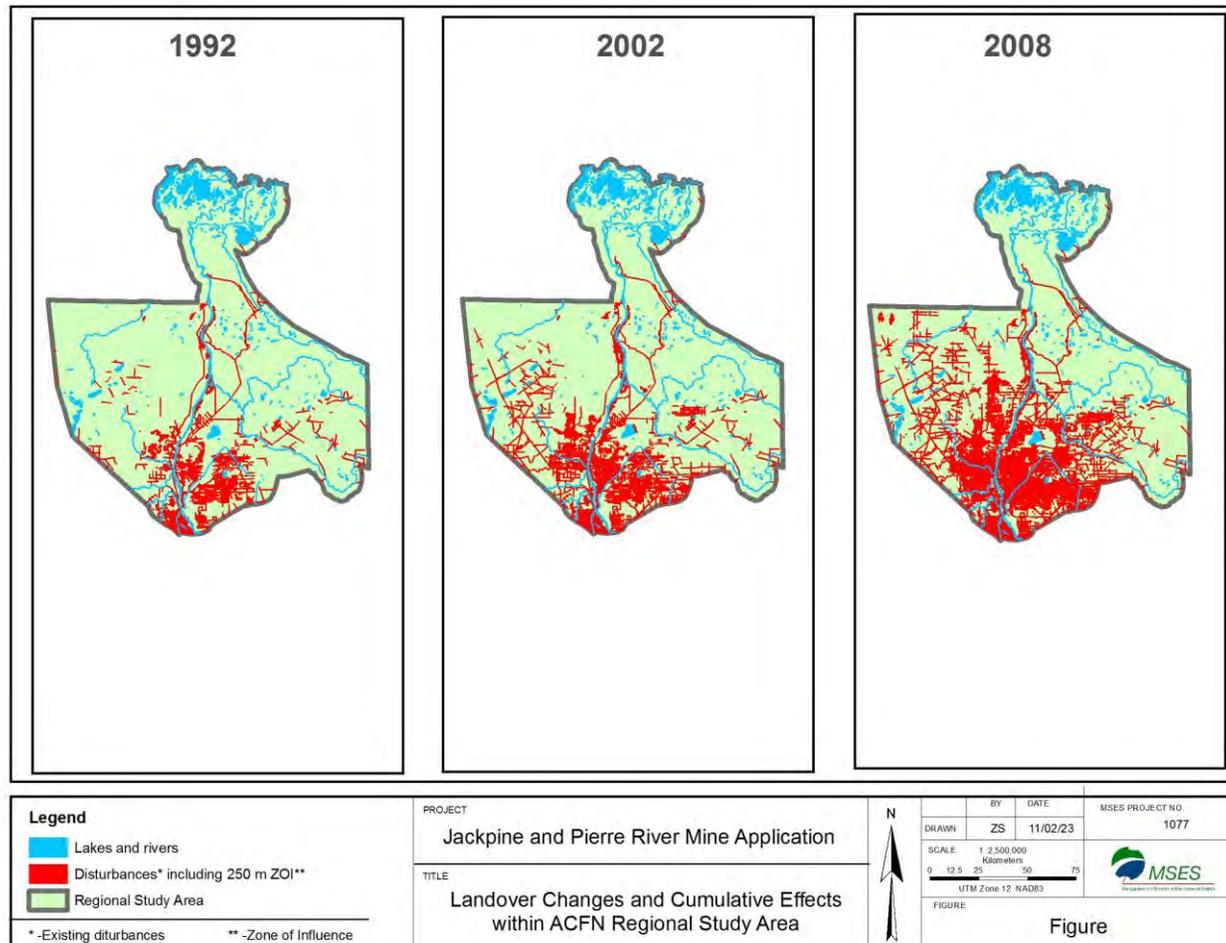
#### SPOT Image Analysis

When using the more detailed SPOT image analysis, it appears that the results shown in the Landsat analysis grossly underestimate the amount of disturbance in the ACFN RSA (see comparison of results in Figure 2.1-2). Using the SPOT images for the disturbance analysis, the results show that in 2008, 28% of the land cover in the ACFN RSA was on or within 250 m of an industrial feature.

Because forest fires degrade caribou habitat, the combination of forest fires and industrial disturbance have cumulative effects on caribou viability. Given that 37% of forests in the ACFN RSA were disturbed by wildfire (based on data obtained from the Wildfire Management Branch, Forestry Division, Sustainable Resource Development, Gov't of Alberta), the results from the SPOT image analysis indicate that a key population viability index for an important traditional resource, the woodland caribou, could have been reached. Sorensen et al. (2008) showed that woodland caribou populations are not viable if more than 28% of land is within 250 m of industrial features in a landscape where 37% of the vegetation is burned by fires that occurred within the past 50 years.

In terms of linear disturbance, in 2008, there were 12,121 km of linear corridors in the ACFN RSA, representing a linear disturbance density of 0.68 km/km<sup>2</sup>. To put this density into perspective, density thresholds of seismic lines as low as 0.3 to 0.8 km/km<sup>2</sup>, depending on the ecological context, have been shown to exclude caribou populations from an area (Weclaw & Hudson 2004).

Consequently, with 28% of land on or near industrial features and 0.68 km/km<sup>2</sup> linear disturbance, woodland caribou populations may soon cease to be viable in the ACFN RSA. Other wildlife species, such as moose, can likely only persist at very low densities under these land disturbance conditions.



**Figure 2.1-1: Increasing conversion of natural surfaces (green) to industrial ones (red) in ACFN RSA.** (Includes 250 m ZOI around all industrial features and is based on Landsat image analysis.)

2008

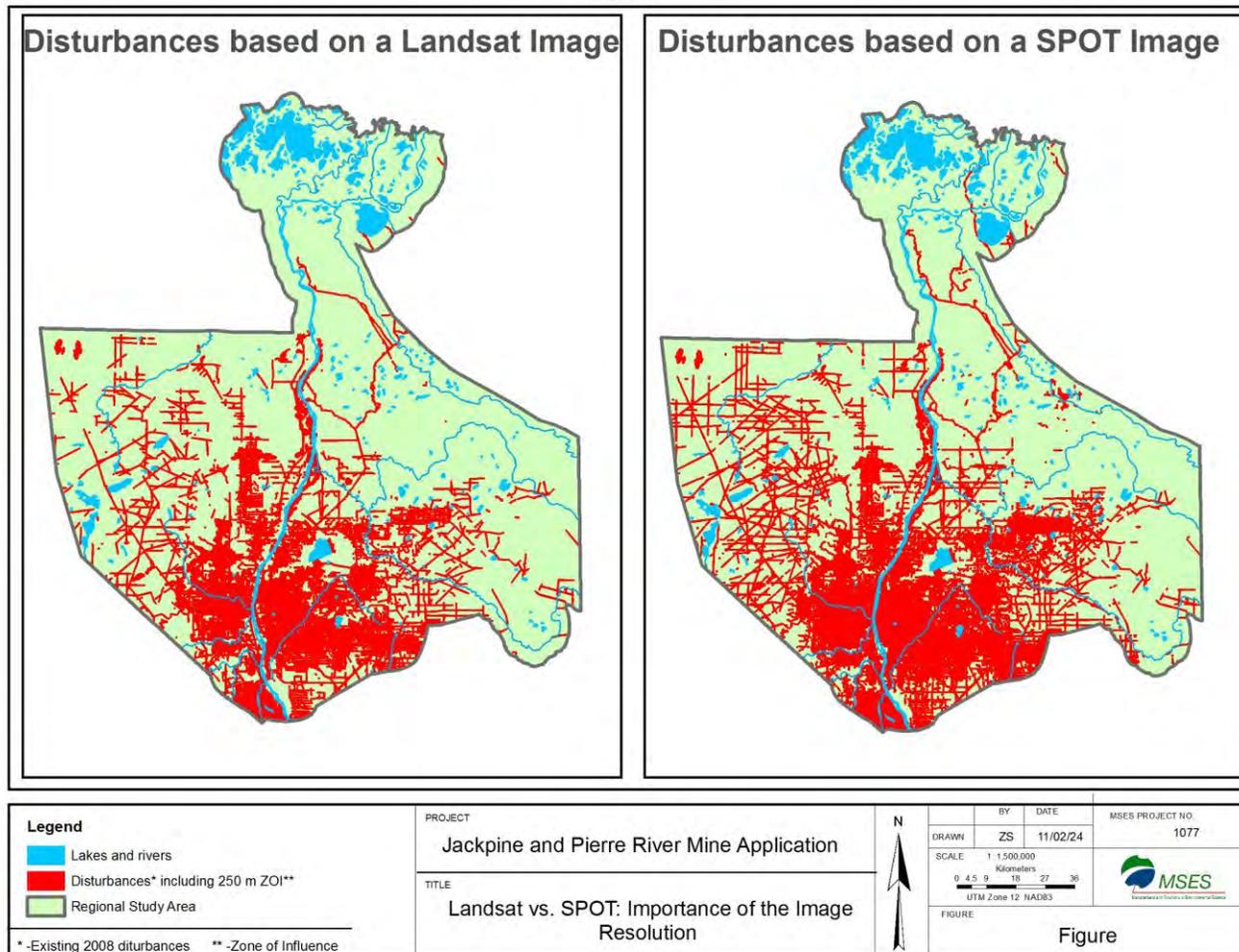
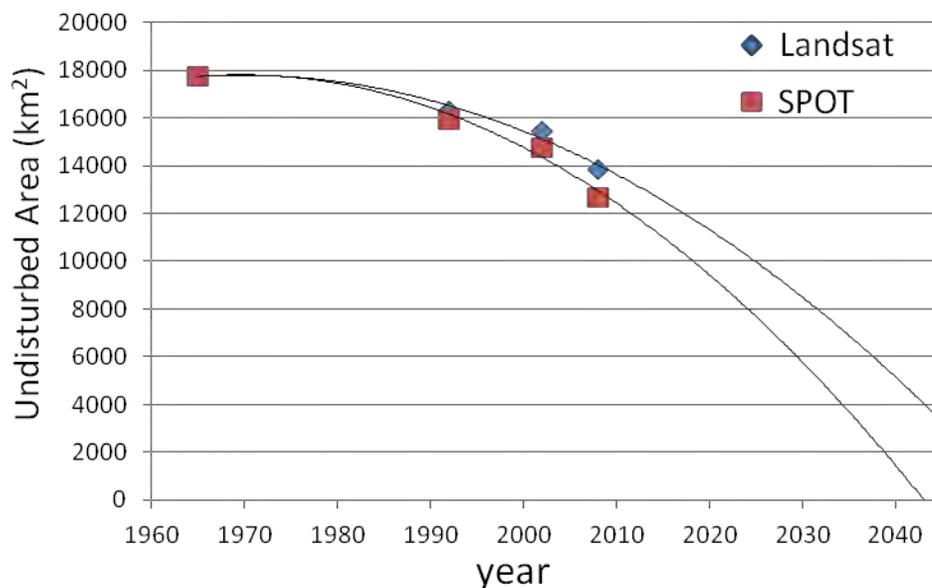


Figure 2.1-2: All current (2008) disturbances in the ACFN RSA using SPOT data (right panel) and Landsat data (left panel).

## 2.1.2 Projected Decrease of Natural Surfaces

### 2.1.2.1 Rate of Disturbance and Future Projections

Landsat image analysis indicates that over the past 16 years, the ACFN RSA saw an average annual addition of 155 km<sup>2</sup> (0.9% of the ACFN RSA) of new disturbance. However, analysis of SPOT images shows that the Landsat images leave an approximate 23% of the disturbance undetected. We can therefore estimate that the actual yearly disturbance was on average 1.23 times larger than indicated by the Landsat image analysis resulting in an average annual addition of 191 km<sup>2</sup> (1.1% of the ACFN RSA). Assuming that the rate of change remains as shown over the past 16 years, we can project disturbance levels into the future (see Figure 2.1-3). At this rate, the conversion of natural land cover to industrial surface will be 100% by 2042 (Figure 2.1-3). In other words, after 2042, there will be no area left in the ACFN RSA where a person could go to be farther than 250 m away from an industrial feature.



**Figure 2.1-3: Projected disturbance in the ACFN RSA, based on Landsat and SPOT image analysis, including ZOI.** (Best fit trend lines were calculated by second degree polynomials). The 1964 data point is an approximation of the total area of the ACFN RSA that was available for traditional resource use before Oil Sands development.

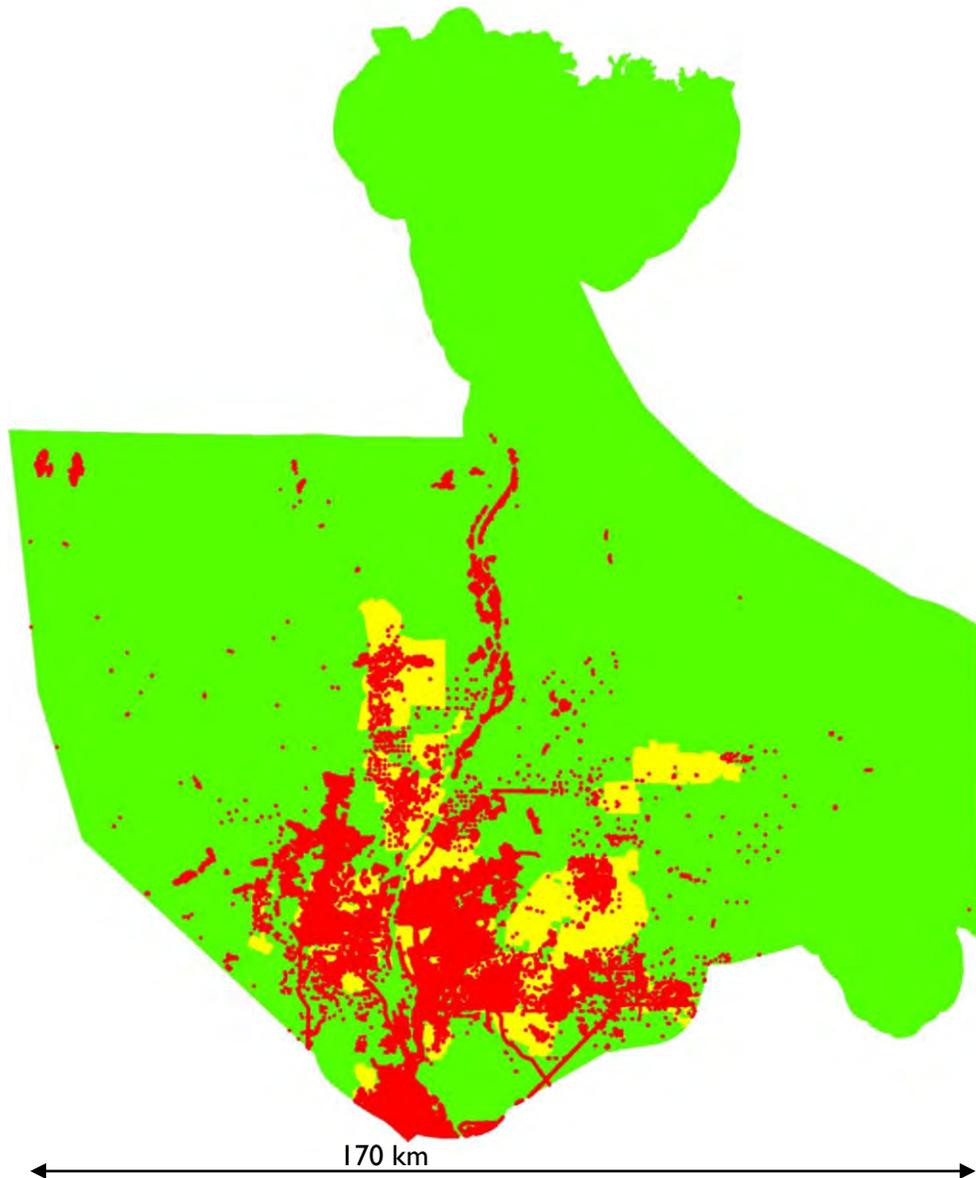
The continued addition of new disturbance is not currently balanced by reclamation because not all vegetation types are targeted for reclamation and those that are show little similarity with pre-disturbance conditions (see Section 4.0 below, and Johnson and Miyanishi 2008)

### **2.1.2.2 If Only the Currently Planned and Approved Projects Are Executed**

We assume that the planned disturbances will be completed within the next 20 years. This is a reasonable assumption given that, for example, since their regulatory approval in 2003, about 14% of the approved 12,960 ha in the Jackpine Mine (Shell Canada Ltd.) and about 47% of the approved 14,800 ha in the Horizon Mine (Canadian Natural Resources Ltd.) had been cleared by 2008.

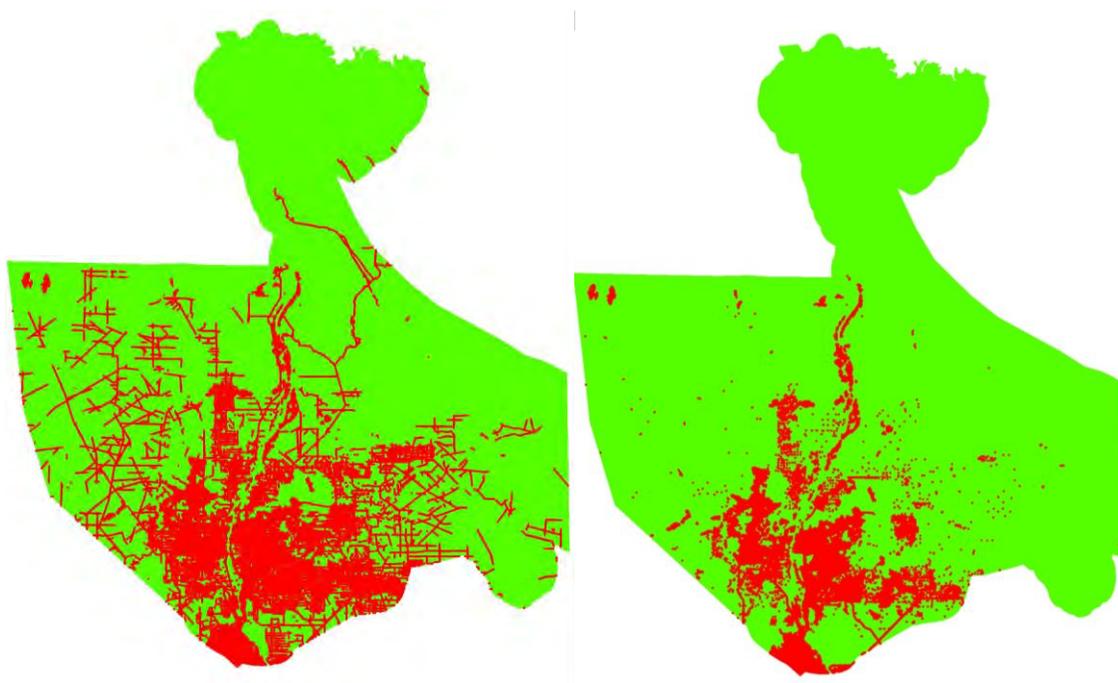
The areas of current and planned disturbance are shown in Figure 2.1-4 (the footprints of planned disturbances have been obtained from applications submitted to regulators). The analysis of Figure 2.1-4 indicates that a total of 4,069 km<sup>2</sup> (23%) would be disturbed in the ACFN RSA by 2028 (assuming that the planned disturbances will be completed within the next 20 years).

The Planned Projects do not include supporting activities such as exploration or infrastructure projects. Figure 2.1-5 shows how much disturbance is underestimated when linear features are omitted from the analysis (as is the case in the analysis of Planned Project disturbance shown in figure 2.1-4). Moreover, other projects may be planned but not yet disclosed. The projection of future developments based on the Planned Projects (Figure 2.1-4), therefore, grossly underestimates future disturbance.



**Figure 2.1-4: The projected disturbance of natural land cover in the ACFN RSA, based on the Planned Projects.**

**Areas in red represent disturbance existing in 2008, areas in yellow represent additional disturbance currently planned. Most linear disturbance such as exploration is not shown because planned linear disturbances are unknown.**



**Figure 2.1-5: Comparison of the disturbances in the ACFN RSA by 2008 showing all disturbances including linear features shown by SPOT data (left panel) and without the linear features (right panel).**

### **2.1.2.3 Conservative Use of Data**

A major challenge in obtaining data detailed enough to capture all disturbance data lies in the fact that Landsat images do not capture small human caused changes. While we were able to obtain SPOT images for recent years in order to capture linear disturbance with high accuracy, we were unable to apply the same level of detail to the analysis of non-linear developments. For example, well pads are difficult to capture on satellite images and we believe that we may have omitted potentially thousands of well pads in the analysis of disturbance of the ACFN RSA. Other small disturbances such as staging areas, sumps, or workers camps may not have been detected as a disturbance.

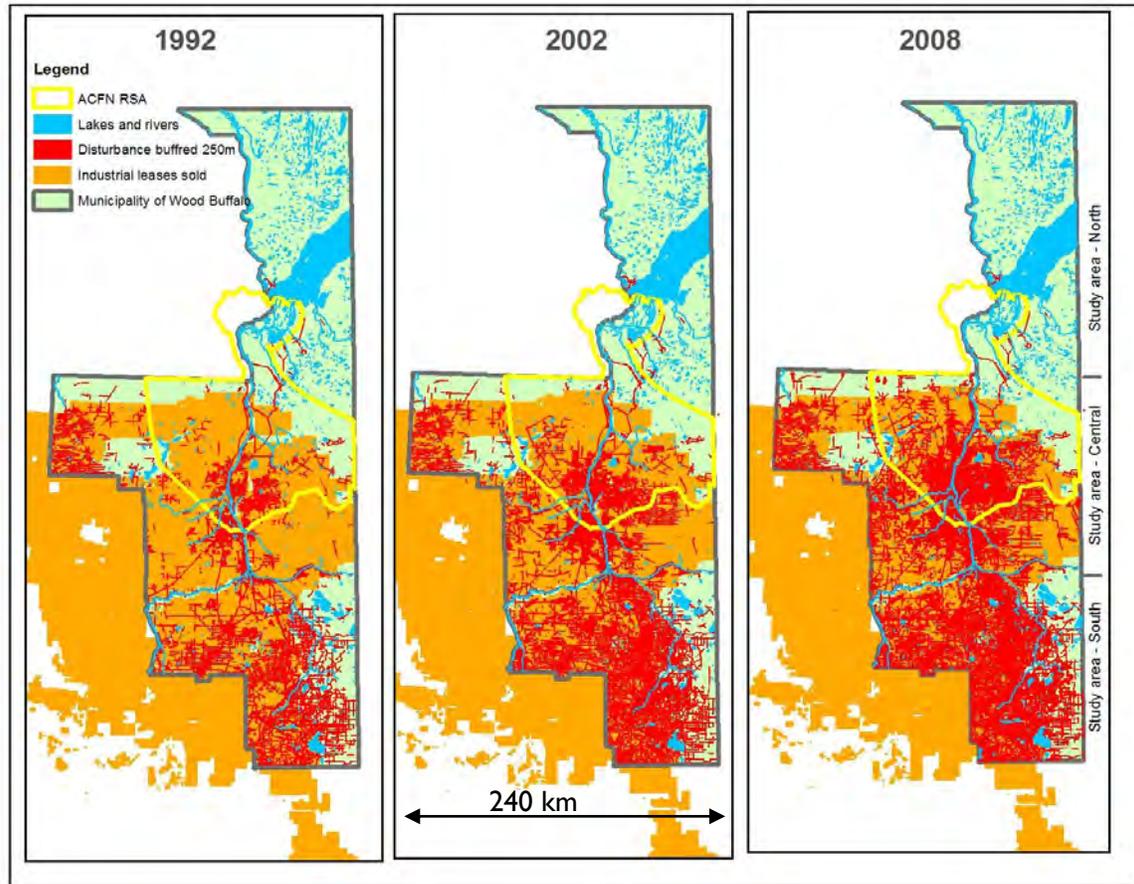
### 2.1.2.4 Development beyond the ACFN RSA

The map of Oil Sands Leases (Appendix D) indicates that resource exploitation within the RMWB is anticipated to expand much beyond the ACFN RSA (Figure 2.1-6). It appears likely that all areas south of Wood Buffalo National Park in the RMWB will be disturbed in a similar manner as the ACFN RSA. We have conducted an analysis of disturbance in the RMWB, similar to the one we presented above which was specific to the ACFN RSA. The only difference between the analyses for the ACFN RSA and the RMWB was that we did not use the fine resolution SPOT image analysis of 2008 for the large area of the RMWB. Our Landsat image analysis shows that disturbance has increased since 1992 in the RMWB south of Wood Buffalo National Park (Figure 2.1-6), and that it moved northwards over time.

By 2008, 15,813 km<sup>2</sup> or 23% of the Regional Municipality of Wood Buffalo were disturbed by land clearing and the surrounding zone of influence of 250 m. The south experienced relatively the most disturbance, followed by the central area. The north area was relatively unaffected by land clearing and the surrounding zone of influence (Table 2.1-1); this coincides with an absence of Oil Sands Leases (Figure 2.1-6). By contrast, areas outside of the RMWB are under lease (Figure 2.1-6) and likely follow a similar pattern of disturbance as the leased areas within the RMWB shown in our analysis.

**Table 2.1-1: Disturbances (km<sup>2</sup>, Linear and Footprint Combined)  
 in the RMWB within a 250 m Zone from Disturbance  
 The amount of disturbance is underestimated as the analysis  
 does not include AltaLIS data.**

	Up to 1992	Up to 2002	Up to 2008	Area Disturbed by 2008 %
North	114	124	125	0.7
Central	3,110	5,247	7,969	24.8
South	4,162	6,346	7,719	41.6
<b>Total RMWB</b>	<b>7,386</b>	<b>11,717</b>	<b>15,813</b>	<b>23.0</b>



**Figure 2.1-6: Increasing disturbance of natural surfaces in relation to Oil Sands Tenure (Leases) in the RMWB.**

**The disturbance shown here includes 250 m zones of influence around all industrial features and is based on satellite image analysis. Overlain are lease areas. Disturbances are underestimated as they do not include SPOT data.**

## 2.2 Ecosystem Process

**Key Finding:** The ecosystem in the ACFN RSA may have already shifted to a different state, particularly where it overlaps with Oil Sands leases: the landscape now exists of very many, very small and isolated patches of natural surfaces. Further development is almost certain to push the ecosystem into a substantial and long-term reorganization which is understood as an ecosystem or regime shift.

Ecosystem shifts occur when external forces alter a system so that its organization shifts from one set of processes to another (Gordon *et al.* 2008). Folke *et al.* (2003, p.354) define ECOLOGICAL RESILIENCE as “the magnitude of disturbance that can be experienced before a system moves into a different state and different set of controls”. These researchers argue that natural and human systems are combined as one social-ecological system and that ecosystems need to be managed to sustain the social systems. They define SOCIAL RESILIENCE as “the ability of human communities to withstand external shocks to their social infrastructure, such as environmental variability or social, economic, and political upheaval”. If the environmental variability represents a great shock to the social infrastructure, then the social structure will break down. If the environmental variability moves the ecosystem to a different state then the First Nation traditional resource use will be unable to sustain that shock and will need to change.

The ecosystem in the ACFN RSA may have already shifted to a different state, particularly where it overlaps with Oil Sands leases (Fig.2.1-6): the landscape now exists of very many, very small and isolated patches of natural surfaces. If the original landscape is disturbed more than 50%, it breaks up into small and isolated patches. The landscape in the ACFN RSA is now dominated by disturbed surfaces and edges of the small patches with core wildlife habitat being rare (Fig.2.1-2). This may lead to the disappearance of wildlife species from the landscape, including caribou and moose (see Sections 3.1 and 3.2 below), and to the invasion by other species, including deer and magpies (Dawe and Boutin 2009; ASRD 2009b). Invading deer change wolf-caribou dynamics (Latham *et al.* 2011), and the invasion of natural vegetation communities by invasive plant species is believed to be a considerable impact caused by disturbance (White *et al.* 1993, ASRD 2004).

The landscape changes bring about many radical ecological changes, not only in wildlife and vegetation populations, but also in hydrological cycles (Gordon *et al.* 2008). The changed ecosystem structure and processes may lead to changes in the ecosystem services such as water retention and filtration, carbon storage, and resource use (Schindler and Lee 2010). Large changes in the landscape structure can increase the risk of ecological regime shifts (Gordon *et al.* 2008). In the early 1990s, aside from providing a comprehensive review of biophysical conditions and trends, the Northern River Basin Study used traditional knowledge of First Nations and Aboriginal to illustrate the observations of people most

familiar with the rivers. Traditional knowledge holders believed that changes in river conditions were not only caused by in-stream flow alterations, but also by activities on land such as mining, logging and other industrial disturbances. In support of these observations, western scientists and authors of the Northern River Basin Study agreed that land clearing includes some or all of these hydrologic impacts on rivers (Northern River Basin Study 1994, p. 29):

- “changes to water tables and water retention capacity of soil;
- slow recovery of evapotranspiration processes;
- changes in the capacity of peat lands to store water;
- reduction in the size and number of wetlands;
- potential for increased flows causing degradation of rivers and streams at some locations and aggregation of rivers and stream beds at other locations;
- decreased stream gradients;
- low nutrient soil environments; and
- changes to sediment levels, water yield, water temperature, and aquatic biota. “

Aside from the projected elimination of natural surfaces, it is likely that the landscape in the ACFN RSA has already entered a new state of configuration of natural vegetation patches likely leading to a new scheme of ecological processes (Scheffer *et al.* 2001; Gordon *et al.* 2008). Open spaces and habitat edges or ecotones now dominate the landscape and areas large enough to be considered intact expanses of boreal forests no longer exist (Potapov *et al.* 2008 defined intact forests as areas of at least 500 km<sup>2</sup> without significant human activity). Concurrently with the advancement of disturbance, the spread of species such as deer, magpies, and invasive vegetation is observed as is the disappearance of others such as caribou. Early warning signals for ecological transition, such as increasing variance of environmental parameters (natural variability), may well be accessible and measurable (Landres *et al.* 1999; Carpenter and Brock 2006, Scheffer *et al.* 2009), but the system controls in the ACFN RSA or in the larger RMWB are not sufficiently known to quantify the change.

Oil Sands proponents often state that their disturbances (which in our view cause ecosystem shifts) can be reversed. However, as discussed below there is very little evidence of successful re-establishment of natural vegetation communities in the Oil Sands region (Section 4.0). Further, there is no example in the oil sands where pre-disturbance conditions had been restored, which would allow for traditional land use to resume.

In fact, future development is almost certain to push the ecosystem into a substantial and long-term reorganization which is understood by many as an ecosystem or regime shift (Scheffer *et al.* 2001; Carpenter and Brock 2006; Gordon *et al.* 2008; Scheffer *et al.* 2009; Gamerstani *et al.* 2009).

## 3.0 Industry Impacts on Traditional Resources

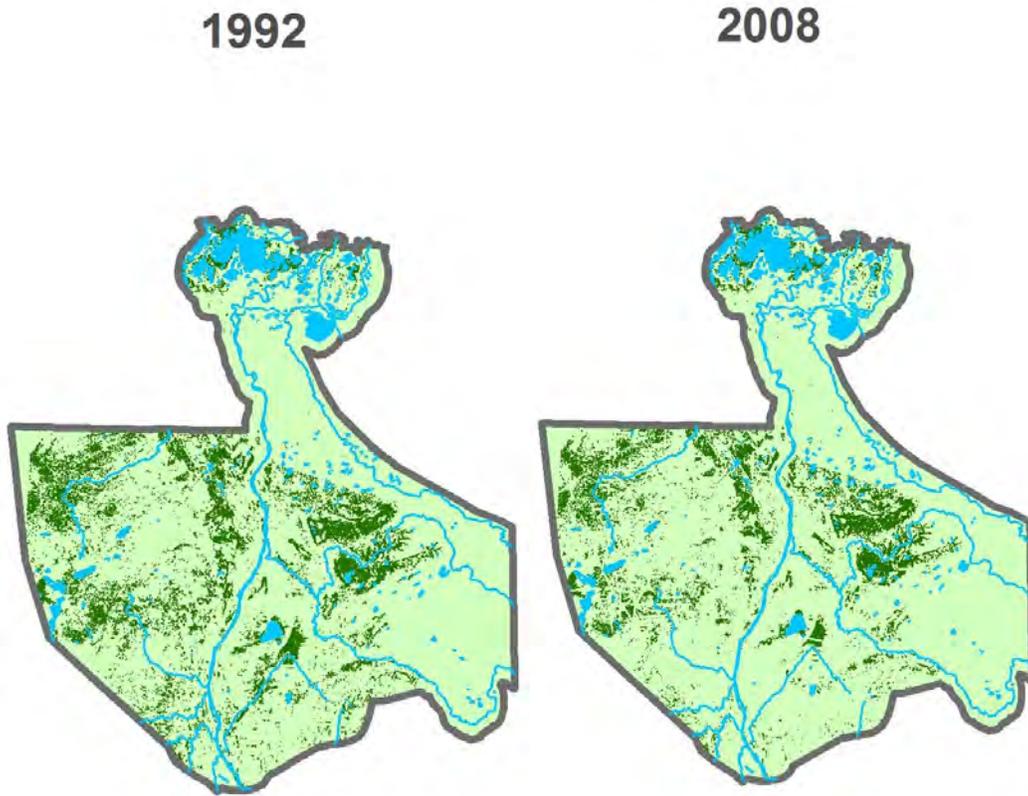
### 3.1 Bison and Caribou

**Key Finding:** Bison and caribou have been virtually removed from the ACFN RSA, and from most areas of the RMWB and are scarcely available for traditional resource use.

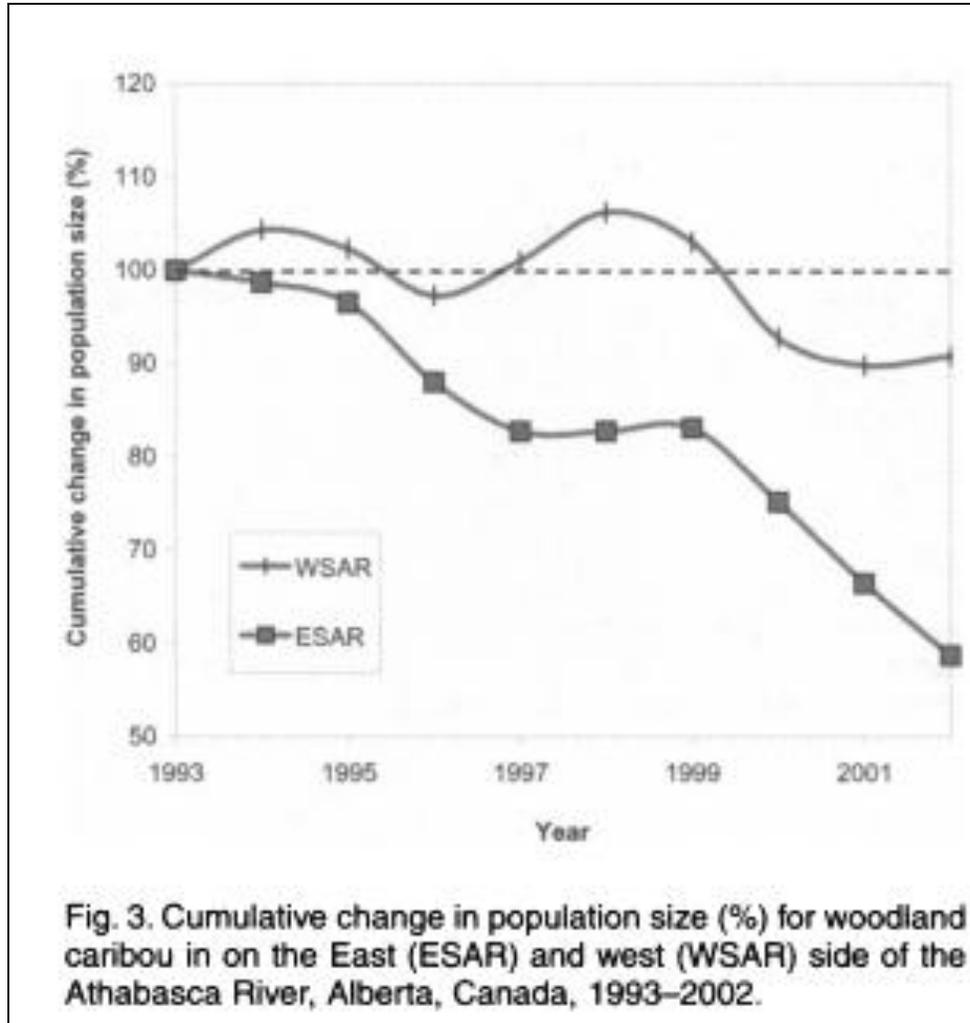
It is said that “Indians ... once lived bountifully on the buffalo” but that by the end of the 19<sup>th</sup> century the last wood bison were seen in the Clearwater River and the Fort McMurray areas (Gates *et al.* 1992). Although the Wood Buffalo National Park was established with the purpose of protecting the remnant population, the bison have never re-established in the region between Lake Athabasca and the Clearwater River.

Wood Bison are listed as threatened under the Species at Risk Act. Accordingly, Environment Canada is currently developing a recovery plan. However, the opportunity for a bison recovery is dwindling with the increasing disturbance of bison habitat. Bison habitat in the ACFN RSA declined from 696 km<sup>2</sup> in 1992 to 591 km<sup>2</sup> in 2008 (Figure 3.1-1). This represents a yearly loss of 6.6 km<sup>2</sup> or 1.0% of the bison habitat that was available in 1992.

In that same region, the woodland caribou population has been declining since the 1990s (Figure 3.1-2, McLoughlin *et al.* 2003, Alberta Caribou Committee 2010). According to Sorensen *et al.* (2008) caribou populations can only be sustainable in a landscape where less than 61% is either burned or within 250 m of industrial development. Our analyses indicate that 28% of the ACFN RSA was within 250 m of industrial disturbance in 2008 and 37 % were burned in the past 50 years for a total of 65% fire and industrial disturbance combined (see Section 2.1 above). We conclude that given the existing and planned developments, the extirpation of woodland caribou in the ACFN RSA is a near certainty (McLoughlin *et al.* 2003; Alberta Caribou Committee 2010).



**Figure 3.1-1: Bison habitat (dark green areas) decline in the ACFN RSA between 1992 and 2008. Blue areas represent lakes and rivers.**



**Figure 3.1-2: Caribou Density Decline.**  
Figure reprinted from McLoughlin *et al.* (2003).

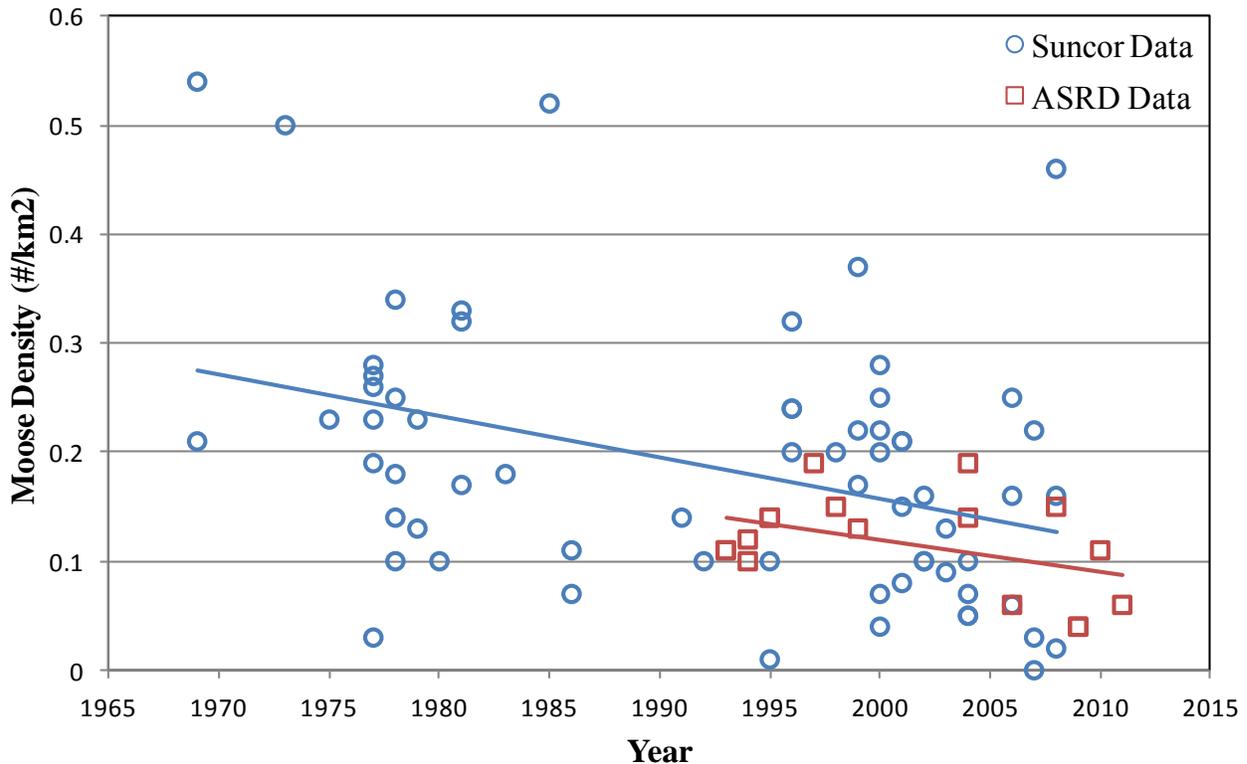
Both bison and caribou are therefore essentially removed from traditional resource use.

## 3.2 Moose

**Key Finding:** In the past 16 years, an average of 42 km<sup>2</sup> (an equivalent of up to about 10 moose home ranges) or 1.1% of moose habitat has been removed each year from the ACFN RSA. The decline in habitat directly translates in the decline of moose population density which declined from 0.4 in the 1970s to 0.1 moose per km<sup>2</sup> in the region of the oil sands leases.

### 3.2.1 Moose Population Decline

Figure 3.2-1 is based on the data provided in Suncor's Mine Dump 9 Application (Attachment I of the SIRs, Table 5-1, Suncor 2008) and moose survey data publically available from Alberta Sustainable Resource Development (ASRD) for Wildlife Management Units (WMU) 512, 517, 518, 519, 529, 530, and 531. It demonstrates that moose density is declining in the oils sands region, which includes the ACFN RSA. The declining trend in the Suncor data is statistically significant (Spearman rank order correlations  $r_s = -0.41$ ,  $N = 65$ ,  $p < 0.001$ ) and consistent with the increasing conversion of natural land surfaces to industrial developments. The declining trend in the smaller ASRD dataset, while not statistically significant, has a similar slope to that of the Suncor dataset (Spearman rank order correlations  $r_s = -0.27$ ,  $N = 17$ ,  $p > 0.05$ ).



**Figure 3.2-1: Moose densities (moose per km<sup>2</sup>) observed in various aerial surveys conducted by regulatory agencies or private industry between the years 1960 and 2008 and ASRD between the years 1993 and 2011. The Suncor data were obtained from Suncor (2008). Where a range of dates was given we plotted the most recent year. The Suncor trend line is  $y = -0.0038x + 7.7525$ . The ASRD trend line is  $y = -0.0029x + 5.9264$ . The declining trend for the Suncor data is statistically significant (Spearman rank order correlations  $r_s = -0.41$ ,  $N = 65$ ,  $p < 0.001$ ).**

### 3.2.2 Moose Habitat Use in Reclaimed Areas

Monitoring reports from proponents in the Alberta Oil Sands Region are required to produce evidence of wildlife re-establishment, for example Suncor's Approval No. 94-02-00:

6.1.73 *The approval holder shall re-establish a diversity of wildlife and fish habitats similar to those that existed prior to disturbance, in proportions appropriate relative to the approved Life of Mine Closure Plan.*

6.1.74 *The approval holder shall demonstrate, through monitoring, progress in achieving a diversity of wildlife and fish habitats as outlined in subsection 6.1.73.*

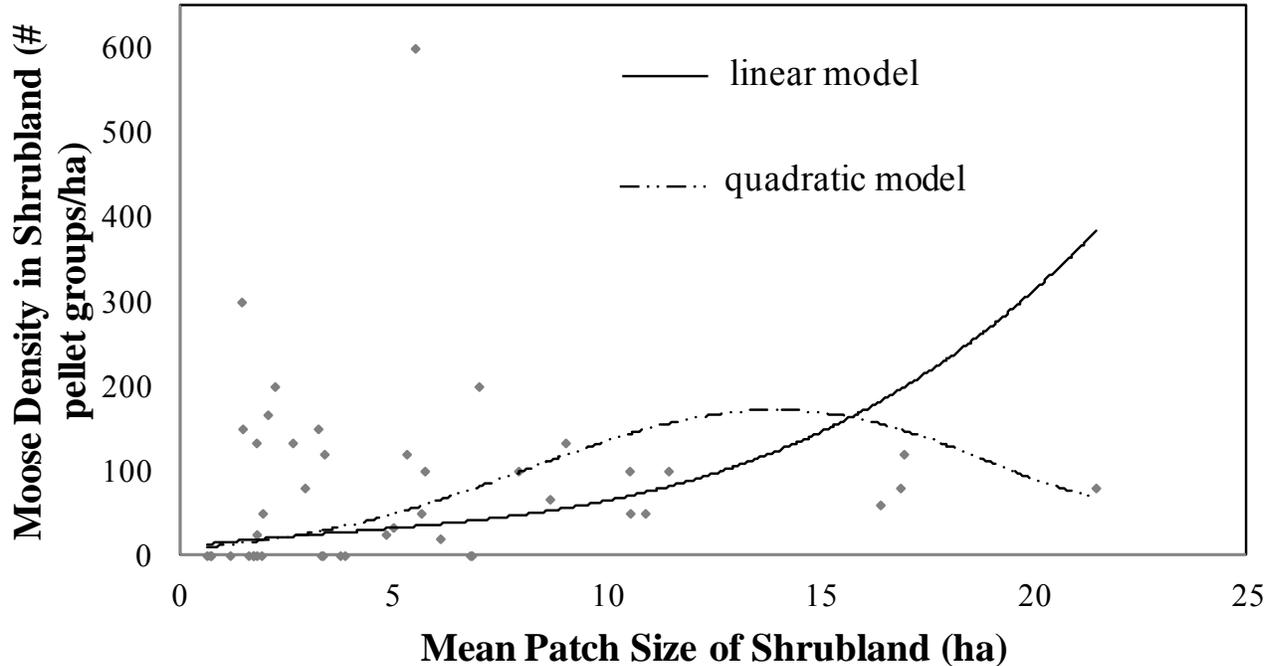
6.1.75 *The approval holder shall document wildlife and fish habitat utilization on the reclaimed land by monitoring wildlife and fish species typically associated with and naturally occurring in the wildlife and fish habitat types present.*

No moose sign on reclaimed or disturbed sites has been found by Suncor Energy Inc in either their 2007 Annual Conservation & Reclamation Report for the Millennium Mine or their Wildlife Monitoring Program March 2006 for the Firebag Project. Similarly, no moose sign has been reported by either Shell (Shell Canada Energy Jackpine Mine Phase I) or Albian Sands (Albian Sands Energy Inc Muskeg River Mine) on their reclaimed areas. Moreover, no empirical documentation of moose re-establishment has been provided by Syncrude in their 2006 Closure and Reclamation Plan.

These observations indicate that moose do not readily return to newly revegetated sites while oil sands operations are still ongoing.

### **3.2.3 Moose Use Habitat Less When Fragmented and in Low Supply**

Increased fragmentation and decreased habitat availability result in greater isolation of moose habitat patches as well as smaller patch sizes of moose habitat. Moose are less likely to use small and isolated patches of habitat because it may not be worthwhile to reach them. Evidence of moose reducing their use of habitat patches in highly fragmented areas has been documented in the Foothills Natural Region of Alberta (Figure 3.2-2, Stewart and Komers (2012)). The implication of these results is that the number of moose in an area declines faster than expected from the decline in habitat availability alone because moose are unlikely to use habitat patches that are small and isolated.

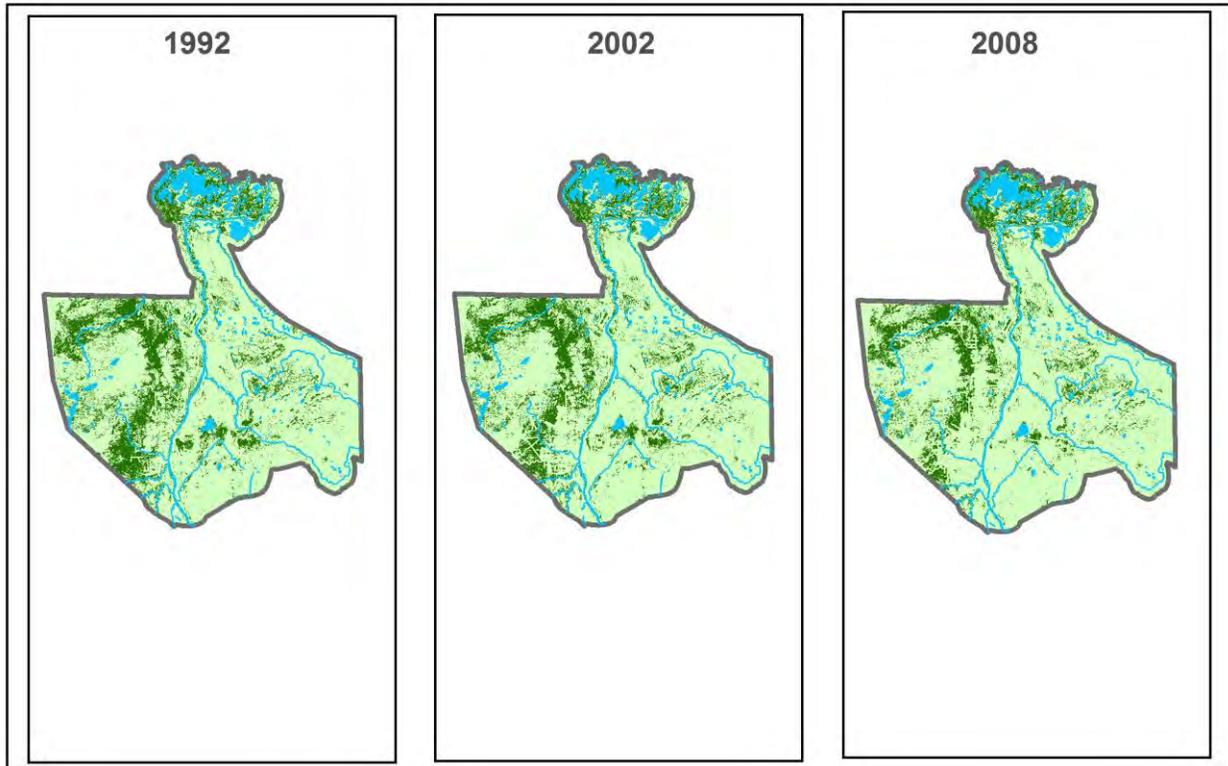


1980). Unlike traditional habitat modelling, which is based on literature and expert knowledge, affinity indices are based on empirical data from field measurements. Affinity indices provided a ranking of habitat preference and gave an indication of where individuals or populations of a species were likely to occur based on past observations.

We assumed that habitat normally preferred by moose that is within 250 m of industrial features is avoided by moose; therefore, we removed all habitat within 250 m of industrial features as having been disturbed. Our assumption is based on many ungulate studies in peer-reviewed literature (Rolley and Keith 1980, Dyer 2001, Forman *et al.* 2003, Gavin and Komers 2006) as well as our own measurements in wildlife surveys and field courses with our students.

The rate of decline in habitat availability was calculated based on satellite imagery. Using a series of satellite Landsat5 images, we calculated the yearly rate of converting natural surfaces to industrial developments from 1992 to present. We applied a change analysis using data processing based on the image algebra method which allows one to compute the change in each pixel between two images of different dates (see Appendix A for detailed methods).

A map depicting the declining availability of moose habitat and increasing fragmentation between 1992 and 2008 in the ACFN RSA is provided in Figure 3.2-3.



**Figure 3.2-3: Moose habitat (green areas) decline in the ACFN RSA between 1992 and 2008. Blue areas represent lakes and rivers.**

### 3.3 Beaver and Waterfowl Habitat Decline

**Key Finding:** In the past 16 years, beaver habitat experienced a yearly loss of 6.3 km<sup>2</sup> or 0.6% of the 1,100 km<sup>2</sup> originally available in 1992. Waterfowl habitat experienced a yearly loss of 3.6 km<sup>2</sup> or 0.2 of the 1,564 km<sup>2</sup> originally available in 1992.

Beaver habitat in the ACFN RSA declined from 1,100 km<sup>2</sup> in 1992 to 1,000 km<sup>2</sup> in 2008. This represents a yearly loss of 6.3 km<sup>2</sup> or 0.6% of the beaver habitat that was available in 1992.

Similarly to the habitat calculations for moose, we have used satellite imagery to map the distribution and availability of beaver habitat (see Appendix B for detailed methods), as well as the changes in habitat availability between 1992 and 2008. We included in our calculations the observations that beaver are disturbed from their preferred habitat within up to 50 m of human activities.

Waterfowl habitat in the ACFN RSA declined from 1,564 km<sup>2</sup> in 1992 to 1,507 km<sup>2</sup> in 2008. This represents a yearly loss of 3.6 km<sup>2</sup> or 0.2 % of the waterfowl habitat available in 1992.

We have used a model for the green winged teal as an indicator for waterfowl in general. We have used satellite imagery to map the distribution and availability of waterfowl habitat (see Appendix B for detailed methods), as well as the changes in habitat availability between 1992 and 2008. There may be some variation between waterfowl species in their habitat requirements and their responses to disturbance, but the green winged teal model we used encompasses the general requirements of many waterfowl species in terms of their need for grassy or shrubby vegetation types in proximity to water. We included in our calculations the observations that waterfowl are disturbed from their preferred habitat within up to 100 m of human activities.

## 4.0 Re-establishing Traditional Resources

**Key Finding:** The disturbed areas are unlikely to be reclaimed. There is very little similarity in terms of species composition between reclaimed sites and natural stands. Reclaimed sites show an unnaturally low diversity of species.

### 4.1 Natural Forest Stands

Under natural conditions within the boreal forest, the plant species present within each stand (i.e., ecosite phase) is determined primarily by the soil moisture and nutrient regime of a site (e.g., Bridge and Johnson 2000) and by the availability of seeds or viable asexual stems/roots soon after wildfire (e.g., Greene *et al.* 2004). Most plant species in the boreal forest appear to establish within the first few years after forest fire (Chipman and Johnson 2002). The establishment of most sexually reproducing plant species occurs where the litter, fermentation and humus (LFH) layers have been consumed by fire, leaving either a very thin layer of humus or exposed mineral soil (e.g., Charron and Greene 2002, Hesketh *et al.* 2009). Where LFH is consumed by fire, conditions for establishment and growth are ideal: there is adequate moisture, space, and light, allowing plants to thrive. Soon after fire, these sites become covered with plants and as a result there is little or no further establishment. Thus, in contrast to what is often believed, a succession of plant species does not establish over long periods of time in these stands (see Appendix C for further detail). At least one study has shown that as boreal forest stand age increases, the number of vascular plant species actually decreases (Chipman and Johnson 2002).

### 4.2 Reclaimed Sites

In a reclaimed site, salvaged surface organic material (LFH) or a peat-mineral mix is put onto the site and a small number of tree and shrub species are planted. The presence of a relatively thick surface organic layer precludes most sexually reproducing species from successfully establishing. Therefore, these sites will consist of mainly planted species that survive and species that can sprout from underground stems or roots and spread from adjacent, intact forests. They may also contain species that have emerged from viable seeds or vegetative structures within the salvaged LFH layers replaced on a site. However, the emergence of species from the LFH appears to occur only if the LFH is replaced within 12 months of it being salvaged (MacKenzie and Naeth 2007). Unfortunately, such rapid replacement is rare in reclamation. Only a small number of species are planted in reclamation sites because it is believed that a succession of species will establish over time, eventually leading to high diversity sites similar to naturally occurring boreal forest stands. Unfortunately, this view is not supported by evidence in the scientific or gray literature.

Evidence for the above arguments of a lack of succession can be seen in peer-reviewed publications (e.g., Gutsell and Johnson 2002) and in Suncor and Syncrude's long-term reclamation data as seen in Appendix F of Guidelines to Reclaim Forest Vegetation in Alberta (OSVRC 1998). Notably, Syncrude and Suncor's results, after 40 or more years of reclamation, substantiate the arguments that there is a short establishment period in reclaimed sites and no succession thereafter (and contradict the Guidelines' own recommendations that revegetation of reclaimed sites will occur by natural successional processes). The relevant results from their reclaimed sites are detailed below (text in italics are quotes from page F-14, OSVRC 1998):

On the oldest reclaimed sites, where peat amendment was incorporated and a legume/grass mix applied, grass and legume cover ranged from 50-100%. These vegetation communities have *persisted for over 20 years* and have *resisted the establishment of native species either through natural invasion or planting programs*. Reclaimed sites that were not seeded or only seeded to annual barley have typically become dominated by a variety of herbaceous species that provide *close to 100% total cover within a few years after reclamation* (incidentally, none of these herbaceous species were present in natural stands). These herbaceous species *maintain their control in the following years*. Trembling aspen, balsam poplar and a variety of native shrubs *invade the sites within a few years of reclamation*.

### 4.3 Differences Between Natural Stands and Reclaimed Sites

The methods that Shell proposes to reclaim disturbed areas have been shown to result in reclaimed sites that have very low or no similarity, in terms of species composition, to natural stands, with a low diversity of species unlike any post-fire boreal forest stands. The reasons for this can be seen by examining what we know about the post-fire regeneration dynamics in the boreal forest and comparing it with the methods Shell proposes in its reclamation plan.

Comparisons between reclaimed sites and natural stands show that there is very little similarity in terms of species composition between any of the reclaimed areas with natural stands. The oldest reclaimed sites seeded to grasses and legumes typically had  $\leq 10\%$  similar species. Sites seeded to native grasses and sites not seeded had similarity values between 0.1 and 0.29. In most cases, the *species that were common between the sites were the trees and shrubs planted as part of the reclamation program*. These results clearly show that it is incorrect to assume that re-vegetation will be augmented by natural vegetation species ingress and reclaimed areas will evolve into ecosystems similar to those found naturally. Clearly, if a particular set of plant species is desired within a reclaimed site then they will need to be planted within the first few years of reclamation. Within these reclaimed sites at least some patches of thin humus or exposed mineral soil will be needed to ensure early plant survival.

There is a relatively small number of plant species in the planting mix for reclaimed sites because it is also believed that shrubs, graminoids, and forbs will establish from seeds or propagules in the LFH layers that are placed back onto reclamation sites. However, as noted above, recent studies in the oil sands (MacKenzie 2006, MacKenzie and Naeth 2007, MacKenzie 2009) have found that when soils are stockpiled for more than one year, there are no viable seeds or root stocks remaining in the LFH. Furthermore, if the LFH was a productive source of seeds then one would expect to see the emergence of plant species found in natural stands from soils salvaged from natural areas (pre-disturbance stands). Instead, Suncor and Syncrude's reclaimed sites have plants that are "virtually absent" in natural stands (OSVRC 1998). Two of the plants found to be dominant in reclaimed sites, fireweed (a native species) and sow thistle (a non-native species), which are known to be good at dispersing quickly into disturbed areas, were not found in adjacent natural stands. Trembling aspen, balsam poplar, a variety of willows and other native shrubs *invaded* the sites (likely from asexual stems) within a few years of reclamation (OSVRC 1998). Given that none of the herbaceous species that dominated reclaimed sites were present in natural stands and that tree and shrub species apparently invaded the sites from adjacent intact stands, it does not appear that there has been emergence of individuals from the LFH.

The information presented above is important to understanding how successful reclamation might be achieved. Unfortunately, the belief that the emergence of plants from the LFH and "successional processes" will supplement any early reclamation efforts (i.e., planting/seeding) means that not enough will be done in the critical early period of reclamation to ensure that a variety of plant species will establish successfully and lead to the high diversity of forested stands seen in the pre-disturbance landscape.

Shell claims that a number of ecosites will be reclaimed progressively and at closure. However, to date there is no evidence that reclamation has been successful. That is, there are no reclaimed areas that are similar in species composition and contain a similar number of species as naturally occurring, boreal forest stands.

## 5.0 First Nation Participation in Decision Making

**Key Finding:** The environmental assessment process for Alberta Oil Sands projects does not involve any objective quantification of traditional resources. There is no evidence that the impacts on First Nations traditional resource use are rigorously measured in any part of the assessment process.

In 2010 we conducted a study investigating how questions posed by aboriginal communities are addressed through the process of impact assessment (IA) in the Oil Sands region. The results of the study are published in the peer-reviewed 2010 proceedings of the International Association for Impact Assessment conference in Geneva (Appendix E).

Our study was a comprehensive review as to the extent of which scientific rigor was applied to address questions and concerns from First Nations. We investigated the various phases of the IA process, including the scoping phase of the IA, the analysis and IA reporting phase, and the follow-up and monitoring phase, which includes measuring the effectiveness of mitigation measures.

This section responds to specific questions asked by Karey M. Brooks, of Janes Freedman Kyle Law Corporation, in a letter dated December 6, 2010 with respect to whether the IA processes included any specific consideration of First Nations' concerns and interests.

The specific questions asked by Ms. Brooks focus on what was required of any IA process. However, it should be noted that it is the terms of reference (TOR) that "require" an IA to include any particular analysis. The IA (also called EIA for Environmental Impact Assessment or EA for Environmental Assessment, see Appendix E for more explanation) provides the results of an impact analysis as required by the TOR.

Our comments below, therefore, address our assessment of both the requirements as established by the TOR and the analyses as conducted in the IA. Specifically, we discuss how well, on average, the requirements as set out in the TORs guided the IA to address the specific concerns raised by First Nations. We further comment on how well, on average, we were satisfied with the analyses and results provided in the IAs.

Our team of reviewers are all ecologists. Therefore, we assessed the performance of the IA process from a scientific point of view. The scientific process demands that questions be both testable and reproducible. For our study, in all phases of the IA process, the formulation of questions was informed by the specific concerns of First Nations regarding the impacts of development on Treaty rights.

Accordingly, we reviewed the IA process, to identify scientifically formulated questions that addressed the concerns of the First Nations in an ecological context.

To illustrate, in considering the First Nation concern regarding declining moose populations we reviewed the TORs for any requirements involving measurements of moose population densities, movements, abundance, and habitat availability. We then assessed whether the TORs outlined and prescribed specific ecological parameters to be measured and whether these parameters were adequate to provide testable and reproducible results. Our evaluation for this specific First Nations issue was based on the following:

- If we did not find any requirements that focused on moose populations, we concluded that the TORs were not satisfactory (the TOR would receive a score of 0).
- If there were requirements to address moose populations in general, but no specifics were provided regarding what should be measured, we concluded that the TORs were partly satisfactory (the TOR would receive a score of 0.5).
- If there were requirements that moose population density and trends be provided, and that the habitat quality, habitat amount and fragmentation and trends be calculated, we concluded that the TORs were satisfactory (the TOR would receive a score of 1.0).

We tested the IA analysis and results by reviewing the parameters that were measured, the scientific methods that were used, and whether sample sizes and data collection were adequately robust to allow for statistical testing of data. We then assessed whether, with respect to moose populations, we were not satisfied, partly satisfied or satisfied with the analysis and results of the IA, depending on whether the scientific steps outlined above were followed. We commonly adopt this approach to our reviews when asked by journal editors to conduct peer-reviews for scientific manuscripts submitted by researchers for publication in journals.

The concern regarding moose populations is one example of a typical First Nation concern. We have been asked to assume that the key concerns for First Nations include maintaining traditional land uses and the ability to carry out traditional resource based activities such as hunting, trapping, fishing, and berry picking within their traditional territory. We have also been asked to assume that Treaty rights protect the continued exercise of these traditional resource based activities. These activities are directly related to the availability of the traditional resources and the many ecological constituents and processes that we considered in our IA review process.

Our analysis (Appendix E) indicated that, on average, the mean rating score for TORs was 0.37 on a scale of 0 to 1.0. This suggests that reviewers were mostly partly satisfied with the TORs. Our analysis also shows that IAs were mostly rated as not satisfactory resulting in a mean rating score of 0.03 for EAs, and 0.14 for EIAs.

What follows are our answers to the specific questions asked by Ms. Brooks in her letter to us dated December 6, 2010:

**I. Did any IA require an analysis of whether any First Nations community, as an entity, should be specifically studied?**

**Terms of Reference Analysis**

With respect to this question, we were only partly satisfied with the majority of requirements established by the TORs.

Our conclusion is based on the following:

- Typically, the TORs did not require that a specific First Nation community be studied. Instead, a TOR usually requires that only those First Nation and aboriginal communities be studied that may be affected by the project.
- While requirements to study First Nations generally were often made, the parameters of what should be studied and what the expected outcome of the studies might be were usually not given. First Nations should be studied as part of the scoping exercises early on in the project planning. This would enable a list of questions and concerns to be developed that could be directly addressed in the IA. Failing to require that a list of questions relating to a specific First Nation be produced prior to the IA phase inevitably lead to an IA report that is not designed to assess impacts to First Nation communities.

**Results of Impact Assessment Analysis**

With respect to this question, we were mostly not satisfied with the results of the IAs.

Our conclusion is based on the following:

- A list of First Nations that were consulted regarding the development is usually included in the IAs. Often, tables are provided containing dates of meetings with First Nations and associated notes, or dates for attempts to reach any given First Nation by phone or mail. However, the meeting notes typically do not provide detailed assessments of impacts or mitigation measures.
- We did not find any IA report where mitigation measures were designed to specifically alleviate potential impacts to any given First Nation. Further, we did not find any monitoring programs that were specifically established to test the effectiveness of mitigation measures that would be relevant to any given First Nation.

## **2. Did any IA require an analysis of what resources are integral to the meaningful practice of Treaty rights?**

### **Terms of Reference Analysis**

With respect to this question, we were only partly satisfied with the majority of requirements established by the TORs.

Our conclusion is based on the following:

- TORs do not usually require that the resources that are integral to the meaningful practice of Treaty rights be analyzed. Rather, TORs require that traditional resources be identified in general, and impacts on these resources be assessed.
- The general need to evaluate traditional resources was identified, but no specific link was made between traditional resources and the practice of Treaty rights.

### **Results of Impact Assessment Analysis**

With respect to this question, we were mostly not satisfied with the results of the IAs.

Our conclusion is based on the following:

- We found no IA that explicitly analyzed impacts on Treaty rights.
- At best, IAs would list commitments for continued dialogue between the proponent and First Nations and suggest that the proponent may eventually identify and possibly mitigate the impacts.

## **3. Did any IA require an analysis of the aboriginal perspective of what rights are at stake?**

### **Terms of Reference Analysis**

We were not satisfied with the TORs in this respect.

Our conclusion is based on the following:

- At best, TORs only imply that the aboriginal perspectives of what rights are at stake be considered. They do this by highlighting the need to study traditional resources as noted in the above questions.
- However, there is no explicit requirement to describe the aboriginal perspective or to provide any definitions as to how impacts might be perceived by First Nations.

## Results of Impact Assessment Analysis

With respect to this question, we were mostly not satisfied with the results of the IAs.

Our conclusion is based on the following:

- Apparently as a result of poor guidance provided by TORs, we found no example of an IA that used aboriginal perspectives for assessing the severity of impacts. Absence of the aboriginal perspective is common throughout the assessment process.
- Even when dialogue is held between First Nations and the proponent, the proponents still uses their own definitions for assessing the severity of impacts.
- That is, the proponent usually concludes that impacts on traditional resource based activities are insignificant because they will be reversible in the future. These impact assessments do not reflect the views of First Nations regarding the duration of impacts or the success of re-establishing traditional resource based activities post-development.

### **4. Did any IA require an analysis of the ecological conditions required to meaningfully exercise Treaty rights?**

This question is very closely related to Q2. We understand ecological conditions to be a part of the resources that are integral to the practice of Treaty rights.

### **5. Did any IA require an analysis of socio-cultural and economic conditions required to meaningful exercise Treaty rights (e.g.: remoteness, safety, lack of contamination, access, time available for harvest)?**

## Terms of Reference Analysis

With respect to this question, we were only partly satisfied with the majority of requirements established by the TORs.

Our conclusion is based on the following:

- The TORs often required that socio-cultural and economic conditions for First Nations be studied. However, we were only partly satisfied with the TORs because only a general need to evaluate traditional resources was identified, and no specific link was made between socio-cultural and economic conditions and the practice of Treaty rights.
- With respect to specific questions about remoteness, safety, lack of contamination, access, and time available for harvest, TORs do not require that such parameters be assessed in terms of their importance for the exercise of Treaty rights.

## Results of Impact Assessment Analysis

With respect to this question, we were mostly not satisfied with the results of the IAs.

Our conclusion is based on the following:

- The IAs usually fail in regards to assessing the above listed parameters in two ways.
  - First, IAs do not assess how, for example, changes in remoteness would impact the exercise of Treaty rights.
  - Second, IAs typically lack a scientifically rigorous process for assessing changes to these parameters. Data sets used for such analyses, if conducted at all, are often out-dated or incomplete.
- The analyses are conducted based on the assumption that all proposed mitigation will be successful, often with little or no support from scientific literature, such as the ability to re-establish pre-disturbance conditions using current reclamation technology.
- The analyses further assume that a timeframe of about a century to re-establish pre-disturbance conditions is acceptable for the exercise of Treaty rights.
- We are currently unaware of any IA that clearly demonstrates how the conditions required to meaningfully exercise Treaty rights have changed from those that existed prior to industrial development. Nor have we seen an IA that predicts, using trend analysis, how conditions required to meaningfully exercise Treaty rights might have changed given current rates of development. In other words, there is no measurement available to date that would show how successfully or how poorly the exercise of Treaty rights has been re-established anywhere; yet, IAs make the assumption that Treaty rights will be re-established.

### **6. Did any IA require an analysis of the key issues (ecological, socio-cultural and economic) currently affecting the exercise of Treaty rights?**

This question is very closely related to the above questions because the assessment of key issues currently affecting the exercise of Treaty rights are not explicitly required in TORs nor are they adequately addressed in IAs. We were not satisfied with either the TORs or the IAs in this respect.

**7. Did any IA require an analysis of impacts on the environmental, cultural or social conditions necessary to exercise Treaty rights, particularly with respect to water quality, air emissions, increase in noise and impacts on plants and animals?**

**Terms of Reference Analysis**

With respect to this question, we were only partly satisfied with the majority of requirements established by the TORs.

Our conclusion is based on the following:

- With respect to water quality, air emissions, increase in noise and impacts on plants and animals, the TORs require that such parameters be assessed.
- The TORs usually leave the methodology and data quality objectives up to the proponents, giving the proponents the benefit of doubt that they would do the assessment adequately and to the best available scientific standards.
- Regardless of the required rigor of the analyses, TORs did not specifically require that water quality, air emissions, increase in noise and impacts on plants and animals be directly linked to the exercise of Treaty rights.

**Results of Impact Assessment Analysis**

With respect to this question, we were mostly not satisfied with the results of the IAs.

Our conclusion is based on the following:

- The scientific rigor of the analyses if usually poor.
- Impact assessments are often made based on unproven assumptions of successful mitigation.
- The monitoring reports that we have reviewed to date show that many of the assumptions about the effectiveness of mitigation do not hold true.
- No IAs made a clear linkage between impacts on the above noted parameters and what these impacts might mean for the exercise of Treaty rights.

**8. Did any IA require an analysis of the extent to which a First Nation's ability to exercise Treaty rights has already been affected by existing disturbances (e.g. was a baseline of infringement established)?**

**Terms of Reference Analysis**

We were not satisfied with the TORs in this respect.

Our conclusion is based on the following:

- TORs do not usually require that impacts of existing disturbances be assessed. To the contrary, the TORs explicitly require that conditions be described as they currently exist, assuming that all disturbances to date have been assessed and approved in previous regulatory processes.
- The TORs do not require that the proponent demonstrate the level of change or the rate of change in the environment that has occurred to date.

**Results of Impact Assessment Analysis**

With respect to this question, we were mostly not satisfied with the results of the IAs.

Our conclusion is based on the following:

- Likely as a result of the lack of guidance provided by TORs, IAs do not compare conditions that existed prior to industrial development to current conditions.
- This is a gross inadequacy of the IA process because we do not know the extent of the existing impacts on the exercise of Treaty rights under current development conditions.
- Consequently, it is impossible to determine the significance of adding a new disturbance to some unknown degree of existing impacts.

**9. Did any IA require an analysis of the impact of the proposed development in relation to other developments with a First Nations' traditional territory (e.g. a cumulative impact assessment)?**

**Terms of Reference Analysis**

With respect to this question, we were only partly satisfied with the majority of requirements established by the TORs.

Our conclusion is based on the following:

- Although cumulative impact assessments are required in TORs and are conducted in IAs within regional study areas, we were only partly satisfied with the requirements in the TORs because

of the weaknesses noted above regarding the measurement of parameters and the assessments of impacts on the exercise of Treaty rights (the weaknesses of the TORs regarding cumulative effects assessments are similar to the weaknesses regarding project specific assessments).

- In TORs, cumulative effects assessments usually include all approved and reasonable foreseeable projects. It is left to the proponent to develop this list.

### **Results of Impact Assessment Analysis**

With respect to this question, we were mostly not satisfied with the results of the IAs.

Our conclusion is based on the following:

- The IAs present the cumulative impact assessment poorly because they only evaluate future projects that are currently known, *i.e.*, projects for which plans have been publically disclosed. A large majority of projects that are likely to occur during the lifespan of any given project are not included at the time of application because they have not been publically disclosed or are not required to be disclosed (e.g. exploration and forestry activities).
- With respect to cumulative effects assessments in a First Nation's traditional territory, an understanding of how much of the territory has been disturbed to date and the rate at which future disturbances are likely to continue are fundamentally important for the assessment of cumulative effects. These assessments are typically inadequate in most IAs, if they exist at all.

#### **10. If an assessment of cumulative impacts was required, did any IA require small projects, (such as exploration, camps, roads) be included in predicting cumulative effects?**

No, small projects are not usually included in the cumulative effects assessment of IAs, as noted in Q9 above.

#### **11. Did any IA require an analysis of potential impacts of the project on Treaty rights?**

No, TORs do not require that impacts on Treaty rights be assessed directly. Consequently IAs do not provide these analyses either. As discussed in the responses above, TORs require that impacts on traditional resources be assessed in general, but an explicit link to Treaty rights is generally not made.

#### **12. Did any IA require an analysis of direct, indirect and cumulative impacts of development, in addition to the specific project, on Treaty rights and / or the livelihood of First Nations generally including: their ability to teach the**

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## **next generation how to exercise their rights and/or the ability to have places to exercise their rights?**

### **Terms of Reference Analysis**

With respect to this question, we were only partly satisfied with the majority of requirements established by the TORs.

Our conclusion is based on the following:

- As noted in the responses above, the TORs only require that impacts on traditional resources be assessed in general, but an explicit link to Treaty rights is not usually made.
- Specifically, with respect to the First Nation's ability to teach the next generation how to exercise their rights and/or the availability of places to exercise their rights, TORs do not require that impacts on the ability to teach about rights or on having the places to exercise the rights be assessed.

### **Results of Impact Assessment Analysis**

With respect to this question, we were mostly not satisfied with the results of the IAs.

Our conclusion is based on the following:

- The IAs do not typically provide such an analysis. At best, IAs show the footprint of the proposed development within a traditional territory and generally conclude that the impact of the development is negligible.
- IAs specifically avoid assessing the impacts of zones of influence around any given disturbance, and avoid assessing the effects of fragmentation as a result of the disturbance in the traditional territory. To assess the impacts on the ability to teach or to reach the places required for the exercise of Treaty rights, the IA would need to account for, at a minimum:
  - the availability of areas that are unaffected by the impacts of direct (footprint) and indirect (zone of influence through noise, smell, and sights) disturbance;
  - fragmentation and dispersion of remaining places available for the exercise of Treaty rights;
  - the impacts to travel routes required to reach such places;
  - the disturbance resulting from non-traditional land users, and
  - the socio-economic conditions (e.g. affordability of increased travel) that may impact the ability to reach such places.

### **13. Did any IA require mitigation measures address the potential direct, indirect and cumulative impact on Treaty rights?**

#### **Terms of Reference Analysis**

With respect to this question, we were only partly satisfied with the majority of requirements established by the TORs.

Our conclusion is based on the following:

- TORs usually require that mitigation measures address potential impacts on traditional resources. However, they did not specifically require that impacts to Treaty rights be mitigated.
- The TOR do not require that the proponent provide concrete plans for how the success of such mitigation measures.

#### **Results of Impact Assessment Analysis**

With respect to this question, we were mostly not satisfied with the results of the IAs.

Our conclusion is based on the following:

- Because of the lack of specific requirements regarding the measurement of parameters that relate to concerns from an aboriginal perspective (noted in responses above), IAs do not usually present a list of mitigation measures that specifically address impacts on Treaty rights.
- As noted under questions 1 and 2, at best, IAs commit to participating in continued dialogue with First Nations with the possibility of eventually identifying impacts and possibly mitigating them. In other words, not only do IAs not provide specific measures to mitigate impacts on Treaty rights, no IA stated how the success of mitigation measures would be determined, even if mitigation was proposed.
- To our knowledge, there have been no examples to date of a monitoring program that would be able to demonstrate successful re-establishment of traditional resource use after disturbance.

## 6.0 References

- Alberta Caribou Committee 2010. Website accessed July 2010. Last updated approx end of 2009: <http://www.albertacariboucommittee.ca/>.
- ASRD (Alberta Sustainable Resource Development). 2004. Costs and threats of invasive species to Alberta's natural resources. Website Accessed July 2010: <http://www.srd.alberta.ca/ManagingPrograms/FishWildlifeManagement/FisheriesManagement/documents/>.
- ASRD (Alberta Sustainable Resource Development). 2008. Hunting regulations. Website accessed September 2008: <http://www.srd.alberta.ca/fishwildlife/fishinghunting/albertaregulations.aspx>.
- ASRD (Alberta Sustainable Resources Development). 2009a. Terrestrial ecosystem management framework for the Regional Municipality of Wood Buffalo (TEMF). Website accessed July 2010. Last updated February 2009. <http://www.cemaonline.ca/index.php/cema-recommendations/terrestrial-ecosystem>.
- ASRD (Alberta Sustainable Resource Development). 2009b. Wild species: white-tailed deer (*Odocoileus virginianus*). Website accessed July 2010. Last updated June 2009. <http://www.srd.alberta.ca/BioDiversityStewardship/WildSpecies/Mammals/Deer/WhitetailedDeer.aspx>.
- Bayne, E.M., L. Habib and S. Boutin. 2008. Impacts of chronic anthropogenic noise from energy-sector activity on abundance of songbirds in the boreal forest. *Conservation Biology*, **22**: 1186–1193.
- Bridge, S.R.J. and E.A. Johnson. 2000. Geomorphic principles of terrain organization and vegetation gradients. *Journal of Vegetation Science*, **11**: 57-70.
- Cairns, A.L. and E.S. Telfer. 1980. Habitat use by 4 sympatric ungulates in boreal mixedwood forest. *J. Wildl. Manage.*, **44**: 849-857.
- Carpenter, S.R. and W.A. Brock. 2006. Rising variance: a leading indicator of ecological transition. *Ecology Letters*, **9**: 311-318.
- Charron, I. and D.F. Greene. 2002. Post-wildfire seedbeds and tree establishment in the southern mixedwood boreal forest. *Canadian Journal of Forest Research*, **32**: 1607-1615.
- Chipman, S.J. and E.A. Johnson. 2002. Understorey vascular plant species diversity in the mixedwood boreal forest of western Canada. *Ecological Applications*, **12**: 588-601.

- Collingham, Y.C. and B. Huntley. 2000. Impacts of habitat fragmentation and patch size upon migration rates. *Ecological Applications*, **10**: 131-144.
- Dawe, K. and S. Boutin. 2009. Range expansion of white-tailed deer. Presented at the Resource Access and Ecological Issues Forum. Sponsored by PTAC. Calgary, Alberta, November 30, 2009.
- Dyer, S.J., J.P. O'Neill, S.M. Wasel and S. Boutin. 2001. Avoidance of industrial development by woodland caribou. *J. Wildl. Manage.*, **65**: 531-542.
- Folke, C., J. Colding and F. Berkes. 2003. Synthesis: building resilience and adaptive capacity in social-ecological systems. In: *Navigating Social-Ecological Systems, Building Resilience for Complexity and Change*, ed. by F. Berkes, C. Folke, and J. Colding, Cambridge University Press, Cambridge, pp. 352-387.
- Forman, R.T., D. Sperling, J.A. Bissonette, A.P. Clevenger, C.D. Cutshall, V.H. Dale, L. Fahrig, R. France, C.R. Goldman, K. Heanue, J.A. Jones, F.J. Swanson, T. Turrentine, and T.C. Winter. 2003. *Road ecology: science and solutions*. Island Press, Washington, D.C., USA.
- Gamerstani, A.S., C.R. Allen and L. Gunderson. 2009. Panarchy: Discontinuities reveal similarities in the dynamic system structure of ecological and social systems. *Ecology and Society*, **14**: 15.
- Gates, C., T. Chowns and H. Reynolds. 1992. Wood Buffalo at the crossroads. In: *Buffalo*, ed. by J. Foster, D. Harrison and I.S. MacLaren. Alberta Nature and Culture Series, the University of Alberta Press.
- Gavin, S.D. and P.E. Komers. 2006. Do pronghorn (*Antilocapra americana*) perceive roads as a predation risk? *Canadian journal of Zoology*, **84**:1775-1780.
- Gordon, L.J., G.D. Peterson and E.M. Bennett. 2008. Agricultural modifications of hydrological flows create ecological surprises. *Trends in Ecology and Evolution*, **23**: 211-219.
- Greene, D.F., J. Noel, Y. Bergeron, M. Rousseau, and S. Gauthier. 2004. The regeneration of *Picea mariana*, *Pinus banksiana*, and *Populus tremuloides* along a fire severity gradient. *Canadian Journal of Forest Research*, **34**: 1845-1857.
- Gutsell, S.L. and E.A. Johnson. 2002. Accurately aging trees and examining their height-growth rates: implication for interpreting forest dynamics. *Journal of Ecology*, **90**: 153-166.
- Hesketh, M., D.F. Greene and E. Pouden. 2009. Early establishment of conifer recruits in the northern Rocky Mountains as a function of post-fire duff depth. *Canadian Journal of Forest Research*, **39**: 2059-2064.

- Johnson, E.A. and K. Miyanishi. 2008. Creating new landscapes and ecosystems; the Alberta oil sands. *Annals of the New York Academy of Sciences*, **1134**: 120-145.
- Kroodsmas, R.L. 1982. Edge effect on breeding forest birds along a power-line corridor. *The Journal of Applied Ecology*, **19**: 361-370.
- Kunkel, K.E. and D.H. Pletscher. 2000. Habitat factors affecting vulnerability of moose to predation by wolves in southeastern British Columbia. *Canadian Journal of Zoology*, **78**: 150-157.
- Landres, P.B., P. Morgan, F.J. Swanson. 1999. Overview of the use of natural variability concepts in managing ecological systems. *Ecological Applications*, **9**: 1179-1188.
- Latham ADM, Latham MC, McCutchen NA, Boutin S. 2011. Invading white-tailed deer change wolf-caribou dynamics in northeastern Alberta. *J. Wildl. Manage.* 75: 204-212.
- Laurance, W.F., T.E. Lovejoy, H.L. Vasconcelos, E.M. Bruna, R.K. Didham, P.C. Stouffer, C. Gascon, S.G. Laurance and E. Sampaio. 2002. Ecosystem decay of Amazonian fragments: a 22 year investigation. *Conservation Biology*, **16**: 605-618.
- Laurian, C., C. Dussault, J.P. Ouellet, R. Courtois, M. Poulin, and L. Breton. 2008. Behaviour of moose relative to a road network. *Journal of Wildlife Management*, **72**: 1550-1557.
- Machtans, C.S. 2006. Songbird response to seismic lines in the western boreal forest: A manipulative experiment. *Canadian Journal of Zoology*, **84**: 1421-1430.
- MacKenzie, D. 2006. Assisted natural recovery using a forest soil propagule bank. M.Sc. Thesis. Department of Renewable Resources, University of Alberta. Edmonton, Alberta. 140 pp.
- MacKenzie, D. 2009. Reclamation using Upland Surface Soils from Boreal Forests in the Oil Sands. Ph.D. Thesis. Unpublished manuscript. University of Alberta, AB.
- MacKenzie, D.D and M.A. Naeth. 2007. Assisted natural recovery using a forest soil propagule bank in the Athabasca Oil Sands. Pages 374 -382. *In: Seeds Biology, Development and Ecology*. Cromwell Press, Townbridge, United Kingdom.
- McLoughlin, P.D., E. Dzus, B. Wynes, and S. Boutin. 2003. Declines of populations of woodland caribou. *J. Wildl. Manage.*, **64**: 755-761.
- Northern River Basin Study. 1994. Executive summary of a workshop on the impacts of land clearing on the hydrologic and aquatic resources of boreal forests in Alberta, November 18 and 19, 1994. Northern River Basin Study Project Report 63.

- OSVRC (Oil Sands Vegetation Reclamation Committee). 1998. Guidelines for reclamation to forest vegetation in the Athabasca Oil Sands Region. ISBN 0-7785-0411-5.
- Potapov, P. et al. 2008. Mapping the world's forest landscapes by remote sensing. *Ecology and Society*, **13**: Art.No. 51.
- Ries, L., R.J. Fletcher, J. Battin and T.D. Sisk. 2004. Ecological responses to habitat edges: mechanisms, models and variability explained. *Annual Review of Ecology, Evolution, and Systematics*, **35**: 491-522.
- Rolley, R.E. and L.B. Keith. 1980. Moose population dynamics and winter habitat use at Rochester, Alberta, 1965-1979. *Canadian Field-Naturalist*, **94**: 9-18.
- Scheffer, M., J. Bascompte, W.A. Brock, V. Brovkin, S.R. Carpenter, V. Dakos, H. Held, E.H.V. Nes, M. Rietkerk, and G. Sugihara. 2009. Early-warning signals for critical transitions. *Nature*, **461**: 53-59.
- Scheffer, M., S. Carpenter, J.A. Foley, C. Folkes and B. Walker. 2001. Catastrophic shifts in ecosystems. *Nature*, **413**: 591-596.
- Schindler, D.W. and P.G. Lee. 2010. Comprehensive conservation planning to protect biodiversity and ecosystem services in Canadian boreal regions under a warming climate and increasing exploitation. *Biological Conservation*, **143**: 1571-1586.
- Sorensen, T., P.D. McLoughlin, D. Hervieux, E. Dzus, J. Nolan, B. Wynes, and S. Boutin. 2008. Determining sustainable levels of cumulative effects for boreal caribou. *J.Wildl.Manage.*, **72**: 900-905.
- Stewart, A, P.E. Komers and D.J. Bender. 2010. Assessing landscape relationships for habitat generalists. *Ecoscience*, **17**: 28-36.
- Stewart, A. and P.E. Komers. 2012. Testing the Ideal Free Distribution Hypothesis: Moose Response to Changes in Habitat Amount. *ISRN Ecology*. Article ID 945209, doi:10.5402/2012/945209. pdf available at: <http://www.isrn.com/journals/ecology/aip/>.
- Suncor. 2008. Suncor Energy Ltd., application for approval of the Suncor Energy MD9 mine waste dump; supplemental information requests, Attachment I; submitted to the Alberta ERCB.
- Thiessen, C. 2009. Peace Region; Boreal Caribou Monitoring: Annual Report 2008-09. British Columbia Ministry of Environment, Fish and Wildlife Section, Peace Region Technical Report.
- Weclaw, P. and R.J. Hudson. 2004. Simulation of conservation and management of woodland caribou. *Ecological Modelling*, **177**: 75-94.

White, D., E. Haber, and C. Keddy. 1993. Invasive plants of natural habitats: An integrated review of wetland and upland species and legislation governing their control. Canadian Wildlife Service, Environment Canada. Ottawa, ON.

## **Appendix A**

### **Change of Land Cover Analysis**

## AI.0 Change of Land Cover Analysis

Digital change detection based on satellite imagery has been widely used to measure terrestrial land cover change in the context of changing land use (Jensen 2005; Potapov et al. 2011).

We estimated the change in the landscape based on the:

- 1) digitized linear disturbances that are visible on the Landsat5 images at a 1:50,000 scale;
- 2) change analysis of the Landsat images which extracts areas that have been changed between two consecutive images; and
- 3) footprints digitized from regulatory applications for the planned and approved projects that are not yet visible on the most current image.

Linear disturbances that were visible on the Landsat images were digitized and used as a separate layer of lines. We did not have any reliable information on the width of linear disturbances because they do not have a footprint per se, unless they were buffered by 250 m (see below), so as a result, the change analysis only addresses footprints of non-linear developments such as clearings, facilities, mining operations, etc.

The Landsat images used for the analysis north of Fort McMurray were taken in 1992 (June 11), 2002 (May 14) and 2008 (July 25). The image resolution was 30 x 30 m and they were orthorectified using geodetic and elevation control data to correct for positional accuracy and relief displacement. Large blocks of Landsat data were adjusted through a patented procedure that uses pixel correlation to acquire tie-points within the overlap area between adjacent Landsat images (USGS 2008). Ground control points were fixed, and images were projected to the Universal Transverse Mercator map projection. All bands were individually re-sampled, using a nearest neighbour algorithm. The result is a final product with a Root Mean Square Error of better than 50 m in positional accuracy (USGS 2008). To estimate the disturbances other than linear, we performed a change analysis using data processing based on the image algebra method (Wickware and Howarth 1981, Singh 1989, Stanojevic et al. 2006).

The image algebra method is a relatively simple change detection technique, also known as the band differencing method. The reasons for using the image algebra method versus other methods, such as classifications are:

- 1) The image algebra method is highly accepted and widely used in the remote sensing research community (Jensen 2005).

- 2) Jensen (1981) and Jensen and Toll (1982) report that this method is among the most accurate change detection algorithms.
- 3) The image algebra method was reported to have an overall accuracy near 90% for standardized differencing (Bauer *et al.* 1994). In the Fort McMurray region, the image algebra method was also found to be near 90% accuracy and is believed to be better than other methods when the focus is quantifying change, without defining the categorical nature (e.g. type of vegetation classes) of the change (Alsadat *et al.* **in press**).
- 4) The image algebra method is cost effective as it does not require as much time as image classification methods.
- 5) While classification methods provide information of the categorical nature of the change, these methods are not as effective at detecting anthropogenic change over large areas. Because of its effectiveness, the image algebra method has been used by Global Forest Watch Canada to detect changes in very large regions (Stanojevic *et al.* 2006).

The image algebra method employs an equation for the differencing of a common band of imagery for two image dates as shown below (Jensen 2005):

$$\Delta BV_{ijk} = BV_{ijk}(1) + BV_{ijk}(2) + c$$

where:

- $\Delta BV_{ijk}$  = change pixel value
- $BV_{ijk}(1)$  = brightness value on date one
- $BV_{ijk}(2)$  = brightness value on date one
- c = constant
- i = line number
- j = column number
- k = a single band

The image algebra method allows the analysts to define the level of change that they are interested in describing. In our analysis, we specified that the change in pixel value had to be at least 10%. We compared the satellite image from 1992 to the images from 2002, and the image from 2002 to the image from 2008.

The 4th or 5th image bands were used for differencing within the image pairs. These were used to minimize the atmospheric effects on the spectral signature of any given land cover type. A raster file was created based on the output of this image differencing. The output raster file depicted all pixel changes greater than (approximately) 10% between the two dates. In some cases, the bands being compared were evaluated for minor differences in reflectance unrelated to changes in cover type. Discrepancies

were treated by evaluating and matching the histograms of the bands used in the analysis. This process aided in the reduction of in-between scene variability as a result of potential differences in atmospheric conditions.

All of the raster files depicting change were compared with the image pairs to ensure that the appropriate data were captured. In order to reduce the data “noise” that resulted from the processing routine, the initial processed data set was re-processed using a filter to eliminate the smaller, scattered clusters of pixels that were less than 0.27 ha in size (3 pixels). Upon visual inspection of the image pairs, the vast majority of these small, scattered clusters of pixels appeared to indicate “natural” and/or phenological changes, such as varying water levels in wetlands and lakes, or varying leaf colour and cover. In some cases, the filter eliminated linear disturbances such as roads, seismic line, etc., but these were manually re-inserted into our “anthropogenically-disturbed” data layer during the visual checking stage.

An unsupervised isodata clustering process was also applied to the image files in order to provide an additional dataset to assist in determining whether specific identified changes were anthropogenically-caused disturbances. Clusters which fell into both classes were identified as “crossovers” and these pixels were subjected to another round of isodata clustering (with a greater number of specified classes) and then classified accordingly. This complementary data layer was especially useful in identifying areas affected by wildfire.

In addition to the classification of pixel clusters in the differencing output raster files, the analyst manually “cleaned” the borders of some of the detected changes. Some of the changes that were eliminated by the “noise” filter that was performed were manually recovered and added back into the data set of anthropogenically-disturbed clusters. The pixels classified as “anthropogenically-disturbed” were used to create a digital disturbance layer.

### **AI.1 Disturbance Buffer (Zone of Influence)**

A disturbance buffer or zone of influence of 250 m around the footprints of developments and the centerlines of linear corridors was arbitrarily applied based on the potential for reduced animal activity and hunting and trapping activity near industrial features. The distance of 250 m was chosen because, for example, hunting is not permitted within 183 m (200 yards) of any occupied building (ASRD 2008). For other examples, moose sign was found to be reduced within 200 m of roads (Rolley and Keith 1980), caribou avoid industrial features within about 250 m (but avoidance could be greater or smaller for some feature during some seasons, Dyer *et al.* 2001), and other mammals have been observed to avoid industrial features within this distance (Forman *et al.* 2003). Birds in woodlands have also been observed

to avoid roads, power lines and seismic lines by up to about 300 m depending on species and ecological context (Kroodsma 1982, Belisle *et al.* 2001, Machtans 2006).

Clearly, the zone of influence differs widely between the species, the type of industrial features and related activities, and the ecological context (reproductive cycle, hunting or predation regimes, habitat structure and quality). However, it appears that, in absence of detailed information on any of the situations, the 250 m distance is a reasonable approximation for a zone within which First Nations could not effectively exercise their rights.

## **AI.2 Atmospheric Correction**

The solar spectrum electromagnetic radiation signals that satellites collect are affected by aerosols and gases in the atmosphere. Performing atmospheric correction on the satellite images can account for this modification and lead to improvements in classification and detection, and therefore, atmospheric correction problems have received considerable attention from researchers in remote sensing who have devised a number of solution approaches. Sophisticated approaches are computationally demanding and have only been validated on a very small scale (Tucker and Sellers 1986), and, in fact, some researchers have determined that atmospheric correction is unnecessary in many cases (Tucker *et al.* 2004).

We addressed the issue of atmospheric influence in our study by first creating a cloud-water mask and then performing differencing using only spectral band 4 or 5, because these are less influenced by atmospheric conditions. Other studies also dropped the bands most influenced by atmospheric effects from their analyses (Skole and Tucker 1993, Collins and Woodcock 1994, Foody *et al.* 1996).

## **AI.3 Approved and Planned Disturbances**

In order to estimate the future change of land cover, we added the footprints of proposed, but not yet developed projects in the study area. To do so, we used available maps from regulatory applications that either have been approved or are awaiting regulatory approval. Footprint maps from EIAs were rectified and the planned disturbances from these maps were digitized.

## **AI.4 Accuracy Analyses**

Accuracy assessments determine the quality of the information derived from remotely sensed data (Congalton and Green 1999). We applied both quantitative classification and qualitative positional accuracy assessments.

*Quantitative accuracy assessment*

Quantitative accuracy assessments attempt to identify and measure remote sensing-based error such as misclassification. Processes that use medium and low resolution images produce larger errors than high resolution images. We compared our data derived from Landsat-5 images with AltaLIS 1:20,000 base map data sets. For the accuracy assessment, we selected a micro study area within the central study area of 5,888 km<sup>2</sup>. (Figure 1). For that area we acquired AltaLIS data from 28 sheets of the National Topographic System (NTS). Each NTS sheet covered 215 km<sup>2</sup>. In the micro study area we compared our Landsat based analyses with disturbance analyses that were enhanced by AltaLIS data.

We were also interested to find out, specifically, which types of linear disturbance features the Landsat based analyses underestimated the most. The detailed break-down is demanding on data and time for processing. Therefore, we selected 4 sample areas for which data were obtained from 4 randomly selected NTS sheets. We compared types of linear disturbance features reported by AltaLIS with our Landsat based analysis by quantifying for each AltaLIS feature type, how much of it was captured by our Landsat based analysis. Table A.1-1 shows that our Landsat image analysis captured nearly all linear corridors indicated by the AltaLIS data, except for seismic line of which we captured only 36% of those indicated by AltaLIS. In other words, Landsat analyses underestimate the amount of disturbance by narrow linear corridors.

Data from AltaLIS were selected as the reference data because of data accuracy, availability and cost. According to AltaLIS, “the 1:20,000 Base Feature data set is the most accurate and detailed of the Base products, and was created to populate GIS applications” (AltaLIS 2008). Although no numerical accuracy assessment is available from AltaLIS, we considered it to be the ultimate mapping tool applied by the Alberta government, and through personal communications with AltaLIS we were assured that the accuracy in digitizing linear features is near 100%, certainly more than 90%. Data resources used by AltaLIS include the provincial 1:20,000 Provincial Digital Mapping Program (accuracy ±5 m), the Alberta Vegetation Inventory (AVI), and Indian Remote Sensing (IRS) satellite imagery (accuracy ±25 m). Other data sources include orthophoto imagery, aerial photography, and spot imagery (accuracy ±10 m).

**Table A.1-1: A detailed break-down of linear feature type showing the average (± standard deviation) linear disturbances recorded in 4 sample areas (NTS sheets) by AltaLIS (a database used by the Alberta Government) and in our Landsat image analysis.**

Feature Type	AltaLIS	This Study	Overall Agreement (%)
Seismic line (km)	440.4±271.2	158.3±87.0	36
Pipeline (km)	65.7±53.4	64.3±51.6	98
Railway (km)	20.3±0	20.3±0	100

Road (km)	37.9±12.9	33.4±9.3	88
Power line (km)	14.8±2.8	14.8±2.8	100
<b>Total Linear (km)</b>	<b>548.8±223.8</b>	<b>260.0±39.5</b>	<b>47</b>

The second part of the quantitative accuracy assessment was a comparison of our non-linear disturbance to the Alberta Ground Cover Classification (AGCC) data set. The AGCC data used for the accuracy assessment was based on the Landsat images (p041r021 and p042r20) taken in 1998 (Government of Alberta, AGCC meta data). We used only two classes for the comparison of the AGCC data set with our 2002 data set (the closest date in our set to 1998): Class 12 that represents commercial, industrial, and urban development and Class 31 that represents graminoid dominated clear-cuts. According to the AGCC meta data, the accuracy for these classes was nearly 100%. Our mapping of disturbance captured 92% of Class 12. For the graminoid dominated clear-cuts, accuracy was only 48%. However, we found that almost 25% of our disturbances fell within areas that AGCC classified as wetland. We checked 17 of these areas on 1-m resolution air photos and found that in 14 cases (82%), our classification of disturbance was correct. This suggests that our classification is more accurate in distinguishing between wetland and disturbance than the AGCC data set. This is likely because we determined disturbance by a combination of spectral signature and the change from one date to another, whereas the AGCC data is based on a supervised classification of one image date.

#### *Qualitative accuracy assessment*

For the qualitative accuracy assessment, we determined whether we correctly assigned disturbed versus undisturbed classes by comparing the class extracted from the imagery with what we saw on the ground. This involved visiting 54 sites, 14 in the south study area and 40 in the central study area, to verify the existence of disturbances detected on the Landsat-5 images. Each of the visited sites was located along major roads, forest roads, trails and the Athabasca River. Only 1 out of 54 sites was misclassified, and the other sites (98%) were correctly classified and corresponded accurately with the mapped disturbance.

## **A1.5 References**

Alsadat, M., Das, S., El-sheimy, N. **In press.** Assessment of Three Change Detection Techniques in Fort McMurray In Alberta Canada. University of Calgary, Canada. GIS Symposium.

AltaLIS. 2008. Bring data to life; base overview. Website accessed 8 October 2008: [http://www.altalis.com/products\\_base.html](http://www.altalis.com/products_base.html)).

- ASRD (Alberta Sustainable Development). 2008. Hunting regulations. Website accessed September 2008: <http://www.srd.alberta.ca/fishwildlife/fishinghunting/albertaregulations.aspx>.
- Bauer, M., T. Burk, A. Ek, P. Coppin, S. Lime, T. Walsh, D. Walters, W. Befort, and D. Heinzen, 1994. Satellite inventory of Minnesota forest resources, *Photogrammetric Engineering & Remote Sensing*, 60(3):287–298.
- Belisle, M. and C.C.S. Clair. 2001. Cumulative effects of barriers on the movement of forest birds. *Conservation Ecology*, 5.
- Collins, J.B. and C.E. Woodcock. 1994. Change detection using the Gramm-Schmidt transformation applied to mapping forest mortality. *Remote Sensing of Environment*, 50: 267-279.
- Congalton, R. and K. Green. 1999. Assessing the accuracy of remotely sensed data: principles and practices. CRC/Lewis Press, Boca Raton, FL. 137 pp.
- Dyer, S.J., J.P. O'Neill, S.M. Wasel and S. Boutin. 2001. Avoidance of industrial development by woodland caribou. *J. Wildl. Manage.*, 65, 531-542.
- Foody, G.M., G. Palubinska, R.M. Lucas, P.M. Curran, and M. Honzak. 1996. Identifying terrestrial carbon sinks: classification of successional stages in regenerating tropical forest from Landsat TM data. *Remote Sens. Environ.* 55: 205-216.
- Forman, R.T., D. Sperling, J.A. Bissonette, A.P. Clevenger, C.D. Cutshall, V.H. Dale, L. Fahrig, R. France, C.R. Goldman, K. Heanue, J.A. Jones, F.J. Swanson, T. Turrentine, and T.C. Winter. 2003. Road ecology: science and solutions. Island Press, Washington, D.C., USA.
- Jensen, J.R., 1981, Urban change detection mapping using Landsat digital data. *The American Cartographer*, 8, 127–147
- Jensen, J. R., and Toll, D. R., 1982, Detecting residential land use development at the urban fringe. *Photogrammetric Engineering and Remote Sensing*, 48, 629–643
- Jensen J. R. 2005. *Introductory digital image processing: a remote sensing perspective*. Third edition. Prentice-Hall, Upper Saddle River, New Jersey, USA.
- Kroodsma, R.L. 1982. Edge effect on breeding forest birds along a power-line corridor. *The Journal of Applied Ecology*, 19: 361-370.
- Machtans, C.S. 2006. Songbird response to seismic lines in the western boreal forest: A manipulative experiment. *Can. J. Zool.*, 84: 1421-1430.

- Potapov P, Turubanova S, Hansen MC. 2011. Regional-scale boreal forest cover and change mapping using Landsat data composites for European Russia. *Remote Sensing of Environment* 115: 548-561.
- Rolley, R.E. and L.B. Keith. 1980. Moose population dynamics and winter habitat use at Rochester, Alberta, 1965-1979. *Canadian Field-Naturalist*, 94: 9-18.
- Singh, A. 1989. Digital change detection techniques using remotely-sensed data. *International Journal of Remote Sensing*, 10(6): 989-1003.
- Skole, D. and C. Tucker. 1993. Tropical deforestation and habitat fragmentation in the Amazon: satellite data from 1978 to 1988. *Science* 260: 1905-1910.
- Stanojevic, Z, P. Lee and D.G. Gysbers. 2006. Recent anthropogenic changes within the Northern Boreal, Southern Taiga and Hudson Plains Ecozones of Quebec. Global Forest Watch Canada. Website accessed 8 October 2008: [http://www.globalforestwatch.ca/change\\_analysis/downloadQC.htm](http://www.globalforestwatch.ca/change_analysis/downloadQC.htm). Report needs more info for access.
- Tucker, C.J. and P.J. Sellers. 1986. Satellite remote sensing of primary production. *International Journal of Remote Sensing*, 7: 1395-1416.
- Tucker, C.J., D.M. Grant and J.D. Dykstra. 2004. NASA's global orthorectification landsat data set. *Photogrammetric Engineering & Remote Sensing*, 70(3): 313-322.
- USGS. 2008. Landsat orthorectified TM imagery (Landsat\_Ortho\_TM); Product Readme. USGS Earth Resources Observation and Science Centre (EROS) Website Accessed September 2008: [http://Edcsns17.Cr.Usgs.Gov/Nsdp/Tm\\_Readme.htm](http://Edcsns17.Cr.Usgs.Gov/Nsdp/Tm_Readme.htm).
- Wickware, G.M. and P.J. Howarth. 1981. Change detection in the Peace-Athabasca delta using digital landsat data. *Remote Sensing of Environment*, 11: 9-25.

## **Appendix B**

### **Wildlife Habitat Models**

## BI.0 Affinity Index for Moose Habitat

Information on differential habitat use by wildlife species can be used to develop management tools for species potentially affected by human development (Harkonen and Heikkila 1999). Many methods provide general information on species habitat use, but often habitat availability is not taken into consideration when interpreting this information. Affinity indices provided a quantitative evaluation of wildlife habitat preferences. These indices were designed to remove habitat availability biases from wildlife habitat use assessment (Cairns and Telfer 1980).

Unlike traditional habitat modelling, which is based on literature and expert knowledge, affinity indices are based on empirical data. Affinity indices provided a ranking of habitat preference and gave an indication of where individuals or populations of a species were likely to occur. It should be noted that actual use of habitat by individuals may vary depending on the local (home range) availability of alternative habitat that may provide some resource value (Dunning *et al.* 1992; Estades and Temple 1999). There could be what is termed a neighbourhood effect, whereby abundance within preferred habitat may be positively or negatively influenced by adjacent vegetation, depending on the quality of the adjacent vegetation (Dunning *et al.* 1992). These relationships are difficult to assess; however, they may account for subtle differences in habitat use between different home ranges.

Habitat preference was determined using affinity indices for moose which were calculated based on reports that provided information on relative abundance, survey effort, and habitat availability for the Oil Sands Region. This information was obtained from several EIAs listed in Table BI-1.

**Table BI-1: Datasets Used for Calculation of Affinity Indices**

Valued Ecosystem Component	Data Type	Number of EIAs Used	EIAs Used
Moose ( <i>Alces alces</i> )	Pellet Group Data	7	Husky Oil Operations Ltd. 2005 Imperial Oil Resources 2006 OPTI-Nexen 2006 Shell Canada Ltd. 2002 Shell Canada Ltd. 2005 Suncor Energy Inc. 2005a Suncor Energy Inc. 2005b
	Winter Track Count Data	4	Birch Mountain Resources Ltd. 2006 Shell Canada Ltd. 2002 Suncor Energy Inc. 2005a Suncor Energy Inc. 2005b

Affinity indices were calculated using methods outlined in Neu *et al.* (1974), Cairns and Telfer (1980), and Harkonen and Heikkila (1999). Affinity indices were calculated as: (proportion of total counts of species sign on plots in vegetation group  $\times$  ( $p_i$ )) / (proportion of study plots in vegetation group  $\times$ ). Species sign refers to the data type available for moose, as indicated in Table B1-1. Affinity indices are positive values with no upper limit. The calculation of affinity indices takes sampling effort into consideration. An index  $<1.0$  indicated that the vegetation group was used less than one would expect based on availability. An index equal to 1.0 indicated that the vegetation group was used in proportion to its availability. An index  $>1.0$  indicated that the vegetation group was used more than one would expect based on availability (preferred). Bonferroni confidence intervals were calculated to determine which vegetation groups were used significantly more or less than would be expected based vegetation availability alone (Neu *et al.* 1974; Arthur *et al.* 1996). Affinity indices give an indication of habitat preference, while Bonferroni confidence intervals determine statistical significance of vegetation use. Bonferroni confidence intervals were constructed for each observed proportion of species sign ( $p_i$ ) to identify whether the expected proportion of species sign (area of habitat  $\times$  out of all habitat available) fell within the magnitude of the significant effects. Bonferroni confidence intervals use an adjusted z-statistic that widens the confidence intervals (to bound the probability error rate at  $\alpha=0.05$ ) and takes into consideration that multiple simultaneous estimates are being made. The form of the confidence interval is:

$$p_i - z_{(1-\alpha/2k)}\sqrt{(p_i(1-p_i)/n)} \leq p_i \leq p_i + z_{(1-\alpha/2k)}\sqrt{(p_i(1-p_i)/n)}$$

where:  $\alpha = 0.05$ ,  $k =$  number of simultaneous estimates (i.e., the number of vegetation groups with data), and  $n$  is the sample size (e.g., number of pellet groups). This method of habitat use assessment accounted for vegetation availability biases. The ability to detect significant differences, or the power of an analysis, increases with an increase in sample size due to a corresponding reduction in the standard error of the estimate (Peers 1996). Therefore, vegetation types with affinity indices closer to 1.0 may be found to be significant if there is a large sample size, while those with indices farther from 1.0 may not be found to be significant due to a smaller sample size.

Vegetation group rank was determined using results of the Bonferroni confidence intervals and data interpretation where needed. The ranking system used consisted of four classes: High (1), Moderate (2), Low (3), and Very Low (4). Most often, vegetation used significantly more than expected based on availability (according to Bonferroni confidence intervals) were categorized as Very Low or High, respectively. In some cases, ranks were assigned based on a combination of the affinity index, professional knowledge and data interpretation. Effective wildlife habitat was considered to be vegetation groups ranked as High and Moderate, while vegetation groups ranked as Low and Very Low were considered to be non-effective habitat. Effective habitat is where species abundance is likely to be highest and where the majority of resources are found in the landscape for a species. It is essential to understand the distribution of effective habitat in order to make predictions about the impact that

changes to the landscape may have on a particular species. Habitat availability for the baseline scenario was presented using this binary classification of effective and non-effective habitat in the landscape.

A primary goal of habitat mapping was to be able to predict the distribution and abundance of species of interest by extrapolating from sampled to un-sampled areas. Vegetation group ranks were associated with a spatial vegetation component that was easily analyzed and integrated using a Geographic Information System (GIS). Ranks based on affinity indices, spatial vegetation information, and baseline zone of influence were integrated using a GIS to determine baseline habitat availability.

## **B2.0 Green-winged Teal Habitat Model**

### **B2.1 Introduction**

The group of waterfowl known as “dabbling” ducks are common in Alberta from March – October (Fisher and Acorn 1998). Dabbling describes the feeding behaviour whereby invertebrates, seeds, and other plant materials are filtered from or near the surface of the water. Dabbling duck nesting sites generally occur where graminoid, herbaceous, and low shrub cover (<1 m tall) occur adjacent to water (Bent 1987). The waterfowl habitat model is based on the Green-winged Teal (*Anas crecca*), a typical dabbling duck species that is representative of ducks and waterfowl occurring in the RSA.

#### **B2.1.1 Status**

The status of the Green-winged Teal is determined by federal and provincial agencies. As of August 2007, the Green-winged teal in Canada was not listed on any of the Schedules of the *Species At Risk Act* (SARA). The Committee on the Status of Endangered Wildlife in Canada has not classified the Green-winged teal (COSEWIC 2008). The Green-winged teal is listed as *Sensitive* in Alberta (AENV 2005).

#### **B2.1.2 Distribution**

The breeding habitat of the Green-winged Teal spans most of Canada and Alaska, and spreads south into states of North Dakota, Minnesota, Northern Michigan, and Maine. They do not winter in Alberta, but rather migrate south to the western and southern United States and Mexico (Roof 1999).

### **B2.1.3 Information from Field Surveys**

This species-habitat model was developed using published literature and adapted from a Blue-winged Teal model developed by OPTI-Nexen (2006). Green-winged Teal, and several other species of waterfowl, were recorded during waterfowl surveys conducted in June 2007. The data collected provided presence/absence information and did not provide detailed information on habitat use.

#### **B2.1.3.1 Habitat Preferences**

The Green-winged Teal is typical of dabbling duck species occurring within Alberta. Their primary habitat requisites are aquatic habitat for rearing young and feeding with adjacent suitable nesting habitat. Green-winged Teal feed in shallow water with abundant aquatic vegetation. The Green-winged Teal will most often be found feeding in shallow waters near the shoreline, where they feed on aquatic invertebrates, seeds of aquatic vegetation, and directly on aquatic vegetation (Roof 1999). Any open waterbody, including rivers, creeks, ponds, marshes, and lakes, was considered as potentially suitable habitat for the Green-winged teal. Suitable nesting habitat consists of graminoid, herbaceous and low shrub habitat within 100 m of open water (Hickie 1985).

High quality habitat for the Green-winged Teal was determined by the close proximity (<100 m) of feeding and nesting habitat. Forage was considered to be limiting during the summer season before they migrate south. Reproductive habitat was considered to be a critical factor for green-winged teal during the spring season.

The key habitat components for this species were:

- open water (feeding; summer); and
- graminoid, herbaceous, and low shrub habitat (nesting; spring).

### **B2.2 Development of Ratings Table**

Ratings are listed for each landcover class occurring in the study area (Table B2-1) for each of the life requisites of the Green-winged Teal.

**Table B2-1: Vegetation Group Ratings for the Green-winged Teal Life Requisites in the RSA (Rating: 4= best, 1=poorest)**

Vegetation Group	Nesting: ≤100 m to Water (Spring)	>100 m apart (both requisites)
Bog / fen	4	1
Coniferous	1	1
Deciduous	1	1
Disturbed	1	1
Mixed wood	1	1
Shrub	4	1
Water	n/a	n/a

### B2.2.1 Development of Ratings Table

Green-winged Teal ratings tables were developed for suitability of vegetation groups for the spring and summer seasons. The following list of assumptions was applied to the model:

- any permanent water bodies such as ponds and lakes were suitable as foraging habitat (excluding tailings ponds, streams and Athabasca River); and
- suitable nesting sites were limited to graminoid, herbaceous and low shrub habitat within 100 m of foraging habitat.

The suitability of a habitat type providing resources for one life requisite depended on its proximity to another habitat type providing for another life requisite (Dunning *et al.* 1992). This attribute of Green-winged Teal habitat requirements (i.e., proximity of nesting and food resources) was incorporated into the model (Table B2-2).

**Table B2-2: Adjustments for Green-winged Teal Habitat in the Wildlife RSA**

Needs	Variable	Parameter	Details	Rating	Comments
Spring and Summer: Nesting and Feeding (March – October)	Vegetation and Water	Proximity	Both nesting and food habitat within 100 m	No change to rating.	Habitat requirements met.
			All area >100 m from water's edge	Rating 1-4=1	Proximity requirement not met.
		Human Activity (roads, RoW, facilities, developments)	0-50 m	Rating down by 2	≤50 m waterfowl vigorously swim or fly.
			50-100 m	Rank down by 1	>50 m waterfowl response less vigorous (Pease <i>et al.</i> 2005).

## **B2.3 Development of Ratings Table**

The Green-winged Teal model was evaluated using Green-winged Teal observations from waterfowl surveys conducted in various surveys in the oil sands. Green-winged Teal locations were overlaid on maps showing the distribution of Green-winged Teal effective habitat.

## **B3.0 Beaver Habitat Model**

### **B3.1 Introduction**

Beaver (*Castor canadensis*) are specialized aquatic rodents that are active year-round and range throughout the North America (Allen 1982). Beavers inhabit permanent waterbodies, such as streams, ponds, and lakes, with forested and shrubby margins for forage and building materials. Beavers build lodges on waterbody shorelines or directly within waterbodies, and also build dams to regulate water levels (Fisher and Acorn 1998).

#### **B3.1.1 Status**

As of August 2007, the beaver was not listed on any of the Federal Schedules of the *Species At Risk Act*. The Committee on the Status of Endangered Wildlife in Canada has not classified the beaver (COSEWIC 2008). The beaver is listed as *Secure* in Alberta (AENV 2005).

#### **B3.1.2 Distribution**

Beaver range throughout Canada, though they are infrequent in the prairie regions and not present north of the treeline (Rezendes 1999). In their 2<sup>nd</sup> spring, subadult beavers will migrate to alternate waterbodies, while adult beavers are non-migratory. Migrations typically cover a distance of approximately 8 to 16 stream km (Allen 1982).

#### **B3.1.3 Information from Field Surveys**

This species-habitat model was developed using published literature and adapted from Allen (1982). Beaver presence was incidentally noted during waterfowl surveys conducted in June 2007. The data collected provided presence/absence information and did not provide detailed information on habitat use.

### **B3.1.3.1 Habitat Preferences**

Beaver inhabit permanent freshwater environments, including lakes, ponds, and low-gradient streams, where suitable woody vegetation is in close proximity. Beavers gather food from around a pond and return it to a central location for consumption. Beaver have been known to forage at distances up to 200 m from the water's edge, but typically remain within 100 m of the shoreline (Boyle and Owens 2007). The effort associated with transportation of trees increases as distance from the pond increases. Gallant *et al.* (2004) found that as distance from water increases, tree selection became more selective with fewer, larger trees being cut. This decrease in the number of trees being cut as distance increases suggests an incremental decrease in habitat suitability and no suitability beyond a distance of 200 m. Suitable vegetation consists of tree and/or shrub cover adjacent to the waterbody. Beaver have been noted to prefer aspen and willow species, but will also utilize coniferous species if needed (Allen 1982). Suitable beaver habitat must include a permanent and stable waterbody with a gradient of less than 15%, and the presence of year-round woody food sources (Williams 1965).

High quality beaver habitat was determined by the close proximity (<200 m) of feeding and low-gradient aquatic habitat (ponds and lakes). High quality habitat occurred within 20 m of streams, as streams were likely to be used in search of forage or building materials, but not directly inhabited. Forage was considered to be limiting during the winter season when beavers rely solely on woody vegetation. Reproductive habitat was considered to be a critical factor for beaver during the spring season.

The key habitat components for this species were:

- adjacent tree and shrub habitat (forage; winter);
- permanent water (reproduction; spring); and
- low gradient of water body (reproduction; spring).

## **B3.2 Development of Ratings Table**

Ranks are listed for each vegetation type occurring in the study area (Table B3-1) for each of the life requisites of the Beaver.

**Table B3-1: Vegetation Group Ratings for the Beaver Life Requisites in the RSA  
 (Rating: 4= best, 1=poorest)**

Vegetation Group	Distance to Stream: 0-20 m (Spring)	Distance to Pond/Lake: 0-100 m (Spring)	Distance to Pond/Lake: 100-150 m (Spring)	Distance to Pond/Lake: 150-200 m (Spring)	Distance to Pond/Lake: >200 m (Spring)
Bog / fen	1	1	1	1	1
Coniferous	3	3	2	1	1
Deciduous	4	4	3	2	1
Disturbed	1	1	1	1	1
Mixed wood	4	4	3	2	1
Shrub	4	4	3	2	1
Water	n/a	n/a	n/a	n/a	n/a

### B3.2.1 Assumptions and Adjustments

Beaver ratings tables were developed for suitability of habitat types for the spring and winter seasons. The following list of assumptions and limitations applied to the Project area:

- suitable foraging habitat was limited to woody tree and shrub habitat within 200 m of a permanent waterbodies such as lakes and ponds and within 20 m of streams;
- any permanent water bodies such as ponds, lakes, and streams were suitable as habitat for reproduction (excluding tailings ponds, streams and Athabasca River); and
- the most suitable waterbodies had a gradient of less than 6%. Permanent ponds, lakes, and most streams meet this criterion.

The suitability of a habitat type providing resources for one life requisite was dependent on its proximity to another habitat type providing for another life requisite (Dunning *et al.* 1992). This attribute of beaver habitat requirements was incorporated into the model (Table B3-2). The presence of either water or forage was insufficient for supporting beavers in the study area. Both habitat requirements occurred within 200 m of each other (20 m for streams) in order to be given a habitat suitability ranking, otherwise the habitat was considered unsuitable.

**Table B3-2: Adjustments for Beaver Habitat in the Wildlife RSA**

Needs	Variable	Parameter	Details	Rating	Comments
Winter and Spring: Food and Reproduction	Vegetation and Water	Proximity of food and residence to ponds and lakes	0-100 m	No change in rating.	Proximity requirement met.
			100-150 m	Rating down by 1.	Most trees are cut within 100 m. More selective tree cutting occurs beyond 100 m (Boyle and Owens 2007).
			150-200 m	Rating down by 2.	
			>200 m	Rating 1-4=1	Maximum distance recorded for trees cut (Allen 1982a).
		Proximity of food to streams	0-20 m	No change in rating	Proximity requirement met.
			>20 m	Rating 1-4=1	Unlikely to travel beyond 20 m of streams.
		Human Activity (roads, RoW, facilities, developments)	0-50 m	Rating down by 1	Disturbance adjacent to waterbodies may remove or adversely affect resources (Slough and Sadleir 1977)

### B3.3 Model Evaluation

The beaver model was evaluated using Beaver and Beaver sign observations from field surveys conducted in the oil sands region. Beaver locations were overlaid on maps showing the distribution of Beaver effective habitat.

### B4.0 References

AENV (Alberta Environment). 2005. The general status of Alberta wild species 2005. Alberta Sustainable Resource Development Publication No 1/023 Edmonton, AB.

Allen, A.W. 1982. Habitat suitability index models: beaver. U.S. Dept. Int., Fish Wildl. Serv. FWS/OBS-82/10.30. 20pp.

Arthur, S.M., B.F.J. Manly, L.L. McDonald, and G.W. Garner. 1996. Assessing habitat selection when availability changes. *Ecology*, **77**: 215-227.

Bent, A.C. 1987. Life histories of North American wild fowl; ducks, geese, teals, mergansers, eiders, swans, scoters and others. Dover Publications, New York, p. 314 + plates.

- Boyle, S. and S. Owens. 2007. North American beaver (*Castor Canadensis*): a technical conservation assessment. Prepared for the USDA Forest Service, Rocky Mountain Region, Species Conservation Project. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/northamericanbeaver.pdf> [Accessed October 3, 2007].
- Cairns, A.L. and E.S. Telfer. 1980. Habitat use by 4 sympatric ungulates in boreal mixedwood forest. *J. Wildl. Manage.*, **44**: 849-857.
- COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2008. Canadian species at risk. Environment Canada Ottawa, ON 90 pp.
- Dunning, J.B., B.J. Danielson and H.R. Pulliam. 1992. Ecological processes that affect populations in complex landscapes. *Oikos*, **65**:169-175.
- Estades, C.F. and S.A. Temple. 1999. Deciduous-forest bird communities in a fragmented landscape dominated by exotic pine plantations. *Ecological Applications*, **9**: 573-585.
- Fisher, C. and J. Acorn. 1998. Birds of Alberta. Lone Pine Publishing, Edmonton, Alberta, Canada.
- Gallant, D., C.H. Berube, E. Tremblay, and L. Vasseur, 2004. An extensive study of the foraging ecology of beavers (*Castor Canadensis*) in relation to habitat quality. *Canadian Journal of Zoology*, **82**: 922-933.
- Harkonen, S. and R. Heikkila, 1999. Use of pellet group counts in determining density and habitat of moose (*Alces alces*) in Finland. *Wildlife Biology*, **5**: 233-239.
- Hickie, J. 1985. Habitat management guidelines for waterfowl in Ontario for use in timber management. Ontario Ministry of Natural Resources, Ontario.
- Neu, C.W., C.R. Byers and J.M. Peek. 1974. A technique for analysis of utilization-availability data. *J. of Wildl. Manage.*, **38**: 541-545.
- OPTI-Nexen. 2006. Application for approval of the Long Lake South Project. Submitted to Alberta Energy and Utilities Board and Alberta Environment.
- Pease, M.L., R.K. Rose and M.J. Butler. 2005. Effects of human disturbances on the behaviour of wintering ducks. *Wildlife Society Bulletin*, **33(1)**: 103-112.

- Peers, I. 1996. Statistical analysis for education and psychology researchers. Routledge (Taylor and Francis Group), 1-436pp.
- Rezendes, P. 1999. Tracking and the art of seeing: how to read animal tracks and sign. Firefly Books Ltd., Ontario, Canada. 336pp.
- Roof, J. 1999. "*Anas crecca*" (On-line), Animal Diversity Web. Accessed August 23, 2007 at [http://animaldiversity.ummz.umich.edu/site/accounts/information/Anas\\_crecca.html](http://animaldiversity.ummz.umich.edu/site/accounts/information/Anas_crecca.html).
- Slough, B.G. and R.M.F.S. Sadleir. 1977. A land capability classification for beaver (*Castor canadensis* Kuhl.). *Canadian Journal of Zoology*, **55(8)**: 1324-1335.
- Williams, R.M. 1965. Beaver habitat and management. *Idaho Wildl. Rev.*, **17(4)**: 3-7.

## **Appendix C**

### **Background on Forest Succession and Reclamation through Natural Succession**

## CI.0 Reclamation in Environmental Impact Assessments

Shell's reclamation process is based on CEMA's guidance and the general belief described in EIAs of the Oil Sands Region:

“Successful reclamation requires the reestablishment of ecosystem functions based on natural successional processes.”

“While specific ecosite phases will be targeted within various landscapes, natural processes will ultimately determine the progression and eventual ecosite phase. Revegetation will be augmented by natural vegetation species ingress and successional processes, providing an opportunity for reclaimed areas to evolve into ecosystems similar to those found naturally in the region under similar environmental conditions.”

As the above and similar such statements from EIAs indicate, an important part of any reclamation plan involves believing that “a succession of species” will become established on their own within reclaimed sites. This means that only a few species may be planted/seeded initially in the reclamation site with the expectation that a series of plant species will become established on their own over time. However, *direct* evidence from both Suncor and Syncrude data and scientific studies shows that in the boreal forest most plant species become established within the first few (~five) years of reclamation or after forest fires. The only species that we are aware of that can establish after this initial period are trembling aspen (*Populus tremuloides*), which can sprout from underground stems, and white birch (*Betula papyrifera*) which can sprout asexually from the base of the tree, usually after the tree is damaged or dies. However, both species have high mortality rates.

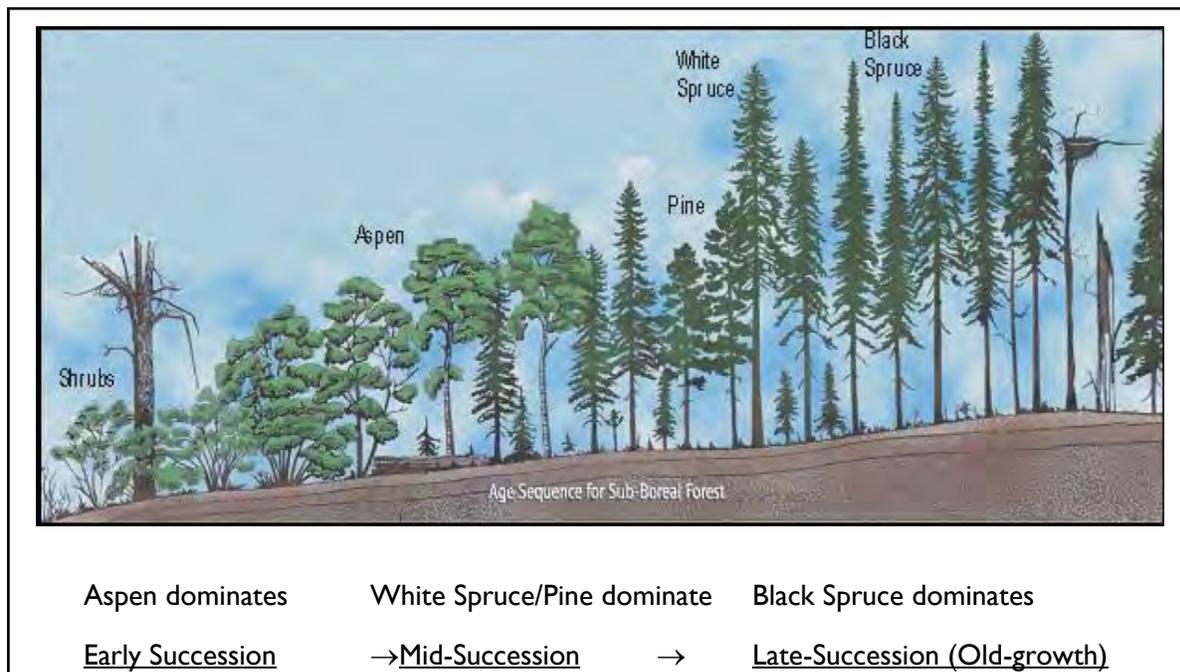
### CI.1 Background about Forest Succession

Definitions of forest succession may include only tree species or all plant species that exist in a forest. The concept of succession with only trees or all plants came about using what is called a chronosequence approach. This approach is described below for only tree species, but the same approach has been used to develop successional arguments for all plant species.

Forest succession is hypothesized to be a result of differences among tree populations in establishment time and growth and death rates. Some populations establish, mature, and decline when a community is young, while others do so when the community is middle aged, or older. Hence, there is a succession of tree species replacing each other. It is often believed that the early successional species make the

environment unsuitable for recruitment of their own species such that as they die, space is made available for the next species in the successional sequence.

For example, Figure C1-1 below shows a *hypothesized* pattern of forest succession in the boreal forest, with different tree populations establishing and dominating at different times. In early succession, aspen (*Populus tremuloides*) establishes and dominates the community. In mid-succession, as aspen dies, white spruce (*Picea glauca*) and pine (*Pinus banksiana*) establish and dominate the community. Finally, in late succession, when aspen and pine have died, black spruce (*Picea mariana*) establishes and dominates the community (with some white spruce).

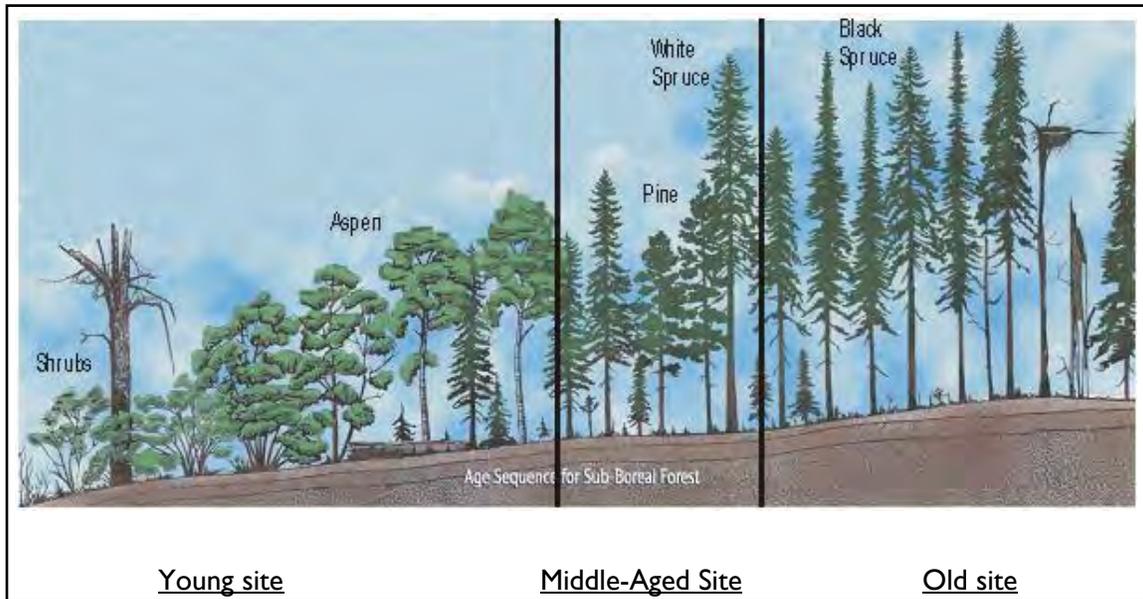


**Figure C1-1: Hypothesized pattern of forest succession in the boreal forest**

The theory of forest succession is widely accepted as an accurate description of nature, but there is actually little *direct evidence* that tree populations succeed each other. Direct evidence is lacking because the long life span of trees (>100 years) makes it impossible to follow several generations of tree species populations long enough to see the replacement of tree species in the canopy.

Because showing forest succession directly is difficult, ecologists have tried to document succession indirectly (e.g., Cowles 1899 and Cooper 1923 are examples of two classic studies). They have attempted this by finding a series of forest sites that are believed to be similar in all respects except age. This series of sites is called a chronosequence. For example, Figure C1-2 below shows the same diagram as above but it is divided into a chronosequence of sites, separated by vertical black lines. On

the left is a young site dominated by aspen, in the middle is a middle-aged site dominated by white spruce and pine, and on the right is an old site dominated by black spruce.



**Figure C1-2: Chronosequence for sub-boreal forest**

It is *assumed* that the different tree populations dominating the different-aged sites represent a sequence over time that occurred (and is occurring) at each site. Unfortunately, studies advocating succession seldom test the assumption that different aged sites experience the same developmental sequence. In fact, the few studies that have examined this assumption have found that plant populations do not succeed each other over time (e.g., Jackson *et al.* 1988; Fastie 1995).

Succession, as described above (or some form of the above) is a widely-believed concept. Therefore, it is surprising to most people that there is actually no *direct* evidence of succession in the boreal forest, or in other forests. More recent studies have shown that forest dynamics are actually much simpler than succession theory suggests. The recruitment of plant species after forest fires or during initial reclamation of oil sands sites is rapid and occurs until all available sites are occupied by plants (e.g., Gutsell and Johnson 2002, OSVRC 1998). After this initial period, the number of species within sites actually decreases such that older stands are less diverse than younger stands (Chipman and Johnson 2002).

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## CI.2 References

- Chipman, S.J. and E.A. Johnson. 2002. Understorey vascular plant species diversity in the mixedwood boreal forest of western Canada. *Ecological Applications*, **12**: 588-601.
- Cooper, W.S. 1923. The recent ecological history of Glacier Bay, Alaska. II. The present vegetation cycle. *Ecology*, **4**: 223-46.
- Cowles, H.C. 1899. The ecological relations of the vegetation on the sand dunes of Lake Michigan. *Botanical Gazette*, **27**: 95-117, 167-208, 361-91.
- Fastie, C.L. 1995. Causes and ecosystem consequences of multiple pathways of primary succession at Glacier Bay, Alaska. *Ecology*, **76**: 1899-1916.
- Gutsell, S.L. and E.A. Johnson. 2002. Accurately aging trees and examining their height-growth rates: implication for interpreting forest dynamics. *Journal of Ecology*, **90**: 153-166.
- Jackson, S.L., R.P. Futyma, and D.A. Wilcox. 1988. A paleoecological test of a classical hydrosere in the Lake Michigan dunes. *Ecology*, **69**: 928-36.
- OSVRC (Oil Sands Vegetation Reclamation Committee). 1998. Guidelines for reclamation to forest vegetation in the Athabasca Oil Sands Region. ISBN 0-7785-0411-5.

## **Appendix D**

### **Map of Government Issued Oil Sands Leases**



## **Appendix E**

### **IAIA Conference Proceedings Geneva, April 2010**

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**Submission ID: 56**

## **Participatory Management In The Canadian Oil Sands**

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*Large-scale developments in the Canadian Oil Sands Region conflict with Aboriginal land-use. To understand the urgency of concerns voiced by Aboriginal communities we measured the rate of land cover disturbance. In a 30,000km<sup>2</sup> area, almost half of the land that is used by Aboriginal communities is within 250m of an industrial feature. At the current rate of development, the remaining land > 250m from an industrial feature will vanish by 2060. We reviewed the EIA process on its ability to plan for industrial impacts on Aboriginal land-use. Current scoping for EIAs does not allow for community participation in identifying environmental and social concerns. Community concerns are only addressed in EIAs that result in the proponent making commitments to find resolutions during follow-up phases. However, follow-up programs typically lack scientifically testable targets to measure the effectiveness of mitigating the impacts on Aboriginal land-use. Governments are now inviting Aboriginal communities to contribute to regional planning.*

### **Introduction**

After Saudi Arabia, Canada's oil reserves are the largest in the world. Developments in the Oil Sands Region of Alberta are based on approximately 1.7 trillion barrels of bitumen, of which 173 billion barrels are proven reserves recoverable with current technology (Government of Alberta 2007). The oil sands land area is about 140,000 km<sup>2</sup>. Numerous Aboriginal communities exist within this area; some remain largely dependent on the local ecosystem.

To many of these communities, natural landscapes are seen as the source of essential ecosystem services that are required to sustain societal development and progress (Folke et al. 2003). Changes to the ecosystems likely result in changes of the services which, in turn, can result in cultural impacts to the societies that depend upon them. In a recent study we found that in our 30,000km<sup>2</sup> project area within the oil sands region, almost half of the land used by Aboriginal communities is within 250m of an industrial feature (Komers and Stanojevic in prep). At the current rate of development, the remaining land >250m from an industrial feature will vanish by 2060. Communities are concerned about how natural and traditional resources will be sustained for future generations.

Impact assessments (IA) are an environmental management tool that should assure local communities that potentially significant impacts from a planned project have been identified (Wood 2003). The term IA denotes the entire process, from scoping to environmental impact assessment (EIA) and follow-up. In the Oil Sands Region of

Alberta, the IA process is applied to protect the environment and local communities from environmental degradation (Alberta Environment 2004). However, this process is increasingly complex and requires the integration of science into management. The application of science should assist communities to understand environmental change and to manage it. Here, we review how scientific rigor is implemented in the assessment process of oil sands development. We start with the premise that predictions made in an EIA should be testable and should lead to environmental monitoring that tests the predictions in a scientifically rigorous manner.

In the spirit of participatory management that integrates science and community concerns in decision making, we assess the role of Aboriginal communities in the IA process. Scoping should lead to the design of EIAs that alleviate potential impacts on the resources that are fundamental to the culture of Aboriginal communities. Subsequently, monitoring should include testable questions that are formulated by the communities to assure them that mitigation measures are effective. Successful mitigation is the quintessential foundation of a greener future that balances intensive industrial development with the continued use of culturally significant natural resources.

### ***Review Methods***

We reviewed 72 environmental planning documents related to wildlife and vegetation ecology that were provided to government regulators between 1999 and 2008, approximately 7,000 pages of information in total. All of the reviewed documents were prepared for bitumen extraction projects in the Canadian oil sands region.

Documents were categorized into one of the three phases of the IA process: 1) Scoping phase (ToR = terms of reference); 2) Environmental Assessment phase (EA = environmental assessment of small projects / EIA = comprehensive environmental impact assessment of larger projects); and 3) Follow-up phase (C&R = conservation and reclamation plan / Monitor = monitoring reports).

Our reviews were conducted as they would be for any peer-review of a scientific manuscript. Firstly, for each phase, we assessed how well the methods were described and whether objectives were clearly stated, we evaluated the soundness of interpretations and the conclusions, and we determined whether the information provided is adequate for environmental protection. We also analyzed the quality of the data, trends and confidence limits, and results of statistical analyses (if present). For issues related to follow-up programs we looked for the use of before-after and control-impact comparisons (BACI; Smith 2002), the application of targets, definitions of mitigation success, and the development of testable predictions and questions (Burns & Wiersma 2004).

We then examined each document for evidence of Aboriginal community involvement in the IA process. We also looked at how science was used to address community concerns. In the ToR, we focused our questions on whether or not the description and quantification of traditional resources (TR) was required. In the EIA phase we asked whether TRs were described in the baseline data and whether impacts on TRs were predicted. In C&R plans we looked for detailed methods for re-establishing the TRs. In the monitoring reports we asked whether the success of re-establishing TRs

was monitored with statistical rigor and whether the benchmarks and targets were set to reflect community concerns.

For each document reviewed, we assigned a value of 1.0 if we were satisfied with the information provided and a value of zero if we were not satisfied. We assigned a value of 0.5 if some aspects of the review, but not all, were satisfactory. For example, we were satisfied (rating 1.0) when baseline data, including visible trends, the variation or confidence limits, and the statistical power of the analyses were provided. We were partly satisfied (rating 0.5) when means and measures of variation were provided, but statistical tests were either absent or incorrectly applied. We were not satisfied (rating zero) when none of the above were provided.

Regulators in Alberta influence the IA process by providing two types of documents: Decision Reports and Approvals. Decision Reports are developed by review panels to communicate recommendations to federal or provincial Environment Ministers. Approvals contain the terms and conditions under which a proposed project will be allowed to operate. We assessed both types of documents based on how they deal with scientific rigor and the concerns of communities. The approval phase documents are qualitative and general. We therefore used simple indices such as number of recommendations and number of pages to evaluate their sophistication and detail.

### ***Results of Scoring***

The overall low scores suggest that pre-disturbance conditions are not rigorously quantified, targets for mitigation are not clearly defined in C&R plans, and the success of re-establishing vegetation and wildlife communities is not objectively tested in monitoring programs. We think that the low scientific rigor of the IA process in the oil sands region is largely responsible for the absence of successful reclamation programs (Johnson and Miyanishi 2008).

Our results indicate that the ToR were given a higher rating significantly more often than EAs, EIAs and C&R plans (Kruskall-Wallis pair-wise comparisons (Siegel and Castellan 1988),  $p < 0.05$ , Figure 1). Monitoring reports were ranked similarly to ToRs, indicating that both these types of documents were, on average, partly satisfactory (mean rating score was 0.37 for ToRs, and 0.25 for Monitoring; by comparison, the means were for: EA=0.03, EIA=0.14, C&R=0.12).

### ***Scoping Phase***

The ToR were often partly satisfactory because quantitative assessments were generally requested by Regulators. However, we could not assign a higher rating because the ToRs often fell short of requesting specific data to address specific questions for ecological parameters. Moreover, details about analytical approaches or parameter selection for traditional resources were not requested.

Some ToRs required that the reclamation progress be measured. Again, however, these requirements fell short of asking for specific methodology or requesting that testable questions and targets for reclamation be developed. Typically, ToRs only asked for a conceptual description, giving the proponent the freedom to decide how detailed

the reclamation and monitoring programs should be. Consequently, by the time the details of monitoring are being developed, pre-disturbance conditions often no longer exist.

### ***EIA phase***

The ToRs requested, in general, the application of quantitative analyses to be included in the assessment. For example, the term "*discuss initiatives, to enable quantitative estimates of future conditions with the highest possible degree of certainty*" was often specified in the ToRs. However, quantification in EIAs was rare. Overall we found that EAs are essentially devoid of adequate baseline data for the application of benchmarks and targets in follow-up programs. The comprehensive EIAs sometimes presented satisfactory baseline surveys; however, the methods were typically inadequate to determine how models were developed, what assumptions they were based on, or what the unit of replication might be for any of the rarely applied statistical tests.

### ***Follow-up Phase***

We were not satisfied with the use of baseline data in most of the C&R Plans or the Monitoring Reports we reviewed. Most C&R Plans did not refer to baseline or pre-disturbance data and did not show concrete methods for the sampling design or statistical analyses. Monitoring reports rarely demonstrated any quantitative comparison between pre- and post-disturbance conditions in vegetation, wildlife, or traditional resources. However, the Monitoring Reports were more likely to include quantitative analyses and models than did any of the documents in the earlier phases of IA (Figure 1). Where quantitative comparisons between impact and control sites were presented, statistical analyses, if applied, were rarely rigorous. Moreover, data were seldom compared against targets and benchmarks.

### ***Aboriginal Community Participation***

We were partly satisfied with the requirements in the ToRs for identifying and reporting community concerns. However, ToRs did not specifically ask to address these concerns in the assessment, mitigation, or follow-up phases. The focus was often on involving communities, but not on providing solutions for their concerns. A serious flaw of this process is that the collection of information about community concerns is a part of the EIA phase, as opposed to being a precursor to it. If communities had meaningful input during scoping, the proponents would develop the EA or EIA based on the concerns raised by communities. This way, communities would be part of strategic decision making.

There were several instances where an EIA presented findings from public consultation sessions leading to commitments for cooperation with communities in the future. However, a more productive, interactive, and timely method for community participation would be to present concerns as a list of questions in the EIA, followed by

answers attempting to resolve these concerns. This method was not used in any of the IA phases we reviewed. While wildlife species and vegetation communities were usually described, no direct link to traditional resource use, predictions of impact on that use, or mitigation of impacts were apparent in any of IA documents.

Currently, community concerns can only be fully addressed during follow-up programs, but we found no evidence in C&R Plans that questions would be developed to test whether or not the community concerns would be alleviated. Monitoring Reports occasionally presented actions that were taken towards understanding traditional resource use, but we found no evidence that the effects on traditional resources were specifically measured.

### **Approval Phase**

In Decision Reports, there was a significantly increasing trend for the number of explicit recommendations to the Environment Minister between 1999 and 2007 (Figure 2). This was true for both the number of recommendations that address actions to manage ecological parameters (Spearman rank correlation  $r_s=0.73$ ,  $p<0.05$ ), and the number of recommendations that address monitoring which must involve "stakeholders" (including communities) ( $r_s=0.95$ ,  $p<0.02$ ).

Recent Approvals list more conditions (i.e. pages) than earlier ones, clearly reflecting the increasing complexity of the issues in the decision process ( $r_s=0.87$ ,  $p<0.02$ ). It was striking, however, that even though the number of conditions increased, they did not become more specific over time. For example, more recent Approvals require the developer to "*address vegetation and traditional land use*" but they do not define what is meant by "*address*." There are no targets prescribed for reclamation of ecological constituents, let alone for traditional resources. There was also no evidence that proponents would be specifically required to quantitatively measure the success of the proposed mitigation measures.

### **Conclusions**

In ensuring a greener future for Aboriginal communities, the IA process in the oil sands is weak in two ways: not only is there a poor quantification of impacts and mitigation success, the Aboriginal communities are not explicitly involved in strategic decision making. However, in the course of the past ten years, regulators seemed to have heard concerns and have responded with increasingly complex decision and approval documents. It remains to be seen if the regulatory process will continue evolving to eventually fully integrate the concerns of Aboriginal communities.

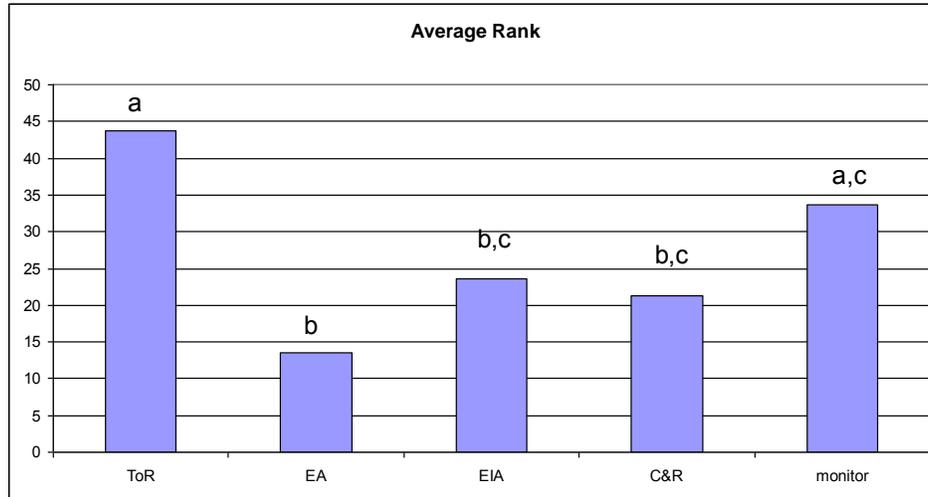
### **References**

Alberta Environment 2004. Alberta's environmental assessment process. Pub No. I/990; ISBN: 0-7785-3766-8 (Printed); ISBN: 0-7785-3767-6 (Online). <http://environment.gov.ab.ca/info/library/6964.pdf>. Retrieved on 2008-07-09.

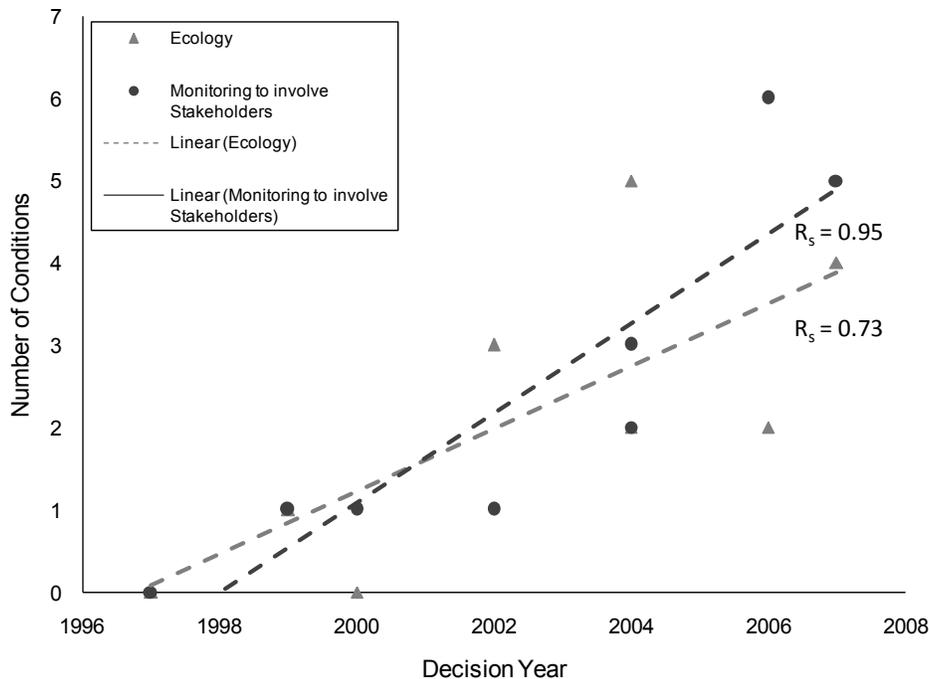
- Burns, D. A., and G. B. Wiersma. 2004. Conceptual basis of environmental monitoring systems: a geospatial perspective. *In: Environmental monitoring*, ed. by G. B. Wiersma, CRC Press, Boca Raton, Florida, pp. 1-35.
- Folke, C., J. Colding and F. Berkes. 2003. Synthesis: building resilience and adaptive capacity in social-ecological systems. *In: Navigating Social-Ecological Systems, Building Resilience for Complexity and Change*, ed. by F. Berkes, C. Folke, and J. Colding, Cambridge University Press, Cambridge, pp. 352-387.
- Government of Alberta. 2007. Alberta's Oil Sands 2006. <http://www.energy.gov.ab.ca/OilSands/pdfs/osgenbrf.pdf>. Retrieved on 2008-05-20.
- Johnson, E. A., and K. Miyanishi. 2008. Creating new landscapes and ecosystems; the Alberta oil sands. *Annals of the New York Academy of Sciences* 1134:120-145.
- Komers, P.E., and Stanojevic, Z. in prep. Rates of Disturbance in the Canadian Oil Sands Region: Do Planned Developments Reflect the Rate of Change in the Past? *Manuscript under review*.
- Siegel, S. and Castellan, N.J. 1988. Nonparametric statistics for the behavioural sciences, 2<sup>nd</sup> Edition. McGraw-Hill. New York.
- Smith, E. P. 2002. BACI design. Pages 141-148 in H. Abdel, El-Shaarawi, and W. W. Piegorsch, editors. *Encyclopedia of environmetrics*, Volume 1. John Wiley & Sons, Ltd, Chichester.
- Wood, C. 2003. *Environmental impact assessment: A comparative review*, 2nd Edition. Prentice Hall, Edinburgh.

### **Acknowledgements**

Beth Dickson, Sheri Gutsell, and Dave Walker contributed to the reviews. The First Nations in the Oil Sands region, most notably the teams of the Mikisew Cree Government Industry Relations and the Chipewyan Prairie Dene Industry Relations Corporation, were instrumental in developing this paper.



**Figure 1: Average ranks of each of five document categories of the impact assessment process in the Oil Sands. Bars not sharing same letters are significantly different from each other, indicating that, for example, reviewers were consistently more satisfied with the ToR than either with EAs, EIAs, or C&R. Sample sizes are 10 documents reviewed for each category except for EIA where 13 were reviewed.**

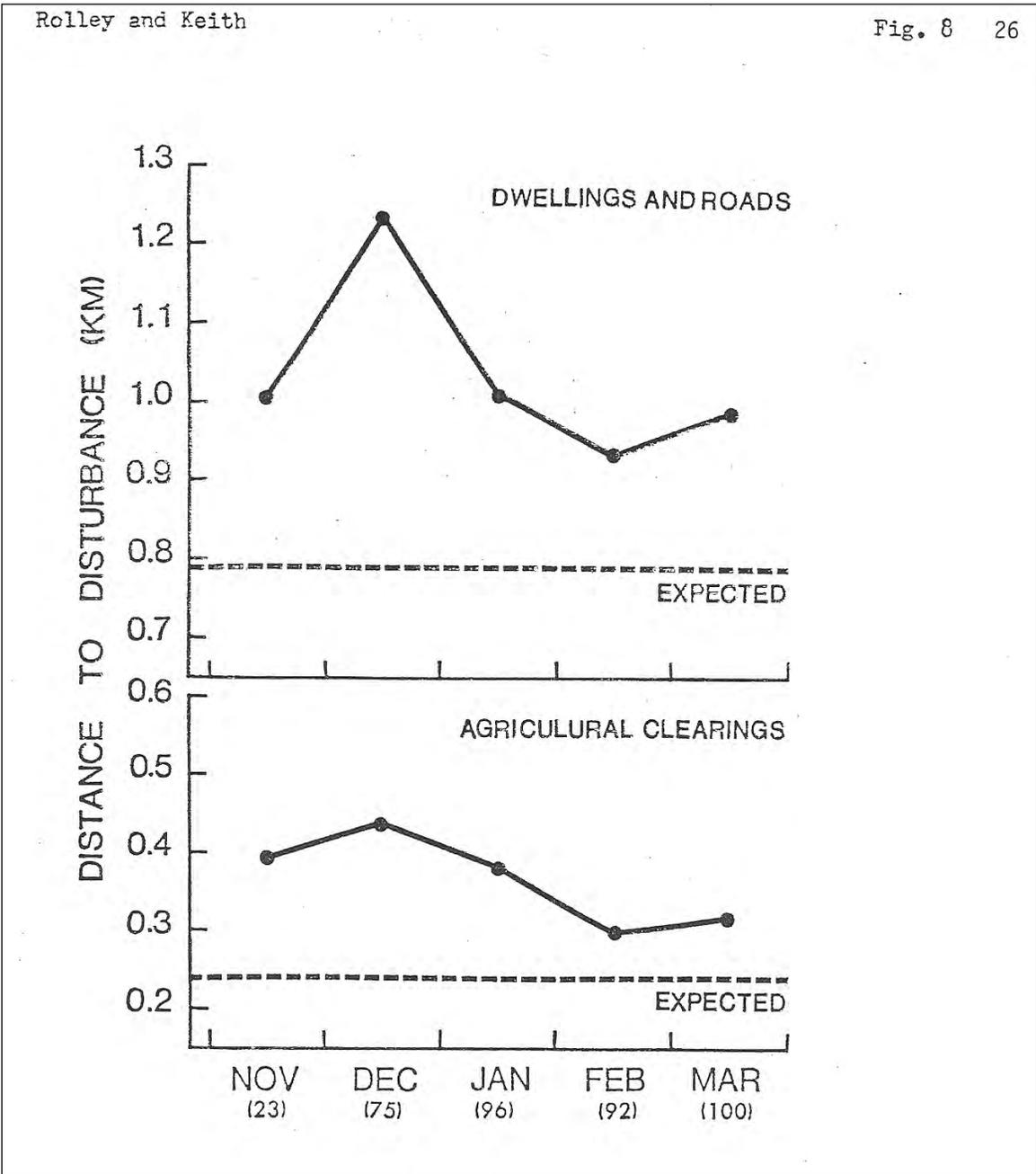


**Figure 2: The number of conditions explicitly listed in Decision Reports on proposed industry projects in the Canadian Oil Sands. Circles and full line indicate the number of conditions that specifically require stakeholders to be involved in**

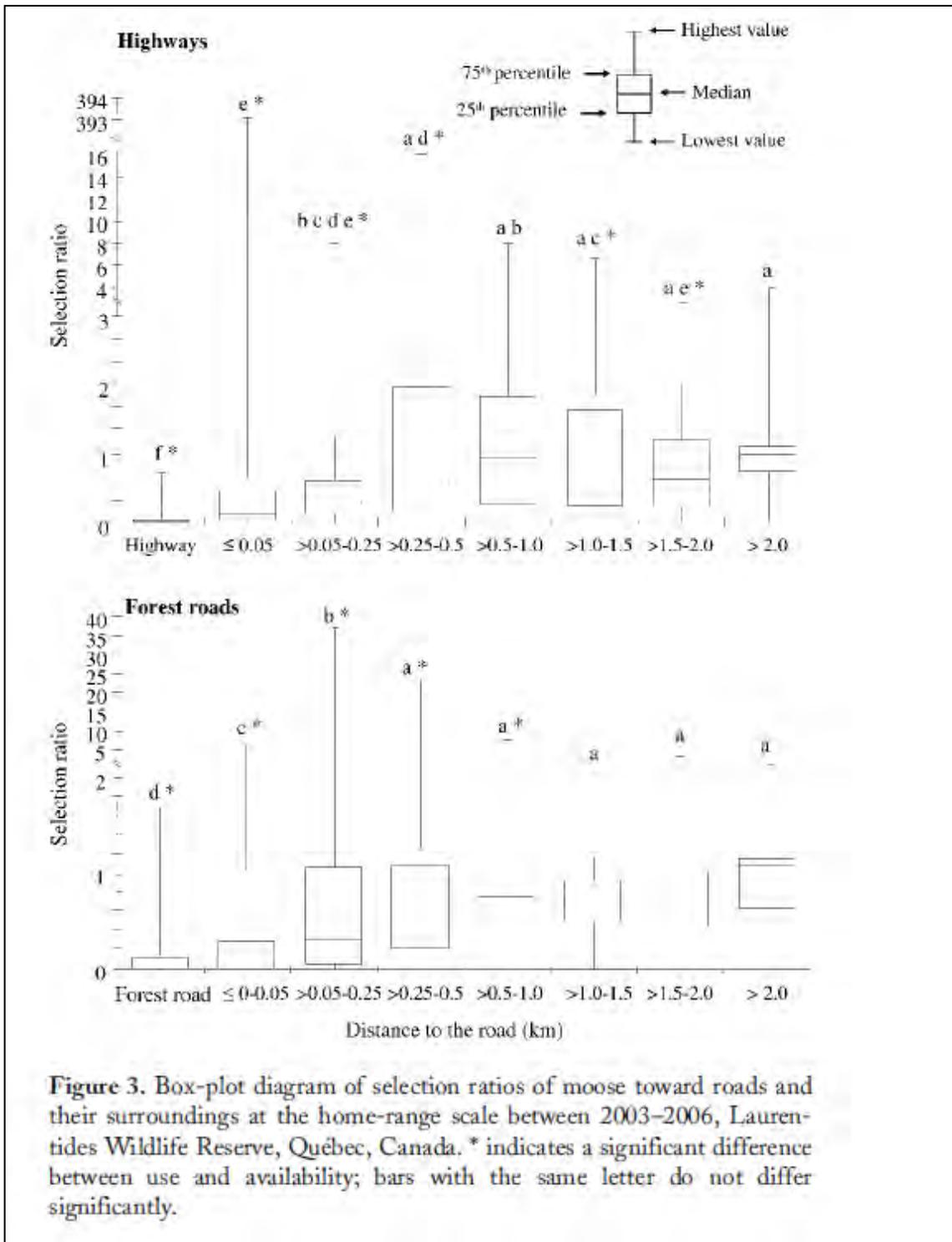
**monitoring. Triangles and dashed line indicate the number of conditions that specifically mention ecological parameters that must be addressed by the projects.**

## **Appendix F**

### **Zone of Influence: Figures from Supporting Documents**



**Rolley, R.E. and L.B. Keith. 1980. Moose population dynamics and winter habitat use at Rochester, Alberta, 1965-1979. *Canadian Field-Naturalist*, 94: 26.**



Laurian, C., C. Dussault, J.P. Ouellet, R. Courtois, M. Poulin, and L. Breton. 2008. Behaviour of moose relative to a road network. *Journal of Wildlife Management*, 72: 155

**Table 2.** Habitat and spatial variables associated with moose-kill ( $n = 28$ ), relocation ( $n = 81$ ), and random ( $n = 210$ ) sites in the upper Flathead Basin, British Columbia, 1985–1996.

Variable	Kill sites			Relocation sites			Random sites		
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Distance from edge (m)									
All size classes	407	121	506	67 <sup>a</sup>	45	66	633 <sup>b</sup>	528	494
Seedling, pole size class	652	636	598	61 <sup>a</sup>	42	63	526	426	475
Medium, large tree size class	230	67	349	75	58	69	765 <sup>b</sup>	714	466
Distance to road (m)	717	387	897	425	275	416	663	460	731
Road density (km/100 km <sup>2</sup> )	65	34	65	82 <sup>c</sup>	89	51	90 <sup>b</sup>	82	63
Size-class patch area (m <sup>2</sup> )	2769	236	3 568	2592	659	3099	2174	219	3175
Distance to stream (m)	385	92	566	462	204	498	837 <sup>b</sup>	475	800
Distance to trail (m)	902	209	1 174	854 <sup>c</sup>	697	717	740	470	877
Elevation (m)	1218	1222	107	1337 <sup>a</sup>	1301	82	1497 <sup>b</sup>	1494	167
NDVI <sup>e</sup>	5744	317	16 330	1140	331	6132	355	359	168
Elk track density (tracks/m)	5 <sup>e</sup>	0	9	13	0	25	12	0	32
Moose track density (tracks/m)	59 <sup>e</sup>	10	153	36	10	65	56	8	112

<sup>a</sup>Kill site significantly different from relocation site ( $P < 0.05$ ).

<sup>b</sup>Kill site significantly different from random site ( $P < 0.05$ ).

<sup>c</sup>Kill site significantly different from relocation site ( $P < 0.10$ ).

<sup>d</sup>Normalized difference vegetation index.

<sup>e</sup> $n = 22$  for kill sites;  $n = 37$  for relocations;  $n = 63$  for random sites.

**Kunkel, K.E. and D.H. Pletscher. 2000. Habitat factors affecting vulnerability of moose to predation by wolves in southeastern British Columbia. *Canadian Journal of Zoology*, 78: 153.**

Table 1. Development buffers created using ArcInfo GIS.

Buffer	Roads	Buffer	Wells	Buffer	Seismic lines
A	<100 m from road	--	-----	A	<100 m from seismic line
B	≥100 m <250 m from road	B	<250 m from well	B	≥100 m <250 m from seismic line
C	≥250 m <500 m from road	C	≥250 m <500 m from well	C	≥250 m <500 m from seismic line
D	≥500 m <1000 m from road	D	≥500 m <1000 m from well	D	≥500 m from seismic line
E	≥1,000 m <2,000 m from road	E	≥1000 m from well		
F	≥2,000 m <3,000 m from road				
G	≥3,000 m from road				

**Dyer, S.J., J.P. O'Neill, S.M. Wasel and S. Boutin. 2001. Avoidance of industrial development by woodland caribou. *J. Wildl. Manage.*, 65, 533.**

Table 2. Mean pairwise log-ratio differences comparing selection of development buffers to selection of outer buffer for development buffers in which significant avoidance effects were detected.

Development type and season (and habitat if appropriate)	Buffer type	Mean log-ratio (SE)	df	t	P
Roads, late winter, open coniferous wetland	0–100 m	4.23 (0.38)	6	11.07	<0.001
	100–250 m	1.19 (0.30)	6	3.98	0.007
Roads, calving, open coniferous wetland	0–100 m	2.13 (0.37)	6	5.78	0.001
	100–250 m	2.52 (0.44)	6	5.75	0.001
Roads, summer, open coniferous wetland	0–100 m	3.66 (1.00)	5	3.66	0.014
	100–250 m	3.54 (1.04)	5	3.42	0.019
Roads, rut, open coniferous wetland	0–100 m	5.05 (0.84)	5	6.05	0.002
	100–250 m	2.58 (0.96)	5	2.69	0.043
Roads, late winter, closed coniferous wetland	0–100 m	5.08 (0.84)	7	6.06	<0.001
	100–250 m	4.57 (1.16)	7	3.93	0.006
Roads, summer, closed coniferous wetland	0–100 m	4.02 (0.73)	4	5.54	0.005
New wells, late winter	0–250 m	1.49 (0.36)	15	4.08	<0.001
New wells, calving	0–250 m	2.41 (4.21)	12	4.21	0.001
	250–500 m	1.61 (0.63)	12	2.57	0.025
	500–1,000 m	1.33 (0.59)	12	2.26	0.043
New wells, rut	0–250 m	1.32 (0.54)	7	2.45	0.044
New wells, early winter	0–250 m	1.38 (0.48)	14	2.86	0.013
Old wells, late winter	0–250 m	2.25 (0.50)	18	4.52	<0.001
	250–500 m	1.33 (0.35)	18	3.76	0.001
Old wells, calving	0–250 m	2.00 (0.68)	12	2.95	0.012
	250–500 m	1.59 (0.65)	12	2.46	0.030
Old wells, summer	0–250 m	1.50 (0.58)	9	2.57	0.030
Seismic lines, late winter	0–100 m	1.03 (0.27)	22	3.76	0.001
	100–250 m	0.45 (0.20)	22	2.25	0.034
Seismic lines, calving	0–100 m	1.02 (0.37)	8	2.7	0.013
Seismic lines, summer	0–100 m	0.63 (0.29)	11	2.27	0.044
Seismic lines, rut	0–100 m	0.42 (0.11)	9	3.9	0.03
Seismic lines, early winter	0–100 m	0.82 (0.17)	16	4.81	0.001

**Dyer, S.J., J.P. O'Neill, S.M. Wasel and S. Boutin. 2001. Avoidance of industrial development by woodland caribou. *J. Wildl. Manage.*, 65, 536.**

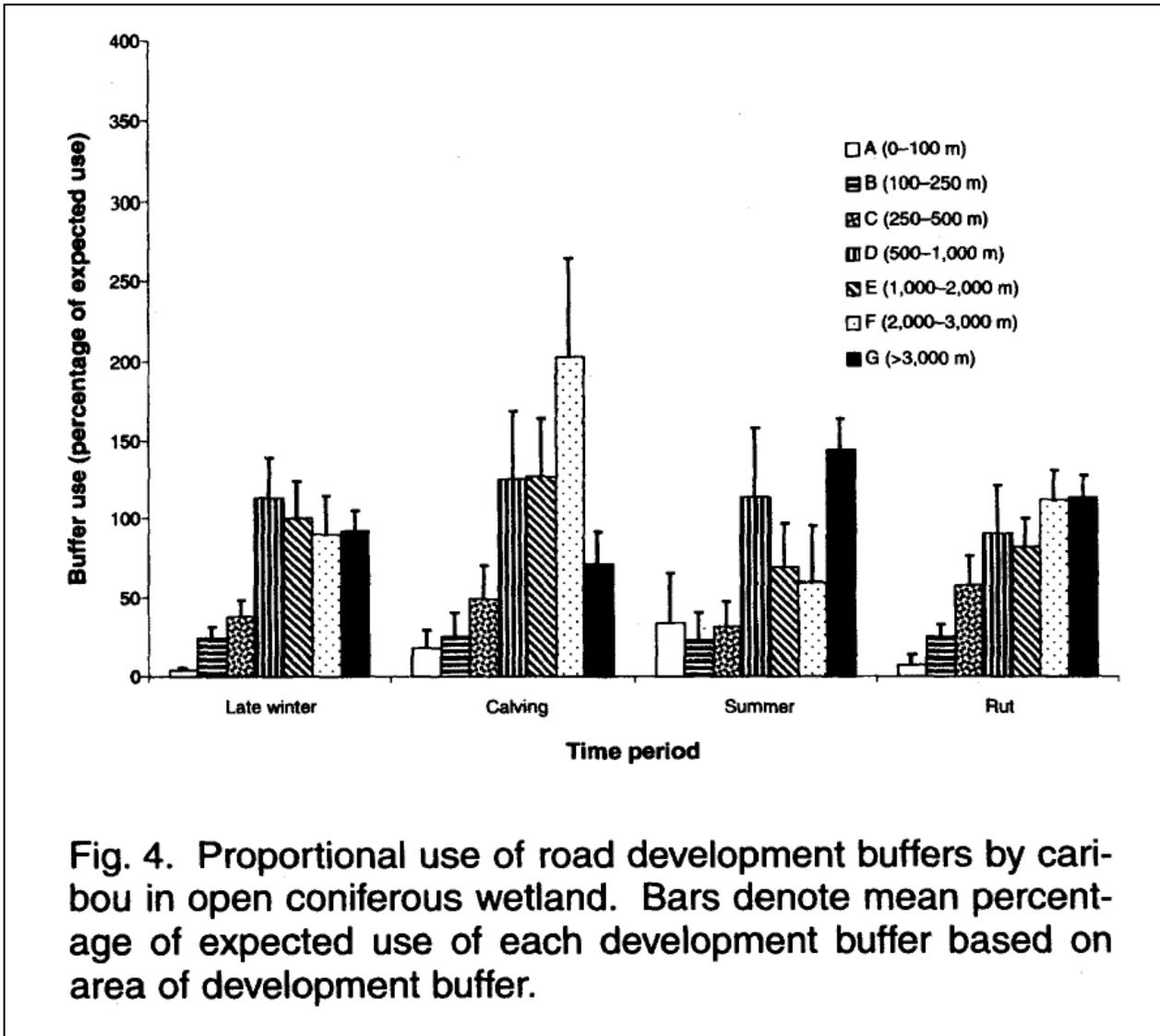
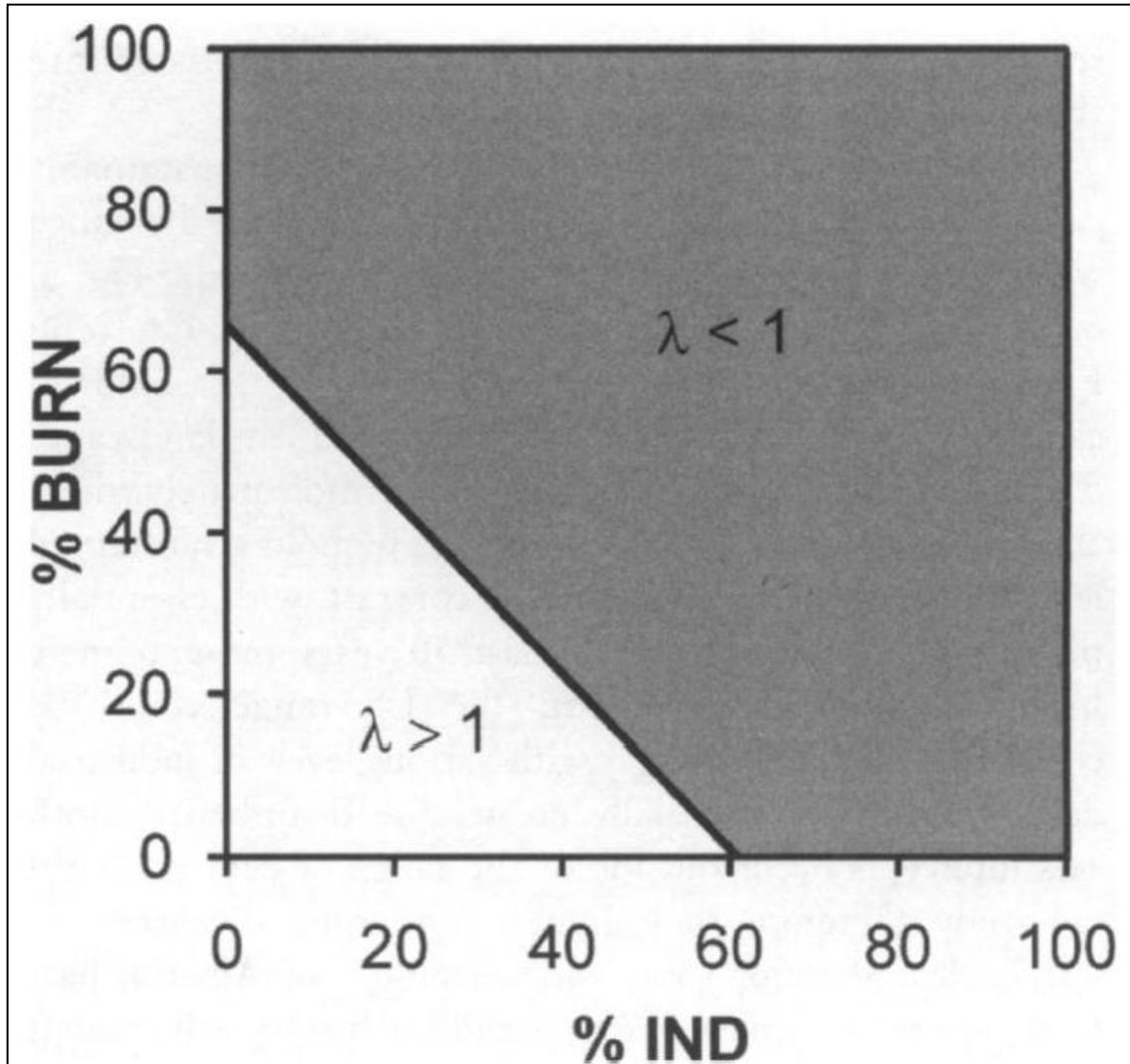


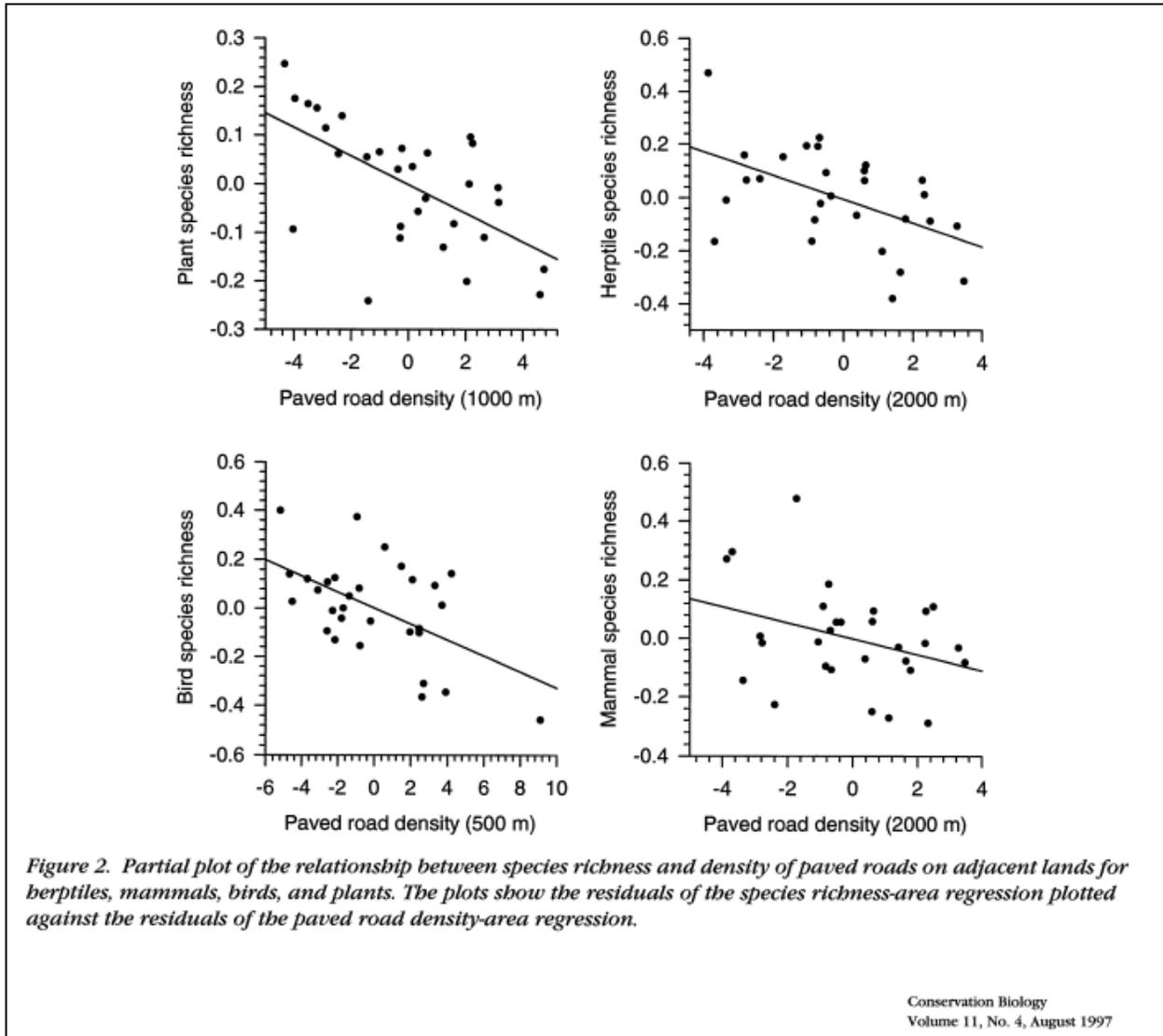
Fig. 4. Proportional use of road development buffers by caribou in open coniferous wetland. Bars denote mean percentage of expected use of each development buffer based on area of development buffer.

Dyer, S.J., J.P. O'Neill, S.M. Wasel and S. Boutin. 2001. Avoidance of industrial development by woodland caribou. *J. Wildl. Manage.*, 65, 535.



**Figure 3.** Predicted habitat threshold for sustainable ( $\lambda = 1.0$ ) boreal caribou populations in Alberta, 1993–2001, as defined by percentage habitat within 250 m of industrial features (%IND) and percentage habitat disturbed by wildfire within the past 50 years (%BURN).

Sorensen, T., P.D. McLoughlin, D. Hervieux, E. Dzus, J. Nolan, B. Wynes, and S. Boutin. 2008. Determining sustainable levels of cumulative effects for boreal caribou. *J.Wildl.Manage.*, 72: 903.



**Forman, R.T., D. Sperling, J.A. Bissonette, A.P. Clevenger, C.D. Cutshall, V.H. Dale, L. Fahrig, R. France, C.R. Goldman, K. Heanue, J.A. Jones, F.J. Swanson, T. Turrentine, and T.C. Winter. 2003. Road ecology: science and solutions. Island Press, Washington, D.C., USA. 241.**

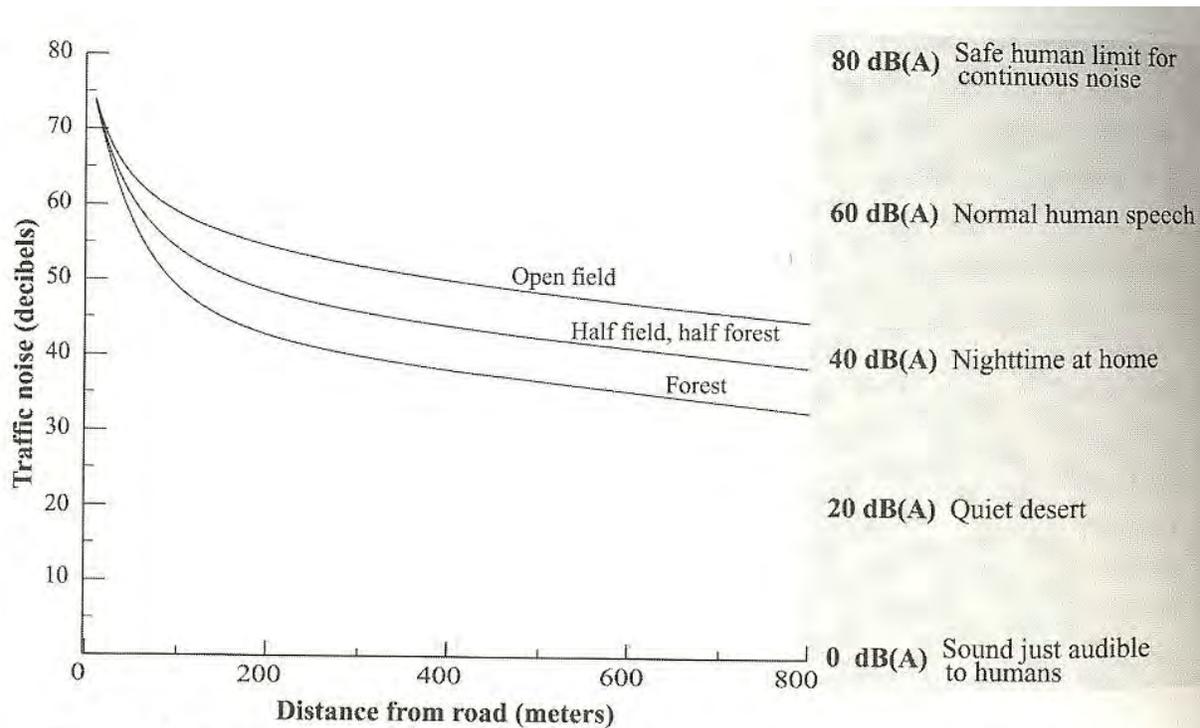
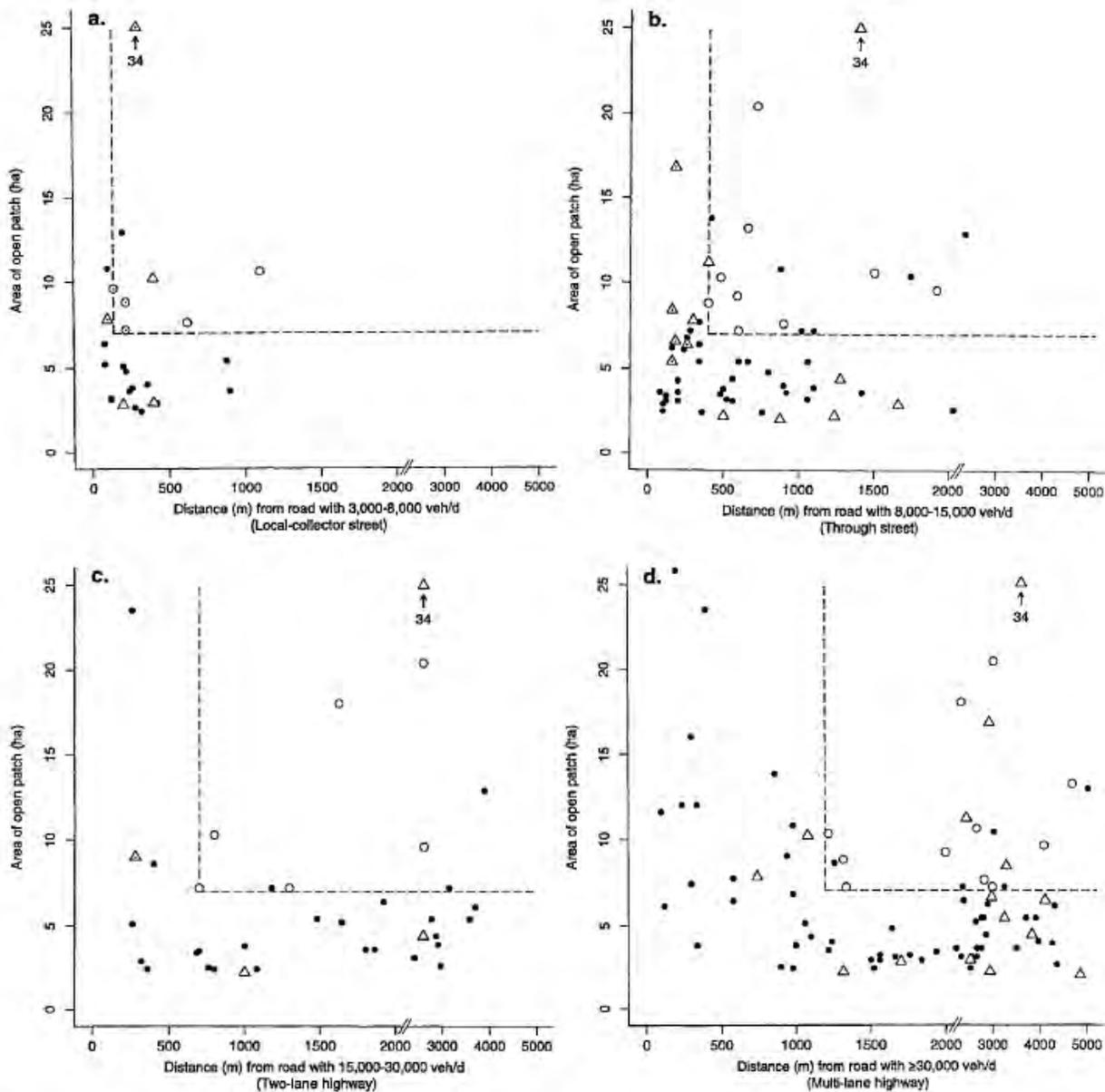


Figure 10.6. Traffic noise through forest and across open field. Based on a busy Dutch highway with 50 000 veh/d and traffic speed of 120 km/h (75 mph) (R. Reijnen et al. 1995). Key decibel levels from Bowles (1997).

**Forman, R.T., D. Sperling, J.A. Bissonette, A.P. Clevenger, C.D. Cutshall, V.H. Dale, L. Fahrig, R. France, C.R. Goldman, K. Heanue, J.A. Jones, F.J. Swanson, T. Turrentine, and T.C. Winter. 2003. Road ecology: science and solutions. Island Press, Washington, D.C., USA. 272.**



**Figure 3.** Distance effect of roads with different traffic volumes on grassland-bird distribution. Each point represents an open patch. Using the data set of 84 open patches varying from 2.0 to 34 ha in area, a patch is omitted from a graph if a road with more traffic is closer to the patch. One highly heterogeneous 13.2-ha patch (160 m from a through street and 240 m from a multilane highway; see Figure 1 and Discussion) with occasional grassland birds is omitted from Figure 3b and d. Circle = regular breeding (patch with at least one of the five grassland species breeding in three or more of the five study years). Triangle = occasional (patch with at least one species present, but no species breeding in more than two years). Large dot = none (patch with no grassland bird observed during five years). Small dot within a circle or triangle indicates that the patch is adjacent to the road. Dashed line indicates portion where all patches with regularly breeding birds occur. For patch area, 1 ha = 2.5 acres.

Forman, R.T., D. Sperling, J.A. Bissonette, A.P. Clevenger, C.D. Cutshall, V.H. Dale, L. Fahrig, R. France, C.R. Goldman, K. Heanue, J.A. Jones, F.J. Swanson, T. Turrentine, and T.C. Winter. 2003. Road ecology: science and solutions. Island Press, Washington, D.C., USA. 275.

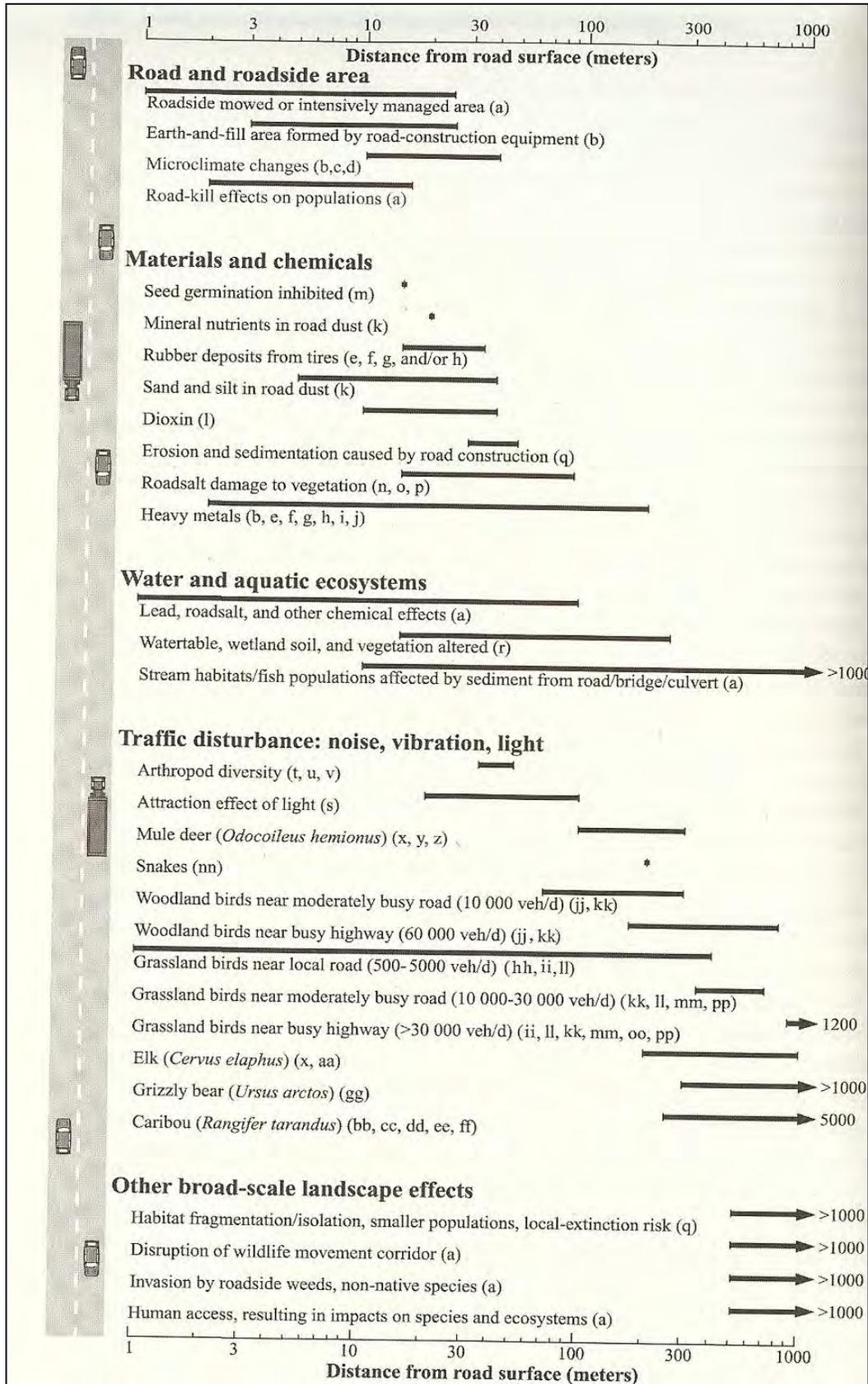


Figure 11.6. Effect-distances from roads for diverse ecological factors. A horizontal bar indicates the approximate range of average and maximum distances from a road that significant ecological effects have been recorded (outliers, if present, are typically excluded). Letters in parentheses indicate sources: (a) authors' estimate; (b) Ellenberg et al. 1981; (c) \*Mader 1981; (d) \*Pauritsch et al. 1985; (e) \*Keller and Preis 1967; (f) \*Fidora 1972; (g) \*Hoffmann et al. 1989; (h) \*Reinirkens 1991; (i) Santelmann and Gorham 1988; (j) Ministry of Transport, Public Works and Water Management 1994c; (k) Tamm and Troedsson 1955; (l) \*Unger 1991; (m) \*Fluckiger et al. 1978; (n) Hofstra and Hall 1971; (o) \*Evers 1976; (p) \*Wentzel 1974; (q) Forman and Deblinger 2000; (r) \*Adam 1992; (s) \*Meier 1992; (t) \*Port and Hooton 1982; (u) \*Maurer 1974; (v) \*Przybylski 1979; (x) Rost and Bailey 1979; (y) Dorrance et al. 1975; (z) Singer and Beattie 1986; (aa) Edge and Marcum 1985; (bb) James and Stuart-Smith 2000; (cc) Dyer et al. 2001; (dd) Nellemann et al. 2001; (ee) Nellemann and Cameron 1996; (ff) Nellemann and Cameron 1998; (gg) Gibeau 2000; (hh) Clark and Karr 1979; (ii) Reijnen et al. 1996; (jj) R. Reijnen et al. 1995; (kk) M. Reijnen et al. 1995; (ll) Forman et al. 2002; (mm) Green et al. 2000; (nn) Rudolph et al. 1999; (oo) van der Zande et al. 1980; (pp) Raty 1979. \* = cited by Reck and Kaule 1992.

**Forman, R.T., D. Sperling, J.A. Bissonette, A.P. Clevenger, C.D. Cutshall, V.H. Dale, L. Fahrig, R. France, C.R. Goldman, K. Heanue, J.A. Jones, F.J. Swanson, T. Turrentine, and T.C. Winter. 2003. Road ecology: science and solutions. Island Press, Washington, D.C., USA. 308.**

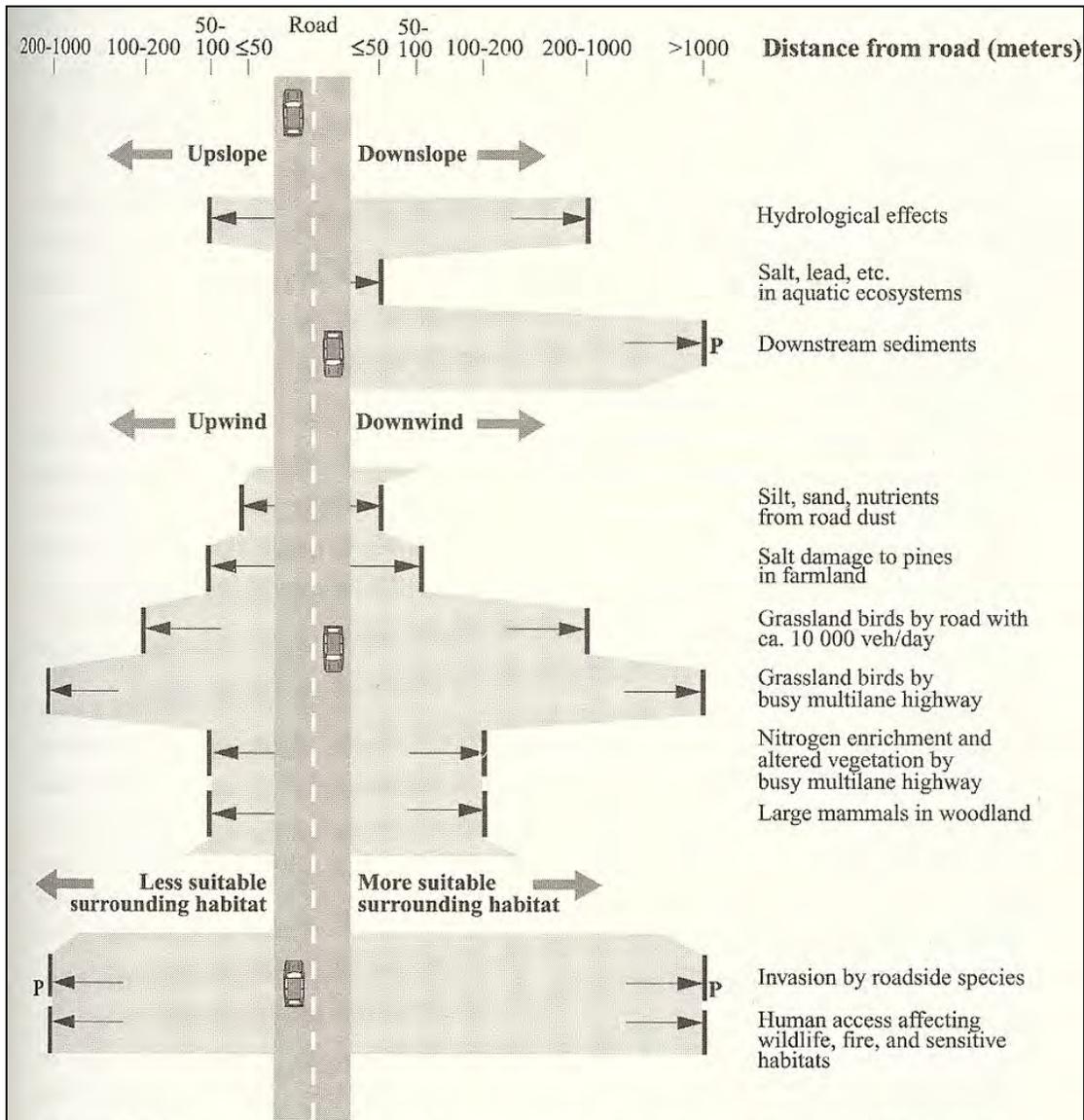


Figure 11.8. Road-effect zone and three mechanisms determining its width and form. Illustrative effects listed on right based on one or more studies. Three mechanisms—gravity (upslope/downslope), wind (upwind/downwind), and behavior or habitat suitability (less/more)—in addition to walls or hills near the road, produce greater effect-distances on one side of the road than on the other. With a scarcity of data, in general distances for the examples are approximately halved on the left side. Shaded area = road-effect zone. Each effect typically extends outward along a stretch of road or road segment; P = an effect extending from a point on the road. Adapted from Forman and Alexander (1998).

Forman, R.T., D. Sperling, J.A. Bissonette, A.P. Clevenger, C.D. Cutshall, V.H. Dale, L. Fahrig, R. France, C.R. Goldman, K. Heanue, J.A. Jones, F.J. Swanson, T. Turrentine, and T.C. Winter. 2003. Road ecology: science and solutions. Island Press, Washington, D.C., USA. 311.

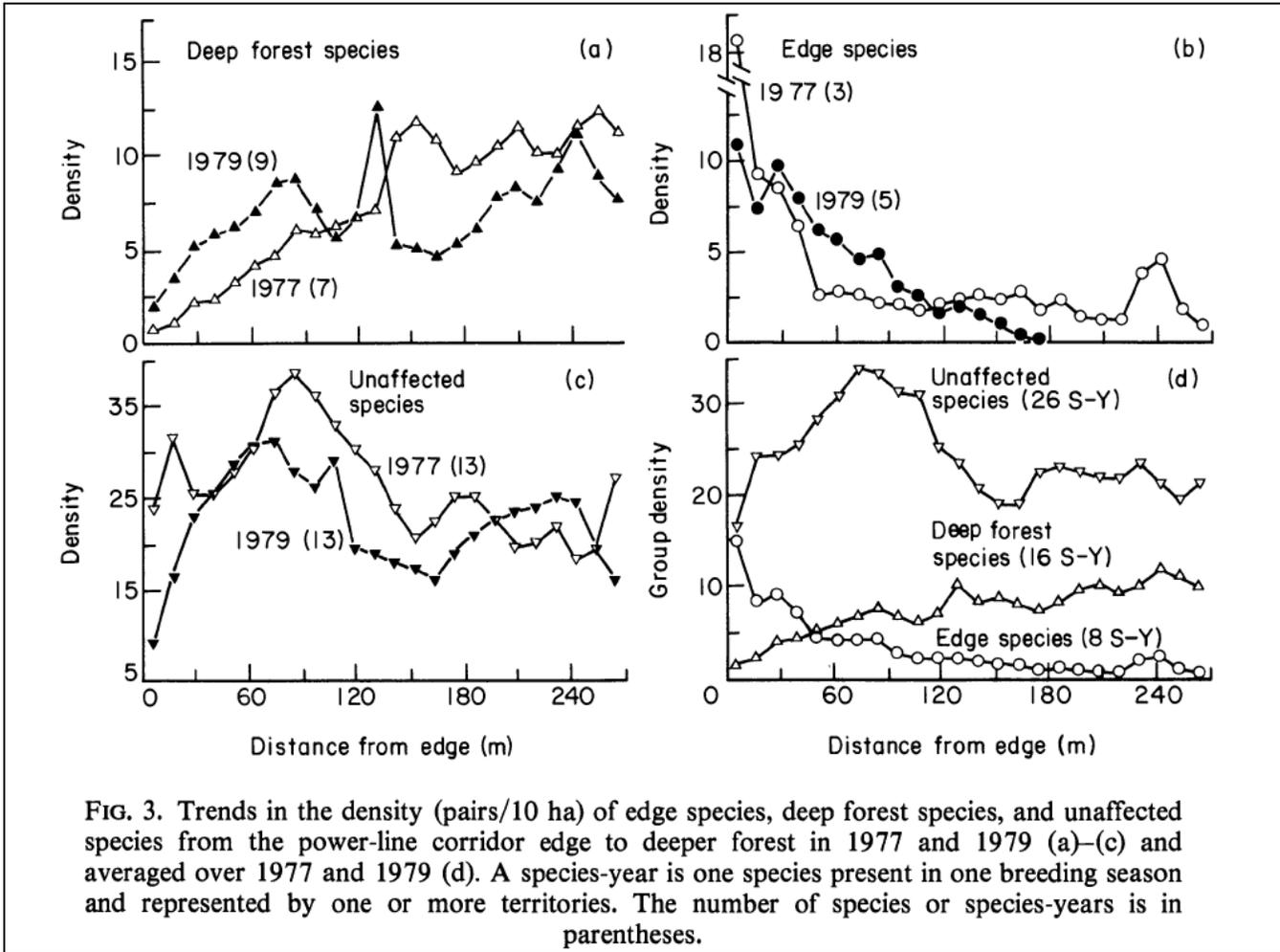


FIG. 3. Trends in the density (pairs/10 ha) of edge species, deep forest species, and unaffected species from the power-line corridor edge to deeper forest in 1977 and 1979 (a)–(c) and averaged over 1977 and 1979 (d). A species-year is one species present in one breeding season and represented by one or more territories. The number of species or species-years is in parentheses.

Kroodsmas, R.L. 1982. Edge effect on breeding forest birds along a power-line corridor. *The Journal of Applied Ecology*, 19: 366.

**Table 1. Density of birds (95% CI) at the edge of natural gas well pads (noiseless sites) and compressor stations (noise-generating sites) relative to areas in the forest interior.\***

<i>Species</i>	<i>Compressor near</i>	<i>Compressor far</i>	<i>Well pad near</i>	<i>Well pad far</i>	<i>Well pad vs. compressor (p)</i>	<i>Near vs. far (p)</i>	<i>Interaction (p)</i>
All	18.8	22.0	32.3	29.3	.	.	0.019
Passerines	(17.3-20.2)	(20.4-23.6)	(30.2-34.4)	(27.3-31.2)			
Ovenbird	5.5	7.5	7.2	7.6	0.359	0.009	0.181
	(4.7-6.3)	(6.7-8.4)	(6.1-8.3)	(6.7-8.6)			
Red-eyed Vireo	3.0	3.7	5.4	3.8	.	.	0.004
	(2.3-3.7)	(3.2-4.2)	(4.6-6.2)	(3.0-3.7)			
Tennessee Warbler	4.4	4.0	3.3	3.4	0.076	0.695	0.558
	(3.9-4.9)	(3.4-4.6)	(2.5-4.1)	(2.7-4.1)			
White-throated Sparrow	0.7	0.5	1.8	1.5	<0.001	0.211	0.750
	(0.5-0.9)	(0.4-0.7)	(1.5-2.2)	(1.1-1.9)			
Yellow-rumped Warbler	1.5	1.1	2.1	1.4	0.021	0.114	0.592
	(1.1-2.0)	(0.8-1.5)	(1.3-3.0)	(1.0-1.8)			

\*Density is the number of birds per 10 ha after statistical correction with different distance-correction functions. Detection functions were derived independently for each noise-distance category. Data are reported as means adjusted to average vegetation conditions. The 95% CIs were derived from a bias-corrected and accelerated bootstrap. The p values were generated via Monte Carlo permutations. Main effects were not tested for significance if the interaction between noise and distance was significant at  $p \leq 0.05$ .

**Bayne, E.M., L. Habib and S. Boutin. 2008. Impacts of chronic anthropogenic noise from energy-sector activity on abundance of songbirds in the boreal forest. *Conservation Biology*, 22: 1190.**

Table 2. Estimates of occupancy rate (95% CI) at the edge of natural gas well pads (noiseless sites) and compressor stations (noise-generating sites) relative to matched areas in the forest interior.<sup>a</sup>

Species	Est. <sup>b</sup>	Compressor near	Compressor far	Well pad near	Well pad far	Well pad vs. compressor (p)	Near vs. far (p)	Interaction (p)
Alder Flycatcher ( <i>Empidonax alnorum</i> )	U	0.18 (0.08-0.37)	0.04 (0.01-0.15)	0.09 (0.02-0.29)	0.09 (0.03-0.29)	0.533	0.032	0.137
American Redstart ( <i>Setophaga ruticilla</i> )	C	0.07 (0.02-0.22)	0.20 (0.06-0.51)	0.53 (0.10-0.92)	0.32 (0.15-0.56)	.	.	0.034
American Robin ( <i>Turdus migratorius</i> )	C	0.69 (0.01-0.99)	0.48 (0.09-0.89)	0.66 (0.18-0.94)	0.54 (0.03-0.98)	0.950	0.691	0.919
Black-and-white Warbler ( <i>Mniotilta varia</i> )	C	0.29 (0.14-0.49)	0.46 (0.22-0.72)	0.26 (0.10-0.55)	0.71 (0.01-0.99)	0.952	0.146	0.639
Black-capped Chickadee ( <i>Poecile atricapilla</i> )	U	0.18 (0.09-0.32)	0.28 (0.16-0.43)	0.09 (0.03-0.25)	0.37 (0.21-0.57)	0.873	0.011	0.131
Chipping Sparrow ( <i>Spizella passerine</i> )	C	0.52 (0.31-0.72)	0.30 (0.13-0.57)	0.53 (0.33-0.73)	0.61 (0.33-0.83)	0.446	0.737	0.242
Connecticut Warbler ( <i>Opornis agilis</i> )	C	0.23 (0.10-0.43)	0.32 (0.20-0.48)	0.33 (0.18-0.51)	0.28 (0.15-0.46)	0.413	0.937	0.413
Gray Jay ( <i>Perisoreus canadensis</i> )	U	0.16 (0.08-0.28)	0.16 (0.08-0.29)	0.12 (0.04-0.28)	0.24 (0.12-0.42)	0.449	0.268	0.254
Hermit Thrush ( <i>Catharus guttatus</i> )	C	0.30 (0.11-0.61)	0.52 (0.18-0.85)	0.59 (0.15-0.92)	0.47 (0.27-0.68)	0.703	0.694	0.375
Least Flycatcher ( <i>E. minimus</i> )	C	0.20 (0.10-0.34)	0.35 (0.22-0.49)	0.52 (0.34-0.69)	0.42 (0.24-0.62)	.	.	0.049
Magnolia Warbler ( <i>Dendroica magnolia</i> )	C	0.55 (0.02-0.98)	0.30 (0.13-0.57)	0.54 (0.03-0.98)	0.71 (0.01-0.99)	0.370	0.577	0.649
Mourning Warbler ( <i>O. philladelphica</i> )	C	0.31 (0.17-0.48)	0.33 (0.20-0.49)	0.50 (0.28-0.72)	0.58 (0.23-0.86)	0.209	0.868	0.890
Ovenbird ( <i>Seturus aurocapilla</i> )	U	0.98 (0.84-0.99)	0.99 (0.88-0.99)	1	1	0.999	0.685	.
Red-breasted Nuthatch ( <i>Sitta canadensis</i> )	U	0.08 (0.03-0.20)	0.13 (0.06-0.27)	0.10 (0.03-0.28)	0.40 (0.22-0.61)	0.016	0.010	0.193
Red-eyed Vireo ( <i>Vireo olivaceus</i> )	C	0.85 (0.71-0.93)	0.95 (0.94-0.98)	1	0.95 (0.77-0.99)	0.041	0.275	.
Rose-breasted Grosbeak ( <i>Pheucticus ludovicianus</i> )	U	0.03 (0.01-0.12)	0.12 (0.05-0.27)	0.55 (0.31-0.76)	0.51 (0.28-0.73)	0.001	0.061	0.103
Ruby-crowned Kinglet ( <i>Regulus calendula</i> )	U	0.13 (0.06-0.30)	0.12 (0.05-0.28)	0.13 (0.04-0.33)	0.13 (0.04-0.33)	0.908	0.942	0.842
Swainson's Thrush ( <i>C. ustulatus</i> )	C	0.82 (0.17-0.99)	0.43 (0.29-0.57)	0.64 (0.32-0.87)	0.78 (0.39-0.95)	0.106	0.083	0.143
Tennessee Warbler ( <i>Vermivora peregrina</i> )	C	0.84 (0.72-0.92)	0.83 (0.70-0.91)	0.82 (0.64-0.92)	0.75 (0.58-0.87)	0.866	0.790	0.992
White-throated Sparrow ( <i>Zonotrichia albicollis</i> )	C	0.57 (0.43-0.70)	0.61 (0.45-0.75)	0.76 (0.58-0.88)	0.84 (0.65-0.94)	0.103	0.564	0.734
Winter Wren ( <i>Troglodytes troglodytes</i> )	C	0.11 (0.03-0.30)	0.13 (0.06-0.28)	0.09 (0.02-0.36)	0.12 (0.03-0.33)	0.646	0.291	0.981
Yellow Warbler ( <i>D. petechia</i> )	U	0.06 (0.01-0.23)	0.02 (0.01-0.11)	0.02 (0.01-0.19)	0.06 (0.01-0.30)	0.755	0.507	0.086
Yellow-rumped Warbler ( <i>D. coronata</i> )	C	0.49 (0.36-0.63)	0.72 (0.50-0.87)	0.66 (0.42-0.84)	0.88 (0.43-0.99)	0.003	0.011	0.633

<sup>a</sup>Data are reported as proportion of point-count stations occupied adjusted to average vegetation conditions. The 95% confidence intervals were derived empirically. The p values are from likelihood-ratio tests. Main effects were not tested for significance if the interaction between noise and distance was significant at  $p \leq 0.05$ .

Bayne, E.M., L. Habib and S. Boutin. 2008. Impacts of chronic anthropogenic noise from energy-sector activity on abundance of songbirds in the boreal forest. *Conservation Biology*, 22: 1191.

**Table 1.** Number of territories of 12 species that occurred on at least half of the study plots and a summary for all passerines.

Species	Control		Treatment		Total	No. of plots where present
	2002	2003	2002	2003		
Tennessee Warbler, <i>Vermivora peregrina</i>	114	48	102	45	309	24
Magnolia Warbler, <i>Dendroica magnolia</i>	47	38	45	51	181	21
Bay-breasted Warbler, <i>Dendroica castanea</i>	35	37	41	40	153	22
Ovenbird, <i>Seiurus aurocapilla</i>	26	34	32	24	116	19
Swainson's Thrush, <i>Catharus ustulatus</i>	29	26	23	29	107	24
Chipping Sparrow, <i>Spizella passerina</i>	22	27	24	25	98	23
Yellow-rumped Warbler, <i>Dendroica coronata</i>	24	22	26	15	87	24
Red-eyed Vireo, <i>Vireo olivaceus</i>	21	11	10	9	51	16
American Redstart, <i>Setophaga ruticilla</i>	10	11	12	13	46	14
Western Tanager, <i>Piranga ludoviciana</i>	11	11	9	14	45	20
Canada Warbler, <i>Wilsonia canadensis</i>	5	7	15	13	40	13
White-throated Sparrow, <i>Zonotrichia albicollis</i>	4	8	5	14	31	15
All passerines (including those above)	401	324	367	319	1411	—

**Note:** Only territories with their centroid inside the spot mapping grid are included in these totals. Species could occur on up to 24 plots (12 plots/year for 2 years).

**Machtans, C.S. 2006. Songbird response to seismic lines in the western boreal forest: A manipulative experiment. *Canadian Journal of Zoology*, 84: 1425.**

**Table 2.** Number of individuals of species seen crossing cutlines out of the total number of individuals observed; only species with nonrandom results are listed.

Species	No. observed crossing	$\chi^2$	<i>P</i>
Ovenbird, <i>Seiurus aurocapilla</i>	0 of 6	6.00	0.014
Red-eyed Vireo, <i>Vireo olivaceus</i>	2 of 10	3.60	0.058
Tennessee Warbler, <i>Vermivora peregrina</i>	7 of 23	4.167	0.041
Yellow-rumped Warbler, <i>Dendroica coronata</i>	12 of 13	9.308	0.002
Western Tanager, <i>Piranga ludoviciana</i>	13 of 17	4.765	0.029
Chipping Sparrow, <i>Spizella passerina</i>	16 of 23	3.522	0.061

**Machtans, C.S. 2006. Songbird response to seismic lines in the western boreal forest: A manipulative experiment. *Canadian Journal of Zoology*, 84: 1427.**

*Effects of roads on grizzly bears*

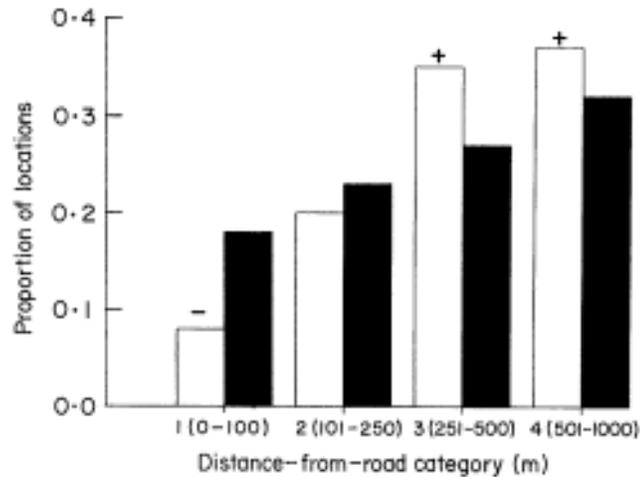
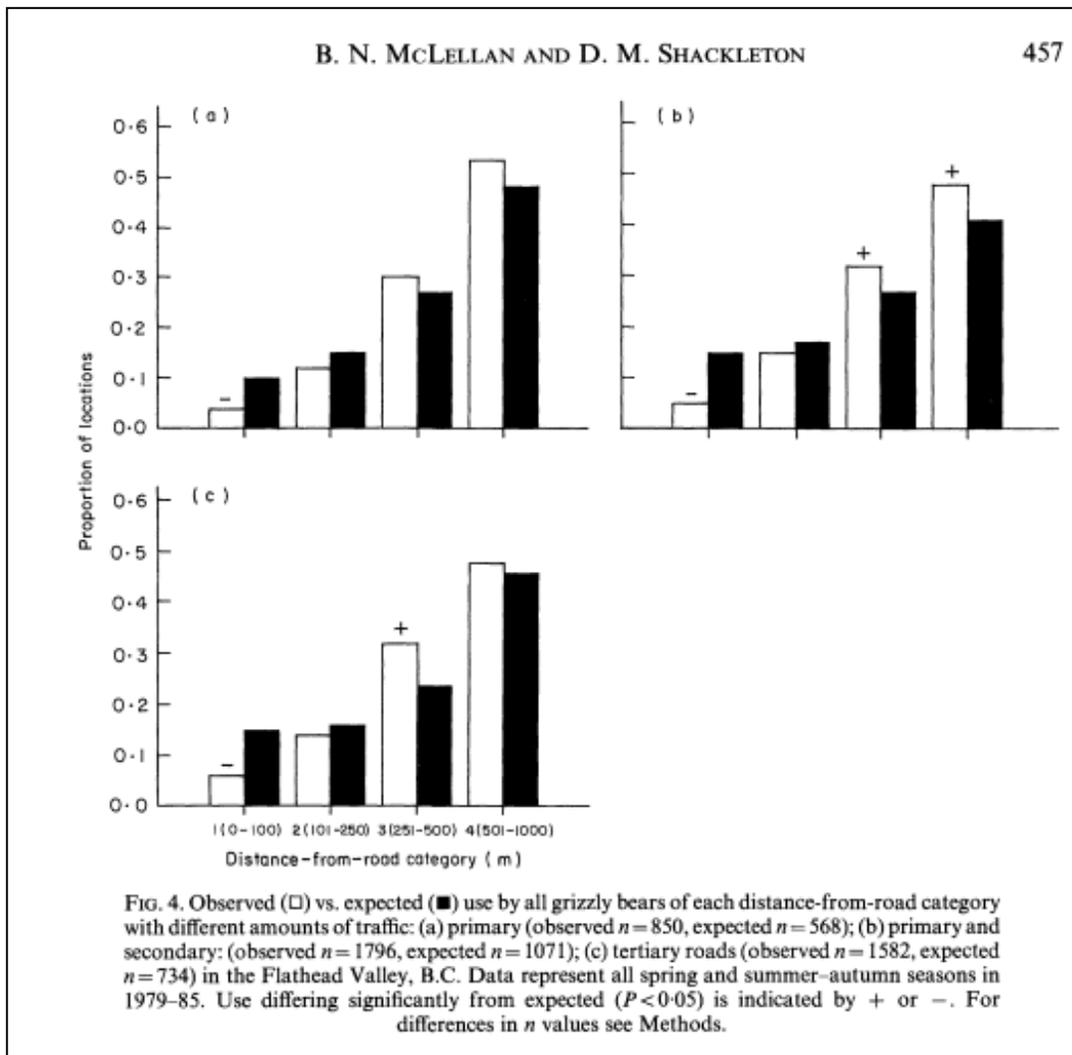


FIG. 1. Observed (□,  $n = 2279$ ) vs. expected (■,  $n = 1380$ ) use by grizzly bears of the four distance-from-road categories in the Flathead Valley, B.C. Data are combined for all road types, both seasons, ground and aerial radiolocations, and all age-sex classes, between 1979 and 1985. Use differing significantly from expected ( $P < 0.05$ ) is indicated by + or -. For differences in  $n$  values see Methods.

**McLellan, B.N. and Shackleton, D.M. 1988. Grizzly Bears and Resource-Extraction Industries: Effects of Roads on Behaviour, Habitat Use and Demography. *Journal of Applied Ecology*, 25: 454.**



**McLellan, B.N. and Shackleton, D.M. 1988. Grizzly Bears and Resource-Extraction Industries: Effects of Roads on Behaviour, Habitat Use and Demography. *Journal of Applied Ecology*, 25: 457.**

# **Continued Effects on Traditional Resources of the Athabasca Chipewyan First Nation between 2008 and 2011: The Shell Jackpine Mine Expansion and Pierre River Mine Projects**

Prepared for

Athabasca Chipewyan First Nation

September 2012

Prepared by



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## ACRONYMS

ACFN	Athabasca Chipewyan First Nation
C&R	Conservation & Reclamation
EA	Environmental Assessment
EIA	Environmental Impact Assessment
ERCB	Energy Resources Conservation Board
IA	Impact Assessments
JPME	Jackpine Mine Expansion
LFH	Litter, Fermentation and Humus
MSES	Management and Solutions in Environmental Science
NTS	National Topographic System
PRM	Pierre River Mine
RSA	Regional Study Area
RMWB	Regional Municipality of Wood Buffalo
TLU	Traditional Land Use
ToR	Terms of Reference
ZOI	Zone of Influence

## **1.0 Introduction**

Shell Canada Energy (Shell) seeks approval from the Energy Resources Conservation Board (ERCB) to construct and operate the Jackpine Mine Expansion (JPME) and Pierre River Mine (PRM) Projects (the Projects). Management and Solutions in Environmental Science (MSES) Inc. was originally retained to review the likely Project impacts on the Athabasca Chipewyan First Nation's (ACFN) traditional resource use. The initial report (MSES, 2012) utilized satellite data to examine the extent of industrial disturbance in the ACFN Regional Study Area (RSA) up to 2008, and make predictions about the extent of future impacts on ACFN traditional lands. For the purpose of this update, we have been asked to examine disturbance levels in 2011 in order to evaluate the predictions made in the original analysis.

### **1.1 Resampling Method**

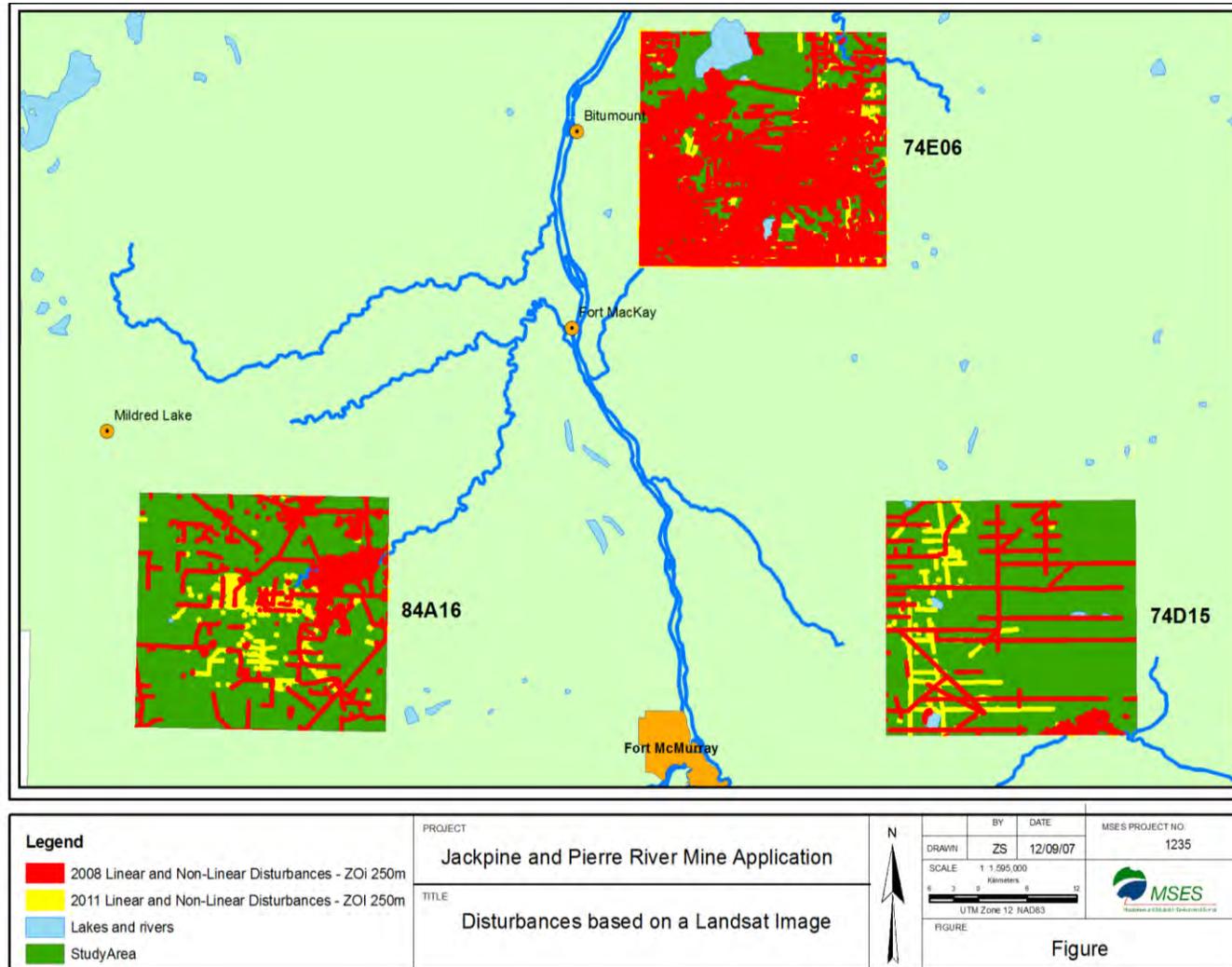
To determine the disturbance levels up to and including 2011, we overlaid the ACFN RSA with a uniform grid of National Topographic System (NTS) map sheets. Each NTS area was given a number, and using a random number table we randomly selected three areas from within the original RSA for a detailed disturbance analysis. The amount of linear and non-linear disturbance in each area was measured from Landsat 5 images taken in 1992, 2002, 2008, and 2011. This allowed us to compare the disturbance trends over time in the resampled area to those in the original report, and to compare the actual amount of disturbance in 2011 to predictions based on data from 1964 to 2008 as in the original report. See Appendix A in the original report for a full detailing of the methods used in this analysis (MSES, 2012).

#### **1.1.1 Conservative Use of Data**

This analysis relied solely on relatively low resolution Landsat images; therefore, it is likely that we did not capture small human caused changes which require finer scale imagery to ensure detection. For example, well pads or other small disturbances such as staging areas, sumps, or workers camps may not have been detected as a disturbance. As a result, our disturbance estimates are conservative.

## **1.2 Results**

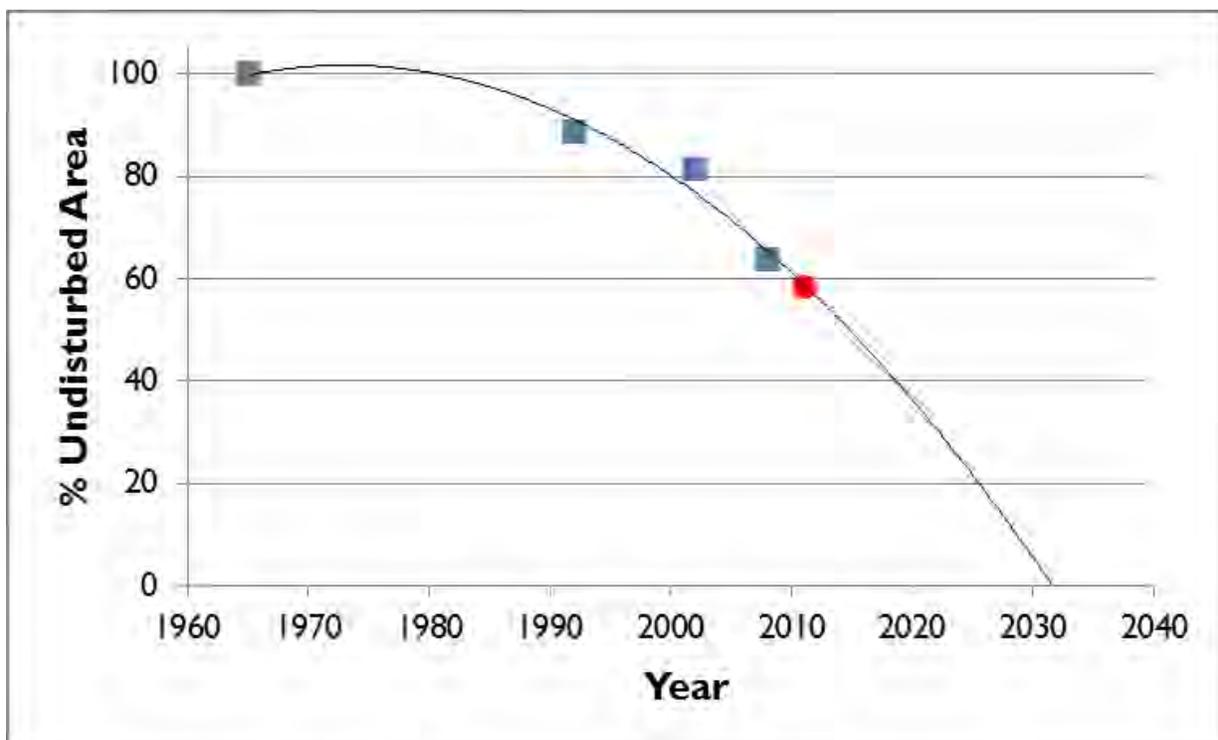
Landsat image analysis of the resampled areas indicates that the overall level of combined disturbance (linear and non-linear industrial features) has increased since 2008 (see Figure 1.1-1). Disturbance levels increased during that three year period, even in areas that were already heavily developed by



**Figure I.1-I: Continued conversion of natural surfaces (green) to industrial ones between 2008 (red) and 2011 (yellow) in resampled areas within the ACFN RSA. (Includes 250 m ZOI around all linear and non-linear industrial features; based on Landsat image analysis.)**

2008. In the resampled areas the linear disturbance density has increased from 0.62 km of linear corridors per km<sup>2</sup> in 2008 to 0.74 km per km<sup>2</sup> in 2011.

The trend of an overall decline in the amount of undisturbed area between 1964 and 2008 is similar between the original report (MSES, 2012, Figure 2.1-3, pg. 7) and the resampled areas we used in the updated analysis (see Figure 1.1-2, blue squares). By 2011, only 59% of the resampled areas remained undisturbed (see Figure 1.1-2, red dot), representing a total loss of 4% of undisturbed land in only three years. The 2011 data point falls directly on the trend line estimated using the data from 1964 to 2008.



**Figure 1.1-2: Amount of undisturbed land in 2011 (red dot) in the resampled areas within the ACFN RSA, compared to predictions using data from 1964 to 2008.** Based on Landsat image analysis, including 250 m ZOI (Best fit trend lines were calculated by second degree polynomials). The 1964 data point is an approximation of the total area of the ACFN RSA that was available for traditional resource use before Oil Sands development.

### **1.3 Conclusion**

As predicted in the original report, our reanalysis demonstrates that industrial development has continued to reduce the amount of undisturbed land, and increase the density of linear corridors within the ACFN RSA. In fact, the new analysis suggests that no undisturbed land (i.e. land farther than 250 m from development) will remain in resampled areas by 2032, roughly 10 years earlier than predicted in the original report. This demonstrates that rates of land disturbance can vary within the broader RSA. By demonstrating that pre-2008 data can be used to accurately predict future impact levels, in this case up to 2011, this analysis supports the predictions made in the previous report (MSES, 2012).

### **2.0 References**

MSES. 2012. Effects on traditional resources of the Athabasca Chipewyan First Nation: The Shell Jackpine Mine Expansion and Pierre River Mine Projects. Prepared for: the Athabasca Chipewyan First Nation.

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**From:** Dave Bartesko [<mailto:Dave.Bartesko@gov.ab.ca>]  
**Sent:** June-13-11 10:27 AM  
**To:** [lisa.king@acfn.com](mailto:lisa.king@acfn.com); Nicole Nicholls  
**Subject:** LARP Input Summary

Good Morning ,

As per our "First Nation Consultation Plan - Lower Athabasca Region", I am providing to you a GoA summary (not verbatim) of the input that you provided related to LARP for your validation. Any corrections or omissions must be sent back to me by end of day June 19, 2011. This individual summary will become part of a summary report of input provided by all LARP related aboriginal groups during the consultation process and will be submitted to Cabinet.

I want to thank you for your hard work, time and dedication in providing your input to GoA on LARP.

Thank you and have a good day.

<<Athabasca Chipewyan First Nation Individual Summary.docx>>

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## Athabasca Chipewyan First Nation

There were a total of 30 aboriginal groups that participated in LARP. Level of participation for your nation included elected officials, Elders, legal counsel and staff. The meeting dates for your nation were: June 1/09, June 26/09 (joint), November 19/09 (joint), March 4/10 (joint), October 20/10 (joint) January 18/11 (Leadership), January 18/11 (Elders and band members), and April 27/11 (joint)

GoA Summary of Input relating to LARP:

- The IRC would like to have face to face meetings with the decision makers
- Would like to information and adequate time to prepare for the meetings before hand
- Need a list of indicators used for modeling scenarios
- Would like to get information that RAC received
- They want to develop their own land-use framework
- Concerns that information given in the LUF consultation will not be given to those working on LARP
- Would like consultation and accommodation imbedded in Strategy Seven
- Richardson Backcountry is very important to the nation and it needs to have its own management plan.
- The nation would like to work with other nations in the area and GoA to develop an access management plan for this area in which they and other nations would have a role in managing the land.
- All 5 Athabasca Tribal Council First Nations are very concerned with the lack of and/or level of capacity funding available
- How does the nation funnel their input, through RAC, to LUS or what?
- Want to have clear demonstration of how their input was used or not, and if not used what was the reason.
- Need to respect the constitutionally protected rights and accommodation of such rights in LARP
- Concerns that information used to date in the LARP process are not publicly available for their review and that some of their confidential input is being made available on a website.
- Requesting a moratorium on oilsands development as, once approved, the LARP may provide guidance.
- Many concerns and issues related to water including:
  - Deformed fish
  - Water quality has deteriorated and are unable to drink it from the source
  - Water quantity has been reduced which does not allow members to hunt, fish or trap as they cannot get into 75% of delta area during normal flow and it is much worst in low water flows
  - Pollution from Fort McMurray and areas north are becoming noticeable
  - Toxin loads are increasing
- Health is another major issue for them as there is a much higher rate of certain cancers and other crippling diseases.
- There is already infringement of their Treaty and Aboriginal Rights and with the potential increase in resource development within the region, this infringement will grow
- They are experiencing a real loss of their ability to practice those rights
- Want to be at the beginning of any process and would prefer to help develop any new process

- They wish to work closely with GoA and are willing to come to the table to develop a meaningful consultation process.
- Economic factors seem to always be factored higher, consciously or unconsciously, and the First Nations are not confident that aboriginal perspectives will trump economic leases on the land.
- Region has unprecedented development and there is a perception that regardless what the First Nations will submit, the LARP will be developed in a different direction.
- Constitutionally protected rights to hunt, fish and trap; and limited water usage due to decreased levels and lower water quality, are all factors in their submissions, looking ahead 50 years.
- Some First Nations are concerned that their ability to exercise their rights is limited – fishing is essentially not exercisable due to contamination and deformity.
- They nation has been working on their own conservation areas plan.
- Concern is that the aboriginal values statements in the LARP will not recognize that treaty rights are higher than all other rights to the land.
- First Nations find it hard to feel positive about this process as there is not a good track record of the GoA listening to them and protecting their rights.
- Information flow will likely need to happen in both directions to get the right points of view moving forward. They need to know that their input will be used in a holistic way.
- The nation wished to add the following areas to be considered for conservation:
  - Muskeg River
  - Richardson River
  - Jackfish Lake
  - Firebag River
- Asked that they be able to meet with the Regional Planning Team.
- Very disappointed that their proposal to develop the Athabasca Chipewyan First Nation and Mikisew Cree First Nation Traditional Land and Resource Use Management Plans (TLRUMP) was not accepted and endorsed by both GoA and the federal government.
- Condensed Analysis of the RAC Vision Document – October 19, 2010 joint input
  - Lack of analysis concerning potential impacts on Section 35 rights
    - The proposal is to monitor impacts and compensate for infringement, not to protect the rights
    - No analysis of the direct and cumulative impacts on existing and planned development on rights
    - No or little recognition of impacts to rights based on existing levels of development
    - No willingness to do proper research and freeze development in certain areas until more information is known about potential direct and cumulative impacts on section 35 rights
    - The proposal for inclusion of aboriginal peoples in land management planning are insufficient to meet GoA's constitutional obligations
    - The proposed land use classifications are flawed insofar as they are not appropriate for addressing section 35 rights
    - As there is a limited acknowledgement of Section 35 rights, a fundamental flaw of the RAC Document is that LARP will not provide meaningful assistance in protecting section 35 rights.
  - The Lieutenant Governor in Council's exclusive control over regional plans

- There is no guarantee that even if certain areas are protected, that those areas and rights will remain protected, as Cabinet can override various protected-related decisions, even if they initially accept them.
  - Need for regulatory change
    - While many of the recommendations concerning aboriginal issues are good ideas but they will require regulatory change to incorporate those perspectives into decision making
    - The RAC Document is flawed in its failure to consider the regulatory processes and proposals being considered by GoA outside of the LARP process. As an example the proposed Public Lands Administration Regulation raises the question whether the First Nations can even exercise their constitutionally-protected rights in the areas set aside for conservation. Another example is the Regulatory Enhancement Project which aims to “increase competitiveness” in terms of GoA’s regulatory approach.
  - Lack of triggers and thresholds
    - There is the question of how important decision-making criteria – such as thresholds and triggers – will be developed and utilized.
    - Baseline information is not described in the RAC Document
    - No indication of how will traditional knowledge be used in LARP
    - The nations have provided extensive input on wildlife, plants, fish, air quality, water (surface and groundwater) quantity and quality and other traditional resources and they cannot see how this input will be used or even considered.
    - LARP fails to demonstrate a real commitment to respecting aboriginal and treaty rights because it fails to define how environmental assessment and monitoring data collected by aboriginal peoples will be used
  - Weakness regarding conservation
    - There is no link between the tools outlined in ALSA and how they may be used in LARP
    - The RAC Document is legally flawed when it states that aboriginal uses will be permitted where those uses will be consistent with conservation strategies. Even where GoA has valid conservation objectives, any infringement of aboriginal and treaty rights must still meet the standard of justified infringement, including priority allocation of resources.
  - Limited, vague and meaningless mechanisms for aboriginal involvement
    - While it is positive that First Nations are included in all fundamental aspects of LARP, this fails to address current realities (e.g., areas already leased out) and their affect on section 35 rights
    - Other sections within the RAC Document limit aboriginal participation to monitoring and do not actively engage them in the design and development of management systems.
    - In some proposed outcomes, aboriginal peoples are not included for example Outcome 5 on air and water.
    - Concern over the proposed mix-use area in that GoA has already determined how competing uses are to be balanced without much if any reference to aboriginal peoples

- Any proposal to work with aboriginal peoples is qualified by the fact that the Lieutenant Governor in Council has the authority to disregard, amend and reject any stewardship recommendation under the Land Stewardship Act without First Nation input.
  - Community members are uncertain about consuming animals within the region due to cumulative effects.
  - The destruction of the nation's traditional territory is having a negative cultural effect on its members.
  - The Athabasca River IFN is critical input into the LARP
  - ACFN is working in good faith on the LARP and will continue to work in good faith.
  - It is not acceptable to hear that Alberta doesn't have the dollars to fund such things as research, Alberta is a rich province
  - The funding provided by LUS is not enough to valid input into the plan.
  - The RAC document has lack of rights based focus and development criteria thresholds with no analysis of the exercise of rights.
  - Within the RAC document there are a number of great ideas, but with each idea there is no information that indicate the changes and who will be implementing it.
  - There is a lack of analysis on section 35 rights. The First Nations realize that land-use planning has to balance the current issues and rights.
  - There is a need to conserve the traditional land base that they need.
- If everyone sat down together we would have better information and understanding on what is needed to practice rights and plan to have an eco-based analysis completed.
- The FNs have great ideas and the GOA agrees that the information provided has good ideas, but once the information is submitted nothing gets accomplished. We need to conserve the traditional land base that we need.
- By not analyzing places like the mixed land-use area with cumulative effects, rights will be infringed. There is an underlying understanding that the traditional rights can still be performed in all land-use areas, it is hard to know how to plan and how to balance, but something has to be completed. There is a comment on compensation to industry for loss of leases in conservation areas, where there is infringement on treaty rights maybe compensation is the only option.
- There are some individuals that receive their income from industry; simply turning to this is not accommodation of the impacted rights.
- The outcome of the plan should respect Aboriginal rights, and insure meaningful consultation. The reality is that the current consultation isn't working and Aboriginal people have been complaining for years. At the end of the day things aren't changing, the same questions are being asked and nothing is being done on the ground.
- Significant traditional lands are already leased out. Energy states that consultation with FN is necessary before a lease is granted; industry will not consult unless it is law.
- The control of the plan is of biggest concern. The plans can be created, but once submitted to Cabinet they can make whatever changes they feel is necessary.
- There is a lack of triggers and thresholds in the plan. There are no triggers that can be established to determine if treaty rights are being impacted. The point is that there is there is no way of the government taking a cultural or holistic approach without analyzing the triggers and flows. It is a different way of thinking but is a way for a non-aboriginal to know how affecting this process is.

- What is missing in the conservation areas are the travel patterns of the animals intended to be protected in the conservation areas. The animals will not stop at the conservation borders. There is a call for protection of a much larger area. Maybe the conservation areas could be Aboriginal managed or the Aboriginals have some sort of control over the areas.
- Turning the parks and recreation opportunities into private control is not a good idea.
- The FN members on the RAC did not consult or speak to any of the FNs in this room. They did not carry out their process despite the request from FN.
- If companies already have leased lands in conservation areas, then FN cannot perform their traditional rights because it conflicts with what is currently happening on the land.
- Co-management would help to rewrite regulation to include the rights to practice traditional use. Depending on the park and the conservation area there would be limits and restrictions that would limit FN's rights. The regulations are decades old; interesting to compare the regulations with what has changed to date.
- A summary of ACFN's November 22, 2010 submission which includes:
  - ACFN Elders' Declaration of Rights to Land Use (some highlights)
    - Our rights have never been extinguished
    - The lands from Firebag north, including Birch Mountain on the west side of river, must be protected. Richardson Backcountry is not to be given away – not to any government.
    - Everything we do here, we do to protect our rights to land use, livelihood and culture.
  - Context on ACFN Mode of Life and Livelihood
    - Dene livelihood ties people with place and culture with the land.
    - The spirit of the people is linked inextricably with the spirit of the land.
    - Large-scale modification of the landscape can disrupt the balance of power in the relationship between people and their environment and can be “negative” to a person and destroy the spirit of the land.
  - ACFN Vision for LARP
    - Treaty 8 is the foundation of the ACFN Vision for the Lower Athabasca Region. Consistent with the spirit and intent of Treaty 8, the reconciliation of Crown and First Nation interests must be a primary goal of the Lower Athabasca Regional Plan.
    - Have a right now and in the future to practice their Treaty 8 rights
    - Establishing co-management boards, or other cooperative land and resource management agreements, guided by the principles of shared decision-making and joint stewardship for lands and resources of critical importance to the continued practice of rights.
    - That a reasonable share of wealth generated from traditional lands and associated resources should flow to those First Nations who suffer, or have suffered direct, indirect or cumulative adverse effects from development that harm, or take up, air, land, and water to the point that their rights under Treaty 8 have been or will be infringed.
  - ACFN Cultural Protection Areas
    - Have identified three cultural protection areas or zones.

- Wish to work collaboratively with GoA to define further land use designations within particular zones as information improves.
- The zones (maps were provided) are:
  - Homeland Zone (2,723,200 ha)
    - These are specific areas that are of critical importance to past, present, and future practices of Treaty Rights
    - This where the deepest consultation and accommodation must occur
  - Proximate Zones (2,236,800 ha)
    - These areas are relied upon for the practice of rights by an increasing number of members living in and around Fort Chipewyan, Fort McMurray and Fort McKay
    - In these areas a reliable process for consultation and accommodation will be required in consideration of treaty rights
  - Critical Waterway Zones
    - These recognize the integral importance of water quality and quantity to the members and their practice of rights
    - There is a 5 km buffer on each side of the waterways
    - Need to establish cumulative effects frameworks and co-management frameworks that properly consider rights and shared decision-making
  - The nine issues of greatest concern at this time are:
    - Landscape and ecosystem alteration and degradation
    - Contamination of traditional foods and resources
    - Declines in water quality and quantity
    - Competition for traditional resources
    - Impacts of increased numbers of recreational land users
    - Restrictions on access to traditional lands
    - Lack of involvement in land and resource decision-making, monitoring and enforcement
    - Cumulative infringements on ACFN's treaty and aboriginal rights
    - Methodology for considering and accommodating ACFN treaty and aboriginal rights in land use planning and regulatory decision-making.
  - ACFN recommendations for management of cultural protection zones;
    - Homelands as Cultural Units for Co-management
    - Watershed Planning and Management for Critical Waterways
    - Rights-based Cumulative Effects Management Framework
    - Sub-regional Planning Process
    - Traditional Land and Resource Use Management Plan
    - Co-management Frameworks
    - Protection of ACFN Rights the Depend of the Athabasca River
    - Community-based Monitoring
    - ACFN Conservation Areas and No-Net Loss
    - LRP Review Process

- ACFN General Comments on the RAC Vision Document
    - Reconciliation mandated by Section 35 of the *Constitution Act, 1982*
    - Proper consideration of Treaty rights requires better knowledge
    - A moratorium on future approvals until knowledge is improved
    - RAC Vision must give confidence that Rights will be sustained
    - Consultation of the RAC document and on LARP has been inadequate
    - Reclamation does not restore Rights
    - Without concrete mechanisms for the incorporation and use of aboriginal knowledge, there is no basis for trust, transparency and use of data.
    - The intent and use of conservation zones is of utmost concern
  - ACFN Technical Comments on Specific Sections of the RAC Vision Document
    - Specific comments made on specific sections and subsections of the RAC Vision document
- Richardson Backcountry is of extreme importance to ACFN and they have given GoA a proposal for Co-management in October 2008, again in November 2010 and again in June 2011
- They also provided in their November 2010 input:
  - Regional Municipality of Wood Buffalo Cumulative Effects Study – Final Report
  - As Long As The Rivers Flow: Athabasca River Use, Knowledge and Change
- Their vision for LARP is based on Treaty 8 as the foundation on which all land use in the region depends
- Their way of life is based on their cultural relationship with the land and sustained through the practice of livelihood rights.
- In keeping with the spirit and intent of Treaty 8, the primary goal of LARP must be reconciliation of Crown and First Nations interests.
- There must be deep consultation and accommodation including full participation in resource management and decision-making.
- The identified “homeland zones” would be areas of co-management.
- At the RAC vision sits, it will not protect ACFN rights
- Traditional Land and Resource Use Management Plan that was proposed would be a positive move in the direction of understanding ACFN’s rights and needs.
- They have serious concerns about the consultation process to date on LARP and sincerely requests that Alberta enter into a more collaborative and mutually agreeable process.
- From the outset, ACFN has consistently declared in their correspondence on LARP, that their utmost concern in respect of land use planning is to ensure that the meaningful practice of their Treaty 8 rights can be sustained for future generations. Treaty Rights include but not limited to, hunting, fishing, trapping and gathering for sustenance and livelihood purposes. There needs to be sufficient land and resources to do this.
- Athabasca Chipewyan First Nation (ACFN) called for the meeting (January 18, 2011) because there has been correspondence back and forth with the government to develop a consultation policy with ACFN. The Government of Alberta (GOA) hasn’t been consulting with ACFN properly. Our traditional territories are being encroached by development all over the region. ACFN would like to come up a plan with the GOA to protect certain areas within our traditional areas. The late Chief wrote a letter to Ottawa regarding our hunting lands; he stated in the letter that ACFN’s hunting grounds were 300 miles in each direction from where he stands. This letter is still on file today.

- The aspect of how we address ourselves, our traditional territories spread beyond the reserve. The Déne People travel long ways for hunting and trapping. Some people will travel up to three years gathering berries and trapping.
- ACFN would like to come up with a development plan to protect the Richardson Backcountry. Our traditional territory extends from Poplar Point to the Saskatchewan border. This type of information and work has already been captured in the Access Management Plan in 2005.
- The massive amount of development occurring in our traditional territory is having a great burden on our way of life. When the Region Advisory Council (RAC) came to Fort Chipewyan for a meeting there was no community consultation. We submitted our concerns to the RAC through written input and the RAC met with Chief and council. There was no community consultation on the Land-use Framework (LUF). Fort McKay was given the opportunity to meet with the Land-use Secretariat (LUS) monthly; ACFN was not given this same opportunity. ACFN will continue to voice our concerns until our concerns are dealt with on both a provincial and federal level.
- Currently ACFN is building a law suit against the GOA on constitutional rights. In the meeting today let's work on these issues and try to find a solution to prevent from getting the level of the courts.
- Our treaty states to share the land and live together in harmony. There needs to be government to government meetings, but right now ACFN is being secluded and our traditional lands are being encroached upon. Our community members can no longer go hunting for ducks and geese in the spring due to the low water table in our area.
- The conditions that our traditional lands are in and the health concerns associated with the environmental impacts are of great concern to ACFN's community members.
- We need to work together to develop solutions to these problems, otherwise ACFN will have no other choice but to go to the courts, this is not an optimum path for ACFN but if we can't work together then it may be the only solution. Let's work on good terms and develop a relationship to address ACFN's concerns. ACFN would like to sit down at the table with decision making officials to develop an access management plan.
- ACFN would like an agreement by both the GOA and ACFN to work collaboratively. ACFN is currently working with the federal government on 21 issues outlying in Treaty 8. Our rights extend outside of our reserve lands. The southern Indians are now secluded to their reserve lands.
- The *Natural Resources Transfer Agreement* has a lot to do with our conversations today. ACFN was not consulted on the development in the area. Our people knew of the resources in the area; we used to use the tar from the tar sands on our canoes, we used to thrive on the land and drink right from the Athabasca Lake and River. Our people have never been beggars because everything we ever needed was from the land.
- ACFN members were not involved in the consultations in regards to new trapper's rights.
- ACFN is looking for face to face consultations with the GOA, not government to government letters because we cannot see eye to eye; we are acting like a bunch of kids.
- We may be a young Chief and Council but we are looking after our generations to come. The government can't keep bending backwards for industry. Our people are stewards of the land, once we harvest from an area we will not go back to the area for 3 to 4 years.
- ACFN's Elders live on a fixed income in an isolated community with a high cost of living. We rely on the hunting, fishing and trapping and the traditional way of life, it is the Elders in the community that are taking on the majority of the burden from development.
- Our meeting today isn't to advocate the halt in oil sands industry, ACFN wants to develop a sustainable resource strategy.

- The media has labeled ACFN's Chief as a radical for voicing our communities concerns around health of our people, water, land, and animals. Disrespecting and ripping up the earth is radical behavior.
- From the province some kind of access management plan needs to be developed with ACFN and the provincial government. A possible solution may be to develop a wildlife sanctuary that would fulfill our Treaty rights of hunting, fishing and gathering. When the GOA does not want to commit it demonstrates to ACFN that the GOA is not working in good faith. ACFN would also like to see regular community based monitoring of cumulative effects on the health of our community members and environment.
- The sand dunes are supposed to be a heritage site, but there is no-one managing the land.
- The GOA is granting licenses to American hunters to come into Alberta to hunt, this needs to be in the access management. If the GOA puts forth some resources we could gather the information of who is using the area and collect regional data. The Richardson Backcountry has become a playground for recreational users that disrespect the land.
- ACFN and the LUS will need to coordinate meetings with the Deputy Minister to develop a definition of co-management. ACFN is happy to see that co-management may be an opportunity. ACFN will continue to work government to government and encourage proper protocol to develop the purpose and intent of co-management.
- ACFN is willing to work with the Métis, Mikisew Cree First Nation, and Fort McKay First Nation, and Smith's Landing First Nation.
- What is left of Richardson Backcountry is pristine land. If the area is going to be developed for tourism the GOA and ACFN should work together to develop this. ACFN needs to be involved in the planning of this area because the management of the area will influence the ACFN community members.
- We support an all weather road, but consultation on the route of the road is imperative.
- ACFN may move back to the Old Fort on the south shore.
- The Athabasca Delta was once the richest delta in the world. There were muskrats caught there by the thousands. The spring hunt brought in 600 000 muskrat in 5 weeks, today there is nothing left on reserve and the BC hydro is to blame for the decrease, it is the people of Fort Chipewyan that are impacted by the development.
- Would like to have a separate meeting regarding timber harvesting in Richardson Backcountry
- We are entitled to this land under the Constitution. There have been arrow heads discovered in this area that date back 10 000 years. This is the Dené's land. The GOA looks after their resources, but where are ACFN's resources? We govern our lands too.
- The Elders Council was formed 10 years ago, we have been wanting to meet with the GOA for 6-7 years, thank you for coming. It is important for us to speak to the GOA because it is the government that is issuing the permits to industry to develop. Industry doesn't worry or listen to us.
- Mikisew Cree Nation's track record of taking the government to court is high in winning their cases.
- The GOA has never rejected a license in this area. The EUB is not protecting our interests or rights. Our ultimate goal is to protect the environment. If Alberta is going to be the leading province in the world for oil, why doesn't Alberta lead the way with clean energy and reclamation as well? We want to sustain not destroy our environment.
- There are still drums located across the delta from the spill in the 1970's, Alberta Environment stated that they would take care of the debris, but it is still there today. The effect from the spill and the debris is toxic to our community.

- Our community has wanted to build an Elder and youth lodge a LaRouge Lake 3 years ago, the government denied our request but allows oil and gas into the area for development. The GOA turned the area into a park after ACFN submitted our application. There are many different hunting outfits that go into our traditional lands bear hunting and possess licenses issued by the province. We are not consulted on any of this.
- The GOA is breaking ground by coming to the table to listen to the communities concerns; but we cannot trust the government because of the terrible job done in the past. The activities on the land are affecting our very lives; this is a human plea for the need of resources.
- We can no long drink or swim in the water, we now travel to Dorie Lake but that is getting polluted as well. Along the shores of Jackfish Lake you can see oil.
- ACFN has submitted our concerns to the LUS, now it is waiting until further conversations with the LUS. Thank you for coming and listening to our concerns.
- Thank you for our first meeting with the GOA, hopefully in the future we will be meeting again. We feel that our concerns often fall onto deaf ears.
- Input from January 18, 2011 meeting with ACFN community members
  - The FN representative on the RAC did not go out to the FN communities to gather information.
  - ACFN was very upset with the RAC process and has submitted letters clarifying their position/opinion.
  - The RAC documents were confidential to only the RAC members.
  - The GOA will allow for industry to go wherever and continue their normal practice. The protected areas have Species at Risk such as song birds that will no longer nest in that area.
  - There needs to be continual meetings with the Elders, the Elders are the individuals that have the knowledge of the land. The GOA has not been meeting with us the entire process.
  - Don't use the word consult.
  - The FN has the jurisdiction over the land here. This is where we live. The Treaty that was signed was signed with Canada and now we are dealing with Alberta.
  - When FN are referred to as stakeholders there is an entirely different approach between Treaty and stakeholder rights.
  - There is an area that ACFN brought to the GOA's attention during the Special Places consultations to have protected. The area is now a wildland provincial park, ACFN members are not allowed to berry pick or hunt in the area. The GOA cannot honor an agreement, why should ACFN trust you with this plan?
  - Community members are unaware of all the policy changes and regional planning, there is no communication to the grassroots people.
  - There should be a cultural impact assessment completed on ACFN's community to demonstrate to the government the damages that industry has created, before the GOA begins the regional planning.
  - The RAC process was flawed from the beginning. The Crown should insure that the right information was being filtered to RAC during the planning process. The majority of the members on the RAC were from industry, the end results will be swayed to one side.
  - Due to a flawed system our lands are now leased to a group that will not allow for ACFN to practice their Treaty rights.

- The Supreme Court has laid out particular rules on how FN needs to be consulted with. It is against the law for RAC not to consult with ACFN.
  - ACFN is not in support of the plan. (a vote was conducted by show of hands and the majority of the room opposed the RAC vision document)
  - The LUS does not supply adequate funds and no resources to allow ACFN to engage with you. The GOA is not working in good faith.
  - In some of the conservation areas there are petroleum, natural gas and uranium operations; the GOA should get the industry out these areas before the plan is final.
  - Will there be a response and a follow up to this meeting on behalf of the GOA? This definitely won't be the ACFN's last meeting with the LUS. ACFN will have our legal counsel review our submissions.
- ACFN frustration is that there is no feedback regarding what has been considered of their submissions and thus which areas need to be pushed harder. The Plan is going to affect their constitutional and traditional rights, and it's the job of the individual consultation managers to ensure that this plan will have the smallest impact on their Treaty rights. Probably the most important thing that is happening in this region to these nations.
  - ACFN is surprised that there has not been any contact from the GOA to clarify the submissions made to date to help build the draft plan.
  - ACFN – the GOA has a duty to outline what was used in the creation of the plan and what wasn't.
  - ACFN – what is the status of the health assessment? We have commented on the physician's working group but haven't heard anything more.
  - ACFN would like to have the provincial and federal members working on the IFN framework to provide feedback to them about the input and how it was used – commitment was made that this would be done but still hasn't happened.
  - ACFN – have contamination pathways been considered in the frameworks? Impacts on traditional foods could impact human health.
  - ACFN – the proposed limits are not the same as the World Health Organization (WHO) limits and seem to be based more on economics and politics and are not as protective of human health.
  - ACFN – seems like there will not be a reversal of the quality of the surface water as there are several industries that are allowed to discharge effluent directly into the river and the members cannot use the water in the way that it was in the past. The fines/actions currently are not a deterrent.
  - ACFN has seen a decline in the numbers and size of wetlands and thus less waterfowl - need to consider the link between groundwater and surface water
  - ACFN – trappers are not allowed to build new trails, cabins, etc. in parks, even though those areas may already be in use, which is a limitation of their rights.
  - ACFN – SRD has not been talking to the FN's much on the *Public Lands Administration Act* or on other areas.
  - ACFN – some frustration that it seems that they are constantly being told that the next iteration or plan will have more details to deal with specific concerns, and it keeps getting pushed off.
  - ACFN would be willing to second staff to GOA to help with this planning, which was offered to the Deputy Ministers but nothing has happened so far.
  - ACFN has done a lot of good faith work in the past few years but it doesn't seem like what has been said has been heard. It appears that the key criterion for choosing CA's was the absence of leases, and doesn't seem like there was any thought to interconnectedness.

- ACFN – maps that were submitted were not actually created for this project and thus were not directly aligned with the needs of the creation of the plan. Money was found to fund the RAC but was not spent on actual duty to consult obligations
- ACFN sent in a position paper but don't feel like their voice was heard in this document.
- ACFN - Tourism/recreation is not a compatible land use with traditional uses.
- Traditional conservation areas in the LARP ie. near important rivers, tributaries or other water bodies
- The draft LARP and regulations fail to address the fact that the Parks Act has the potential to adversely impact and potentially infringe the exercise of treaty and aboriginal rights in conservation and recreation areas.
- June 3, 2011 submission:
  - The draft LARP does not reflect the input provided to date
  - The draft LARP is not based on proper and transparent planning methods and has major data gaps
  - LARP is not based on ecological analysis for the region that would support the design of conservation areas nor does it provide any rules or criteria on how conservation areas reflect the request by First Nations to protect their rights
  - As currently proposed, the LARP does not support an integral ecosystem that is required to support current and future traditional uses.
  - The cumulative management effects approach, including the frameworks and additional planning initiatives, do not recognize or consider what is necessary for the meaningful exercise of treaty and aboriginal rights
  - The draft LARP fundamentally misunderstands what is required to meaningfully involve aboriginal peoples in land use planning
  - The draft LARP and its draft regulations fail to address the fact that current land use legislation, including current regulations under the Parks Act and proposed regulations under the Public Lands Act, have the potential to adversely impact and potentially infringe the exercise of treaty and aboriginal rights
  - The draft LARP, as it currently stands, gives no consideration to land and other disturbances which are already adversely affecting and infringing the rights of ACFN and MCFN and, without the kind of analysis that the two First Nations have been calling for throughout the development of LARP. This will set the stage for further adverse effects or infringements on ACFN and MCFN rights.
  - To address these issues we recommend that further consultation and discussion occur with ACFN and MCFN with respect to the concerns that we have raised prior to finalization of LARP.
  - The LARP must explicitly recognize the constitutional protection afforded to Treaty and Aboriginal rights and needs for these rights to be taken into account in land use planning, management and decision-making.
  - Outcome 7
    - Add a strategy – Develop, in collaboration with aboriginal groups, specific Traditional Land and Resource Use Management Plans.
    - Add a strategy – Establish a co-management board, or other cooperative land and resource management agreement, guided by principles of shared decision-making and joint stewardship for lands and resources of critical importance to the continued practice of rights.

- Add a strategy – Incorporate and consider, in consultation with First Nations, the information from Traditional Land and Resource Use Plans in the strategies under Outcome 3, 4, 5 and 6
  - Revise the Richardson Initiative strategy to reflect the following:
    - Invite First Nations expressing an interest in the Richardson Backcountry to be involved in a sub-regional planning and co-management initiative.
    - This initiative will be based on principles of shared decision-making and joint stewardship of lands and resources.
    - The initiative will consider:
      - The appropriate boundary
      - Vision and goals of FN
      - Management of tangible and intangible resources
      - Access management
      - Framework and implementation plan for FN inclusion in future decision-making, planning management and monitoring
      - Any applicable changes to existing or developing of new legislation
- Outcome 3
  - Amend strategies a, b and c
  - Add a strategy – to determine the rates of human disturbance on the landscape and degradation of indicators and to determine how fast actions must be implemented to keep within acceptable limits
  - Add a strategy – develop an Athabasca River corridor conservation area
- Outcome 4
  - Revise the Air quality strategy by adding additional items to monitor and to add in valid enforcement
  - Revise the Surface Water strategy – must include surface water quality of all waterbodies in LARP
- The core winter range of the Ronald Lake Bison Herd from Red Clay Creek to Ronald Lake be established as a conservation area
- Woodland caribou are a critical traditional resource necessary to the meaningful practice of Treaty 8 rights for ACFN and MCFN
- Legal Review of the Draft Lower Athabasca Integrated Regional Plan was prepared for ACFN and MCFN by Janes Freedman Kyle Law Corporation included the following:
  - Introduction
  - Overview of Concerns
  - The “Cumulative Effects Management Approach” provides insufficient guidance to decision makers to protect Section 35 Rights
  - The Proposed Frameworks & Monitoring Must Include Section 35 Rights
  - Conservation and Mixed Use Areas must be Regulated in a way that respects Section 35 Rights
  - The Conservation Areas selected in the Draft Plan are not based on meaningful consideration of the requirements necessary for the protection of aboriginal and treaty rights

- Involvement of Aboriginal Peoples in Revising and Implementing the LARP is Essential
- The Draft LARP Regulations must ensure that Section 35 rights are considered and respected
- Recommendations:
  - What is required to assess, accommodate and avoid infringing section 35 rights?
    - The LARP must explicitly recognize the constitutional protection afforded to Treaty and Aboriginal rights in section 35 and the need for the LARP to take into account such rights in land use planning
    - The LARP vision must include that section 35 rights can and will be able to be practiced at a level that sustains aboriginal rights holders in relation to their subsistence and livelihood rights.
    - Alberta must work cooperatively with First Nations to develop studies, criteria and thresholds to sustain the exercise of section 35 rights now and in the future and to use that information to select conservation areas.
    - The Government of Alberta must conduct proper studies and consider freezing development in certain areas until more information is known about potential direct and cumulative impacts of existing, planned and reasonably foreseeable development, including on section 35 rights and what is needed to practice and sustain those rights (ecosystem, environment, culture, lands, air, water, fish, wildlife)
    - LARP must make express provision for the protection of section 35 rights and set out specifics on where and how those rights will be protected based on the studies referred to in the previous two recommendations.
    - Alberta must recognize that any infringement of aboriginal and treaty rights must meet the standard of justified infringement, including priority allocation of resources.
    - The “cumulative effects management approach” must be clarified so that it will guide decision makers to make land-use decisions in a way that respects and accommodates section 35 rights.
  - How can the frameworks ensure that section 35 rights are protected now and in the future?
    - Thresholds in frameworks should not be based on future anticipated development. Frameworks must set thresholds and triggers that relate to the meaningful practice of aboriginal and treaty rights. Furthermore, where the proposed frameworks do not address issues that are important to the meaningful practice of section 35 rights, such as Aboriginal Base Flow, Aboriginal Extreme Flow and Ecosystem Base Flow measures, new frameworks must be established to address these issues.<sup>19</sup>

- Thresholds, including for the meaningful exercise of section 35 rights, should be set before further medium and large-scale industrial development is permitted – the current approach assumes a pre-determined level of development and plans for that scenario rather than on determining what level of development can be sustained in various parts of the Lower Athabasca area
- Alberta must work with aboriginal peoples to prepare a traditional land and resource use and management plan. The results must be included in the revised frameworks.
- Aboriginal knowledge of historical and recent changes in water quality and quantity, air quality, land and biodiversity must be incorporated into revised frameworks.
- Environmental assessment and monitoring data collected by aboriginal peoples must be used to revise and update frameworks.
- How can conservation and mixed use areas be implemented in a way that complies with the constitutional framework of Canada by respecting and accommodating section 35 rights?
  - Alberta must ensure that all of its regulatory and legislative mechanisms relating to land use employ a rights-based focus and are consistent with section 35 rights.
  - Alberta must ensure that aboriginal and treaty rights can be meaningfully exercised in “conservation” and other areas such as mixed use areas. This will require Alberta to revise existing and pending legislation and regulations based on consideration of the input of First Nations.
  - Alberta must ensure that regional planning regulations and related legislation recognize the priority allocation of resources to aboriginal peoples and accommodation of aboriginal and treaty rights when balancing resource and land allocation.
  - Alberta must ensure that regional planning regulations and related legislation acknowledge that the ability of aboriginal peoples to exercise traditional uses of the land must be linked to specific lands and territories and the resources thereon, which require conservation for the ability of aboriginal peoples to exercise traditional uses to be maintained. Such conservation or related approaches must ensure protection of section 35 rights now and in the future.
  - Alberta must explain and justify the conservation areas it designated in the Draft Plan prior to the adoption of LARP by Cabinet and must be prepared to add to or modify these areas based on meaningful consultation with the First Nations, if the outcome of such consultation leads to that result.
  - Access management regimes must be developed with the First Nations and must ensure access to the areas where rights are

exercised and must ensure that any restrictions on access (including gates put up by proponents and other such restrictions) are developed in consultation with First Nations and that such restrictions do not impair the rights of the First Nations to access their preferred hunting, fishing, trapping and gathering areas.

- How can First Nations be meaningfully involved in land use planning in the Lower Athabasca Region in a way that facilitates reconciliation?
  - Alberta must develop co-management regimes with the First Nations. The Richardson initiative is not a meaningful starting point for co-management in its present form as it contains certain pre-determined outcomes and it contains no information or details on First Nations who would be involved and how their rights would be protected.
  - There must be formal roles created for First Nations to influence planning and project decision making in land-use planning and environmental assessment at all levels, and planning processes and regulatory instruments must make that happen.
  - LARP must reflect Alberta's constitutional obligation to consult and if required accommodate aboriginal peoples in regards to strategic and high level decisions and should be developed in collaboration with First Nations with respect to decisions which have the potential to adversely affect and infringe their rights under section 35.
  - LARP must require the inclusion of traditional ecological knowledge in land use planning processes and decisions.
  - Alberta must develop strategies akin to those in the Outcome #7 contained in the Advice of the Lower Athabasca Regional Advisory Council.
- Several overarching concerns regarding the draft report are apparent and are listed below:
  - LARP uses terms that sound good (for example "*ecological integrity*," "*conservation areas*", or the "*balance*" of "*economic, environmental and social implications*") but does not provide any tangible definitions of these terms. Without defining such terms the frameworks that would help to "*maintain ecosystem function and biodiversity*" lack the foundations needed for their implementation.
  - LARP is not based on an understanding of how fast the boreal forests in LAR are running out of conservation options, and how conservation should protect "*ecosystem integrity*", a term used throughout LARP.
  - LARP is not based on ecological analyses for the region that would support the design of conservation areas nor does it provide any rules or criteria on how conservation areas reflect the request by First Nations to protect their rights within or outside of conservation areas of the LAR. Rather, conservation areas proposed in LARP appear to be based on avoiding lands leased to industry.
  - LARP does not provide the ecological analyses necessary to first establish indicators, triggers and limits for the resources that are important to First Nations and then to measure the success of keeping industrial degradation within the limits for the indicators in the region. We understand that ACFN expressed that

cultural analyses are also necessary alongside of ecological analyses to establish indicators, triggers and limits. However, we found no evidence in LARP that such analyses have been conducted. Given our finding that many areas of LAR are already disturbed beyond limits that would sustain viable populations of some threatened species, such analyses are urgently needed.

- LARP has not provided ecological information or develop the rules necessary to protect wildlife species and vegetation either within or outside of the conservation areas nor does it specifically protect traditional land use. LARP only includes traditional use as part of their criteria for identifying lands to be designated as conservation areas without giving an indication of how traditional use factored into the designation of conservation areas.
  - LARP is mute on the fate of Key Wildlife and Biodiversity Zones (KWBZ) and Ecologically Significant Areas (ESA) outside of conservation areas and no information is provided on how KWBZ and ESAs and regional habitat restoration would fit into “*the balance between development and conservation in the region*”, which is LARP’s purported approach to designating conservations areas. While Alberta has established KWBZ and ESAs for ecological reasons, the fact that these areas should receive special management considerations in Alberta does not seem to be recognized in LARP.
  - LARP is mute on the conservation actions that that need to be taken outside of conservation areas. LARP does not indicate how the continuing erosion of healthy ecosystems in the region can be halted, let alone how a net-gain in healthy ecosystems in the region can be achieved.
  - LARP does not provide the rates of degradation that are needed to understand how fast actions must be implemented to keep degradation of the indicators within the limits, either within or outside of conservation areas.
  - LARP does not provide the tools needed to bring regional exceedances of triggers and limits under control.
  - LARP has not provided the tools to manage the balance of Green House Gas emissions.
  - LARP only protects 19% of ACFN’s Cultural Protection Areas that they provided to GOA in their November 22, 2010, submission entitled “Athabasca Chipewyan First Nation Advice to the Government of Alberta Regarding the Lower Athabasca Regional Plan”.
  - LARP does not provide any rules or criteria on how the rights of First Nations would be protected throughout LAR, whether inside or outside of conservation areas.
  - GOA does not provide any specific information, whether in LARP or in personal communications (meetings held April 15 and 27, 2011), on how the input from First Nations was used in the drafting process for LARP
- Reviewed the draft LARP based on the following topic areas:
- Definitions and Brief History of Regional Planning - The draft LARP lacks a clear definition of regional planning. It should have drawn from almost thirty years experience with similar large-area regional land use plans in the territorial north.
  - Background Information - Based on a review of the publicly available information, no map information could have been used to make any rational or scientific zoning decisions in the draft LARP.
  - Data Analysis and Plan Development - The draft LARP does not fulfill the Terms of Reference provided by the GoA to examine oil sands production scenarios. It does not explain how it made zoning decisions based on the criteria provided by the GoA. When all other existing land interests are subtracted from the plan area, the

remaining “unencumbered” provincial lands are about same area as the GoA’s 20% target for conservation zones.

- Public Consultation - The public consultation methods used to develop the draft LARP did not allow citizens and stakeholders to know one another’s statements or submissions. The GoA and the RAC did not provide any written explanations or reasons to citizens and stakeholders about its decisions.
- Plan Contents - The plan contents are not well defined and do not fulfill established strategic planning criteria. There is adequate legislation to implement the draft LARP. A recent amendment may have undermined the legislation by establishing excessive rights to compensation for private property owners, establishing plan variances, and allowing a plan to create exclusions, exemptions, and time-limits. Read closely, the plan vision, “Regional Outcomes”, and objectives cannot all be achieved as some are mutually exclusive.
- Best Practices for First Nations Participation in Regional Land Use Planning - Four recent “best practice” regional land use plans across northern Canada were reviewed. The common threads include: partnerships between First Nations and governments; commitment to cutting-edge science and traditional knowledge; establishment of large protected areas between 30% to 50% of the **total** plan area based on intensity of aboriginal land use; and use of Special Management Zones that allow for controlled development. The draft LARP does not have any of these characteristics.

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**From:** Nicole Nicholls [mailto:n.nicholls@acfn.com]  
**Sent:** Thursday, June 16, 2011 2:32 PM  
**To:** 'Dave Bartesko'  
**Cc:** lisa.king@acfn.com; doreen.somers@acfn.com  
**Subject:** RE: LARP Input Summary

Dave,

To be perfectly honest, I am finding the summary that you sent very difficult to review and comment on. Overall, it appears to be more of a random cut-and-paste of certain meeting notes (e.g., while notes from January 18 are pasted, there are no notes from the numerous meetings in 2009 and 2010) and excerpts of submissions. I'm not sure what criteria you used to decide what is included and what is not. And, even more disconcerting, is that the complete lack of issues themes or categories does not provide confidence that our input has been understood or summarized accurately.

For example, it's not clear to me where the info in the first section of bullets (pages 1-2; before the summary of the October 19, 2010 submission begins) comes from. Without any context on this information being provided, it is difficult to understand or interpret what the issues are or why they are applicable now. I have a feeling this section is based on your meeting notes for a specific meeting, but I'm not sure which one. For me to comment effectively I would have to go into the meeting records and verify what was said and why it was said.

Furthermore, it seems like information from some critical meetings and submissions is missing entirely. For example, our April 16, 2009 submission which included expectations on consultation and questions to Alberta that are relevant to the LARP, as well as the numerous meetings we had in relation to that document and those questions, are entirely absent from this summary. (In fact I noticed that one of the meetings, September 16, 2009 is missing from your synopsis of meetings that were held in the first paragraph). I don't agree with the simplistic cut and paste of meeting notes in your summaries. Notes from meetings should be used to back-up explanation of key issues. Furthermore, I have not had a chance to review all meeting notes and verify whether or not they are accurate. I don't think I have even received the notes from the January 18 meetings.

While I appreciate that you wish to provide specific sections of our submissions directly to the Ministers, I think that one or two page summary of the key issues would help to make this more effective.

I don't wish to come across as difficult, harsh or critical, but I'm quite surprised at the poor quality of this summary and Alberta's approach. Effectively summarizing records of consultation is a specialized skill that requires accurate record keeping, an ability to understand and distil themes from vast quantities of data, and a sensitivity to the issues. This summary has to represent two years of work in a way that is effective for communicating the key issues of ACFN to decision-makers. In other contexts (e.g., JRPs), a great deal of resources are devoted to reviewing, distilling and communicating records such as this – it can take years and specialized resources (e.g., experts) in order to do so. It goes against my own professional ethics to provide only a cursory review of the summary you have provided.

Because a list of all of our submissions is not provided in your draft summary (in the description of “level of participation”), I have provided a list of the majority of them (there are some others in relation to CRISP and other government initiatives that I haven't had time to include yet) below:

- April 16, 2009 Submission to ASRD Regarding Consultation on the Lower Athabasca Regional Plan and Questions to Alberta Regarding the Lower Athabasca Regional Plan;
- July 31, 2009 Scope of Work for Consultation on the Lower Athabasca Regional Plan;
- July 7, 2009 Letter to the Regional Advisory Council (RAC) Meeting #5 (July 2009) and August, 2009 meeting objectives and ACFN Request for Suspension
- August 28, 2009, joint letter from ACFN (Lisa King) and MCFN (Melody Lepine) to Land-use Secretariat (Morris Seiferling) regarding Consultation on the Lower Athabasca Regional Plan (“LARP”)
- September 2, 2009 Letter from ACFN (Lisa King) to Alberta Energy (Minister Knight) and Alberta Transportation (Minister Ouellete) Re: Transportation Infrastructure Planning for the Lower Athabasca Region
- Email from Lisa King to Morris Seiferling, September 4, 2009 regarding “Protected / Conservation Areas Map”
- January 29, 2010 Updated Proposal for ACFN Consultation on the Lower Athabasca Regional Plan provided to Morris Seiferling by Lisa King
- February 1, 2010 joint letter from ACFN (Lisa King) and MCFN (Melody Lepine) to Heather Kennedy (RAC Chair) and Morris Seiferling (Stewardship Coordinator)
- February 10, 2010 Letter from Chief Allan Adam to Roy Vermillion (Treaty 8 Seat, Regional Advisory Council).
- February 11, 2010 submission to Heather Kennedy (Chair of the Regional Advisory Council) of the Review of the Socio-economic and Traditional Land Use Assessments for the Shell Canada Energy Applications for Approval of the Jackpine Mine Expansion and Pierre River Mine, prepared by Twin River Consulting, December 31, 2009.
- May 3, 2010 Letter to Dave Bartesko from Lisa King.
- March 3, 2010 letter to Dave Bartesko from Lisa King RE: Lower Athabasca Regional Plan – Chart Summarizing Land Use Secretariat's Understanding of Athabasca Chipewyan First Nation Land Use
- May 3, 2010 Letter to Heather Kennedy (Chair Regional Advisory Council) and Morris Seiferling RE: Proposal for co-management of Richardson Backcountry.
- September 8, 2010 Letter to Dave Bartesko from ACFN (Nicole Nicholls) RE: Lower Athabasca Regional Plan – Funding for Consultation Process
- September 28, 2010 submission of the joint ACFN and MCFN proposal to develop a Traditional Land and Resource Use Management Plan.
- September 30, 2010 Letter from Chief Allan Adam to Peter Watson (Deputy Minister Energy) and Jim Ellis (Deputy Minister Environment)
- October 5, 2010 Joint submission of ACFN and MCFN of technical reviews on the Management Frameworks for the Lower Athabasca Region
- October 19, 2010 ACFN-MCFN-CPDFN Submission on the RAC Vision document
- November 22, 2010 Letter from ACFN (Lisa King) to Dave Bartesko regarding funding agreement
- January 13, 2011 Letter from ACFN (Lisa King) to Dave Bartesko RE: Lower Athabasca Regional Plan - consultation process

- November 22, 2010 Submission of ACFN Advice to Government of Alberta Regarding the Lower Athabasca Regional Plan
- January 24, 2011 Submission of Co-management and the Lower Athabasca Regional Plan: Discussion Paper.
- February 28, 2011 Letter to Morris Seiferling from ACFN (Lisa King)
- March 29, 2011 Email from Lisa King to Morris Seiferling Re: Follow-up to ACFN's January 24<sup>th</sup> Comanagement Discussion Paper
- April 11, 2011 letter from MCFN (Melody Lepine) and ACFN (Lisa King) to Dave Bartesko Re: Response to April 5, 2011 release of draft LARP
- May 16, 2011 Letter from ACFN (Lisa King) and MCFN (Melody Lepine) to Dave Bartesko Re: Your letter dated May 3, 2011
- Email dated May 16, 2011 to Scott Milligan from Nicole Nicholls.
- May 27, 2011 Submission of ACFN's Traditional Use Studies for the Shell Jackpine Mine Expansion and Pierre River Mine Projects and Redclay Lake
- June 3, 2011 Joint submission of ACFN and MCFN regarding the draft Lower Athabasca Integrated Regional Plan

Clearly, it will take some time to consider all of these submissions (along with the others not listed here) in developing a summary.

In order for me to do a proper job of reviewing this and commenting on it, substantial revisions of what you have presented are required so that the key issues for ACFN are more clearly and accurately captured. I'm more than willing to help you in revising and restructuring this document so that is a more effective and accurate record of the last two years of ACFN's input, but this is a great deal of work and could not be completed by June 19. I do not want to hold up your process, but I do want to ensure that ACFN's concerns are accurately represented to decision-makers. It's unfortunate that Alberta has underestimated and under-resourced this critical phase and is now imposing impossible timelines on the First Nations. Is there some way that we could have a "place-holder" or something like that for additional "summary" for Cabinet? Or shall I just send all of our submissions directly to Cabinet?

Please let me know if we can work on a way forward together.

Thanks,

**Nicole Nicholls**

*Project Manager*

Athabasca Chipewyan First Nation

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**From:** Dave Bartesko [<mailto:Dave.Bartesko@gov.ab.ca>]

**Sent:** June-13-11 10:27 AM

**To:** [lisa.king@acfn.com](mailto:lisa.king@acfn.com); Nicole Nicholls

**Subject:** LARP Input Summary

Good Morning ,

As per our "First Nation Consultation Plan - Lower Athabasca Region", I am providing to you a GoA summary (not verbatim) of the input that you provided related to LARP for your validation. Any corrections or omissions must be sent back to me by end of day June 19, 2011. This individual summary will become part of a summary report of input provided by all LARP related aboriginal groups during the consultation process and will be submitted to Cabinet.

I want to thank you for your hard work, time and dedication in providing your input to GoA on LARP.

Thank you and have a good day.

<<Athabasca Chipewyan First Nation Individual Summary.docx>>

Dave Bartesko, RPFT

Senior Consultation Manager

Land Use Secretariat

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April 16, 2009

Mr. Dave Bartesko  
Land-use Framework  
Alberta Sustainable and Environmental Management  
9<sup>th</sup> Floor, 9915-108 Street, Petroleum Plaza, South Tower  
Edmonton, AB T5K 2G8

P: 780-422-4871  
F: 780-644-1034  
[Dave.Bartesko@gov.ab.ca](mailto:Dave.Bartesko@gov.ab.ca)

**RE: Lower Athabasca Regional Plan –  
Consultation with Athabasca Chipewyan First Nation**

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Dear Dave,

Please find enclosed the submissions of Athabasca Chipewyan First Nation regarding consultation on the Lower Athabasca Regional Plan. This submission consists of two documents:

- Athabasca Chipewyan First Nation Submission to Alberta Sustainable Resource Development Regarding Consultation on the Lower Athabasca Regional Plan; and
- Athabasca Chipewyan First Nation Questions to Alberta Regarding the Lower Athabasca Regional Plan.

We are very concerned about the lack of a First Nations consultation process on the LARP. We would like to arrange a meeting with you as soon as possible to discuss our concerns and questions raised in these submissions, and to discuss development of a consultation process, work plan and budget for our participation in the LARP. Given the importance of this matter, a prompt response would be appreciated.

Yours truly,

Lisa King  
Director, ACFN IRC

cc: Chief Allan Adam, Athabasca Chipewyan First Nation  
Minister Morton, Alberta Sustainable Resource Development  
Minister Renner, Alberta Environment  
Minister Knight, Alberta Energy

# Athabasca Chipewyan First Nation

## Submission to Alberta Sustainable Resource Development

### Regarding Consultation on the *Lower Athabasca Regional Plan*

April 16, 2009

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#### I. Introduction

The members of Athabasca Chipewyan First Nation (ACFN) hold rights that are protected by section 35 of the *Constitution Act, 1982*. The rights of ACFN include, but are not limited to, lands within the Regional Municipality of Wood Buffalo and the Lower Athabasca planning region. Since long before ACFN entered into Treaty, our people have lived and sustained themselves, their families and their community from the land and its bounty. The land provided not only for the people's physical well-being, but through the customary practices of making a living from, and caring for it, the land was integral our Denesuline culture and identity. Through maintaining our cultural, social, and spiritual connection to our Traditional Lands, ACFN has retained our unique Denesuline identity and culture. Our belief is that the land is alive and that it must be treated with respect, as should the waters that are its lifeblood, and the plants, fish, birds and animals that dwell within and upon the lands and waters.

“Northeastern Alberta has been the epicenter for economic growth in Alberta and Canada through development of the oil sands... [T]he environment and communities are under immense pressure from a variety of stakeholders, often with competing interests” (LUF 2008:45). Adverse cumulative effects on the ecological integrity of ACFN's Traditional Lands have already occurred as a result of industrialization of the region (CEMA 2008). Given the current level of existing impacts, and the high likelihood for adverse impacts to continue, the Crown has a legal and constitutional obligation to consult with ACFN and to accommodate our rights. In our view, Alberta must work together with us to ensure that our ability to exercise our constitutionally-protected rights is sustained now and for future generations. We note that ACFN is not just another stakeholder – in light of our constitutionally-protected rights, and the relationship between our cultural identity, well-being and traditional lands, ACFN's unique rights and interests must be given priority in land use planning and decision-making.

The First Nations of the Athabasca Tribal Council, including ACFN, have continued to communicate their concerns about Alberta's failure to properly take into account our constitutionally-protected rights in land use planning and project-specific decision-making. These concerns have been raised in various ways, including, but not limited to the following:

- ACFN's past participation in groups such as Cumulative Environmental Management Association (CEMA) and the Richardson Backcountry Access Management Planning Committee;
- ACFN's submissions on various project-specific applications, such as Imperial's Kearl Lake application and Synenco's Northern Light's application;
- ACFN's submissions to various Alberta Departments, such as the Department of Energy, the Department of Sustainable Resources (ASRD), and the Department of Aboriginal Affairs; on oil sands and other issues and most recently on CEMA SEWG's (2008) *Terrestrial Ecosystem Management Framework*;
- Submissions made by ACFN and other Treaty 8 First Nations to Alberta with respect to the Land Use Framework (LUF), especially the October 22, 2008 *ACFN proposal for Co-management of Richardson Backcountry*; and
- Mikisew Cree First Nation's submission (October 31, 2008) to ASRD, the *Joint Submissions of the Mikisew Cree First Nation and the Chipewyan Prairie Dene First Nation on Alberta's Land Use Framework* – we note that ACFN supports that joint submission and the recommendations contained therein.

The key issue for ACFN is to ensure social, economic and cultural sustainability within our Traditional Lands. This requires that our constitutionally-protected rights are properly considered and accommodated in any planning process. This is of particular concern with respect to the Lower Athabasca Regional Plan (LARP) contemplated under the Land-use Framework (LUF) and we would like to point out that ASRD has not responded to a number of questions and concerns that we have raised in respect of how our rights and interests will be accommodated in the LUF regional planning process specifically, and in other planning exercises and project-related issues generally.

## II. ACFN's Primary Concern and Objectives in Relation to Land Use Planning

Continuation of ACFN's constitutionally-protected rights depends on maintaining the ecological, socio-cultural and economic conditions that support the meaningful practice (as defined by ACFN) of those rights. As such, ACFN's primary concern in relation to land use planning is to ensure that those rights, and the necessary environmental conditions to support those rights, are properly and thoroughly taken into account so that they can be protected and/or accommodated. Our objective is not simply "mitigation" of ever-increasing impacts of industrialization. Our objective, as noted above, is to ensure the sustainability of our rights today and into the future.

Drawing from the joint Mikisew First Nation and Chipewyan Prairie Dene First Nation submission on the LUF, ACFN's objectives in regards to any land use planning undertaken within our traditional lands, including the Lower Athabasca planning region and the Regional Municipality of Wood Buffalo, include the following:

- To protect ACFN's constitutional rights now and into the future;
- To establish constraints on industrial activities in parts of our Traditional Lands;
- To slow or stop the further industrialization of our lands until there is adequate time and resources to evaluate the direct, indirect, and cumulative impacts of such industrial activities on our ability to exercise our rights and to determine the environmental conditions and resources necessary for the exercise of those rights.
- To ensure the legal enforceability of any land use plans through legislation, and accompanying regulations; and
- To strike a balance between development and protection of the ecological goods and services upon which our culture and rights depend. Striking such a balance must be based on proper and complete information of the sort set out in the joint MCFN-CPDFN submission, and on ensuring that the existence of tenures (granted without consultation with ACFN) does not automatically mean that development will take place on those tenures.

ACFN requests that this submission, including the concerns expressed herein, as well as the specific requests concerning the kinds of information we feel are necessary to include in the land-use planning process, be taken into account by the Lower Athabasca Regional Advisory Council in the preparation of the LARP and by the Land Use Secretariat and Ministers in regards to decision-making on the LARP. ACFN specifically requests confirmation from the Government of Alberta that our concerns will be taken into account and accommodated in the development of the Lower Athabasca Regional Plan (LARP). At a minimum, we seek consultation, through a process parallel to plan development, on the concerns we have raised through prior submissions to Alberta, on the concerns raised in this submission, and on other possible concerns raised in any future submissions. We are concerned that there is no consultation process for the LARP.

### III. The Relationship between Treaty & Aboriginal Rights and Land use Planning

It is imperative that Treaty and Aboriginal rights be considered and accommodated in any regional plan that forms the basis for land use decision-making and cumulative effects management in the Lower Athabasca Region. ACFN is not just another stakeholder. Our constitutionally-protected Treaty and Aboriginal rights derive from our cultural relationship with our traditional lands and we have a stewardship responsibility to these lands (ACFN 2008). Drawing from the Mikisew 2008 document, this responsibility includes the need to:

- Preserve the necessary ecological conditions, and a sufficient land base, to guarantee a meaningful rights to exercise traditional pursuits;
- Protect culturally sensitive and significant sites;

- Protect reserves and other lands (such as traditional lands and T.L.E. lands) and resources and the ability to maintain a healthy and self-sustaining community; and
- Be consulted and accommodated in a meaningful and timely fashion when lands are proposed to be taken up for development.

Any land use plan must acknowledge, respect and protect Treaty and Aboriginal Rights and the interests that such rights are meant to protect and any decisions that concern trade-offs of key aspects of Treaty and Aboriginal Rights require consultation above and beyond participation of First Nations representatives at a multi-stakeholder planning table. The determination of thresholds for exercise of Section 35 rights now and in the future should be a condition precedent to any trade-offs being made. It is crucial that those involved in the development of the LARP understand what environmental, social, economic and ecological conditions are necessary for the continued exercise of our rights and that this information be integrated into the planning process.

The ability to meaningfully practice our rights is dependent on a host of socio-cultural, ecological and economic aspects (collectively, “environmental aspects”). It is necessary to identify and address these environmental aspects and assess the indirect, direct, and cumulative impact of any eventual land use plan on them. This must begin with a proper understanding of the Aboriginal perspective of those rights and what is needed to sustain them. This must be a prerequisite to any planning process or at least a fundamental part of it. A narrow focus on indicators of ecological integrity (e.g., CEMA 2008) and on activities as opposed to constitutionally-protected rights (as in the current environmental assessment process), is an invitation to ignore or downplay our rights and the environmental conditions necessary to sustain those rights. This is problematic because it is our constitutionally-protected rights that are at stake, not just the activities and environmental aspects related to those rights.

We have attached a copy of the joint MCFN-CPDFN submissions on the LUF (see Attachment “A”). “Appendix A” (pp. 8-14) of that document is meant to develop the kinds of information that we feel is necessary for Alberta to fully and properly understand our rights and the lands and resources needed to sustain those rights. This information will help to go beyond the current narrow approach to defining our rights and to gathering information to inform decision-making about impacts on those rights. This information is necessary for creating the LARP, and, to any future decisions on whether or not to permit further development in parts of our Traditional Lands. We look forward to discussing these questions and issues in the development of the LARP and wish to know how Alberta will take into account these questions and information in that process.

#### IV. Key Concern: is Energy Development a “Given”?

ACFN is very concerned that the LARP will be nothing more than a means to justify bitumen production as an end unto itself. We note, in particular, that the LUF states:

Alberta’s current regulatory system is based on a project-by-project approval and mitigation of the adverse effects of each project. Until now, the approach has been to control the impact of each project. While this may be acceptable for low levels of development, it does not adequately address the cumulative effects of all activities under the current pace of development.

Cumulative effects cannot be managed as an “add-on” to existing management approaches; nor is it about shutting down development. It is about anticipating future pressures and establishing limits; *not limits on new economic development, but limits on the effects of this development on the air, land, water and biodiversity of the affected region. Within these limits, industry would be encouraged to innovate in order to maximize economic opportunity.* (p. 31, emphasis added)

We are concerned that the planning approach of Alberta is not to ask what we consider to be a fundamental question: what is required in terms of land, air, water, ecosystem and species (quality and quantity) to allow us to exercise our rights now and into the future? Instead, the planning process envisioned by Alberta does not appear to even contemplate curbs on development in certain areas. That approach is fundamentally at odds with what is needed to preserve our rights, particularly since Alberta has already issued tenures throughout those parts of our Traditional Territory where it is still possible to exercise our rights. We wish to know whether a possible outcome of the process is that, based on the information developed in the process, certain areas will be off limits for further development. If that is a possible outcome, we also wish to know whether Alberta will buy back leases that have already been issued in those areas?

If the focus of the LARP process is on the continuation of ever-increasing development, irrespective of the potential and actual impacts of that development on our rights, we question the very integrity of the process. As such, ACFN would consider any such process to be meaningless, especially in consideration of the fact that a strategic land use decision, such as the one implied by this principle, would have dramatic effects on the ability of First Nations in the region to practice their constitutionally-protected Treaty and Aboriginal Rights. Because of the continued potential for industrial development to adversely impact and infringe our rights, we require deep consultation – not simply a chance to have input into the planning process as is afforded to “stakeholders”.

#### V. Requirements for Meaningful Consultation in Respect to the LARP

Points 1 through 6 on pages 3 to 7 of the *Joint Submissions of the Mikisew Cree First Nation and the Chipewyan Prairie Dene First Nation on Alberta’s Land Use Framework* (October 31, 2008), lays out issues that must be addressed in order for consultation on the

LARP to be meaningful. We ask Alberta to work with us to address those points and we wish to emphasize that we do not see how the LARP could be developed absent this information. We ask for confirmation as to whether or not Alberta agrees that such information will be developed as part of the LARP and we further ask Alberta how such information will be integrated into the LARP? We also note that developing this information likely will take longer than the one-year timeline for the LARP. How can Alberta assure us that while we undertake this process that parts of our Traditional Lands have not, and will not reach or exceed thresholds at which development should be stopped or slowed? We also note that our First Nation and other Alberta First Nations have been asking for this sort of information to be developed for some time. The fact that Alberta has not worked with us and industry to develop this kind of information in the past should not be used as an excuse not to do so now, such as on the basis that it will “take too long.”

#### VI. Consultation Process

To our knowledge, Alberta has not established a First Nations consultation process for the LARP. We ask again that Alberta work with us, including establishing work plans, time lines and budgets, to fully determine what is required for ACFN to exercise our rights in the face of ongoing industrialization of our Traditional Lands. The September 2008 Draft Consultation Guidelines that we submitted to the Government of Alberta through our participation in the Protocol Working Group lay out our expectations with regards to meaningful consultation generally. A copy is attached for your reference (Attachment “B”). We are prepared to work with your Government to design consultation guidelines which deal specifically with development of the LARP, including a budget and a work plan for consultation. Is Alberta prepared to negotiate a consultation process for our participation in the LARP?

Attachment "A"

Joint Submissions of the Mikisew Cree First Nation and the  
Chipewyan Prairie Dene First Nation on Alberta's Land Use  
Framework

**JOINT SUBMISSIONS OF THE MIKISEW CREE FIRST NATION  
AND THE CHIPEWYAN PRAIRIE DENE FIRST NATION (“THE FIRST NATIONS”  
AND “OUR FIRST NATIONS”) ON  
ALBERTA’S LAND USE FRAMEWORK (“LUF”)**

**INTRODUCTION**

We begin by noting that the First Nations have, on many occasions, expressed their concerns about the failure of Alberta to properly take into account the First Nations’ constitutionally-protected rights in respect of land use planning generally and in respect of approvals for various industrial activities in particular. Those concerns have been raised in various ways including, without limitation:

1. Through the First Nations’ past participation in groups such as CEMA;
2. In respect of various project-related applications, including the MEG 3 application and Total’s Joslyn North application;
3. As part of the Athabasca Tribal Council (“ATC”) submissions to SRD Minister Morton in December, 2007<sup>1</sup>;
4. Through submissions made by the Treaty 8 First Nations of Alberta to Alberta in respect of the LUF;

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<sup>1</sup> At this meeting, the ATC First Nations set out their vision for the LUF. In our view, irrespective of whether or not all of our concerns were integrated into the LUF (which they were not), the Northeast Regional Plan must take into account the points raised in our presentation to Minister Morton as well as other items set out in this presentation. With respect to Treaty Rights, in particular, our presentation to Minister Morton made it clear that:

- **Treaty Rights** and interests must be acknowledged, respected and protected.  
By virtue of the relationship that First Nation peoples have with traditional land, we unlike other stakeholders, have Treaty and Aboriginal Rights and Claims and have stewardship responsibility to these lands. This includes the [need to]:
  - Preserve sufficient lands, flora and fauna to guarantee a meaningful right to exercise traditional pursuits;
  - Protect historical and culturally important sites;
  - Protect reserves and other lands (such as traditional lands and T.L.E. lands) and resources and the ability to maintain a healthy and self-sustaining community;
  - Treaty rights include the right to be consulted and accommodated in a meaningful and timely way when lands are taken up for development.

**We wish to know how the Northeast Regional Plan would be related to any project-specific referral/consultation processes. In other words, would decision makers within Alberta as well as the ERCB or other regulatory bodies be bound by that Plan?**

5. With respect to Chipewyan Prairie in particular, in consultations in respect of the MEG 3 application – including a September 5, 2008 consultation meeting, at which Mr. Bartesko was present.
6. Through a letter that Chief Janvier sent to various Alberta Government Ministers in June, 2008, in which the Chief set out a number of concerns about the LUF. We note that at the above-mentioned consultation meeting, you stated that you had seen this letter. Mikisew Cree First Nation has many of the same concerns as those expressed in Chief Janvier’s letter.

The key issue for the First Nations is to ensure that in any planning process, the constitutionally-protected rights of the First Nations are properly considered and accommodated. This is of particular concern, as noted in more detail below, in respect of the development of the Northeast Alberta Regional Plan (“the Plan”). We have a real concern that work on the Plan is already taking place without proper consultation with our First Nations and without Alberta taking the necessary time to understand our concerns and how those concerns ought to be integrated into the Plan.

In Chief Janvier’s letter to the Ministers discussed earlier, a number of our concerns about the LUF were set out. Since you already have that letter, we do not propose to repeat all of those points. Instead, we wish to focus more particularly on the kinds of issues that we wish to be consulted on as the Plan is developed.

### **Concerns of the First Nations in Relation to the LUF and the Plan**

In general terms, our objective is to ensure that the LUF and the Plan accomplish at least the following:

1. Protection of our constitutional rights now and for the future;
2. The establishment of constraints on industrial development in parts of our Traditional Territories;
3. Slowing down or stopping industrial development until there is adequate time and resources to evaluate the direct, indirect and cumulative impacts of such development on our ability to exercise our rights and to determine the environmental conditions and resources necessary for the exercise of those rights;
4. That there be legislation/regulations in place to “give teeth” to the LUF and Plan; and
5. That there be a proper balance struck between development and protection of the environment and the resources on which we rely. That balance must be struck based on proper and full information of the sort set out in these Submissions and it cannot be assumed in the Plan that the existence of tenures (granted without consultation with our First Nations) automatically means that development will take place on those tenures.

The approach set out in these Submissions is meant to develop the kinds of information that we feel is necessary for Alberta to fully and properly understand our rights and the lands and resources needed to sustain those rights. Development of the Plan and, ultimately, decisions

about whether or not to permit further development in parts of our Traditional Territories is, in our view, contingent on development of the kinds of information set out in these Submissions. A narrow approach to defining our rights and to the gathering of information to inform decision making about impacts on those rights, which is what we see happening at present, will not suffice.

The LUF makes it clear that a priority for Alberta is to develop the Plan. It is unclear to us what the timeline is for development of the Plan. **We wish to know what that timeline is and how Alberta proposes to consult with us in relation to the development of the Plan so that our issues and concerns are properly accommodated in relation to the Plan.** We want to ensure that the Plan is not rushed through. It is our view that such consultation must be between Alberta and our First Nations, and not through a larger stakeholder process. We have seen those kinds of multi-stakeholder processes ignore or minimize our rights. This is one of the reasons why our First Nations withdrew from CEMA and some other multi-stakeholder organizations.

As noted above, we have tried in various ways to have our concerns dealt with by Alberta to ensure that we have a land and resource base on which we can continue to exercise our rights. Those concerns have been ignored or pushed to the side in various ways: we have been told that those concerns cannot be addressed through terms of reference for environmental assessments because those terms of reference are “conceptual in nature”; we have been told that those concerns cannot be dealt with through specific project referrals because assessments deal with activities and not rights; we have been told that regulators cannot consult with us on our issues because they are quasi-judicial; and we have been told that Alberta will deal with our concerns in “parallel processes”, yet those processes never materialize and Alberta never commits to dealing with our specific issues. On this point in particular, Alberta has not answered most of the questions that Chipewyan Prairie posed at the September 5<sup>th</sup> consultation meeting – which go to the heart of our concerns. Moreover, Alberta has not yet answered any of the questions that Chief Marcel posed to Minister Renner in her August, 2008 letter concerning the Joslyn North Project. **Those concerns cannot be shunted aside as they have been in the past. We seek your confirmation that our concerns will be accommodated in the development of the Plan. At a minimum, we seek consultation, prior to the development of the Plan, on the issues raised in those letters.**

At the September 5th meeting, after listening to the concerns of the Chipewyan Prairie Dene First Nation about the MEG 3 Project, Mr. Bartesko stated that he had “learned a lot... today about the type of consultations” that the First Nation wishes to carry out in respect of the LUF. We take this as a positive sign. The main points that Chipewyan Prairie raised at the meeting, with which the Mikisew Cree First Nation agrees and on which we wish to consult prior to the finalization of the Plan, include:

1. Our First Nations have constitutionally-protected **rights** throughout our Traditional Territories. It has been made clear to us on many occasions that the environmental assessment process mandated by the *Environmental Protection and Enhancement Act* (“EPEA”) is not directed at our rights, but at “activities.” While we disagree with that approach, the point we wish to make here is that we expect that the Plan will focus on our **rights**. In other words, because environmental assessments do not focus on those rights, it is all the more important that there be a rights-based focus in the development of the Plan. We are concerned that the LUF as presently constituted minimizes our rights in a

number of ways. For example, our rights under the Constitution are not limited to “sacred cultural sites” or a narrow Alberta-driven definition. One of the first tasks in any consultation between our First Nations and Alberta in respect of the Plan must be for the parties to have a clear understanding of what those rights are.

2. We wish to ensure that Alberta works with us to fully understand the nature of our rights, our preferred means and places of exercising those rights, and what is required in terms of a land and resource base for the exercise of those rights. As part of this exercise, it is necessary for Alberta to work with us to:
  - (a) Determine the extent to which existing industrial development within our Traditional Territories has already adversely affected our ability to exercise our rights<sup>2</sup>;
  - (b) How planned/reasonably foreseeable development (some of which, as it applies to Chipewyan Prairie, was outlined to you in the September 5<sup>th</sup> meeting) has the potential to further adversely affect our ability to exercise our rights<sup>3</sup>;

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<sup>2</sup> Some of the most obvious impacts of such development include:

- The direct footprint of projects is often quite large and restricts the ability of our First Nations to exercise our rights on that footprint (not to mention the cumulative and indirect impacts of development that further limit our ability to exercise our rights)
- Wildlife movement may be impacted by the infrastructure related to such developments, such as transmission lines, roads, construction and increased activity related thereto
- Wildlife presence may be reduced by habitat loss and avoidance due to noise and barriers
- Wildlife mortality may increase from increased predation, increased traffic and more people
- The absence of animals, along with potential access restrictions, such as gates, means that hunting, fishing, trapping and gathering will likely be reduced in the area of development and members of our First Nations will likely have to travel further to hunt, fish, trap and gather, which can cause undue hardship in terms of time and money spent to do these things
- Fish, wildlife and migratory birds may be adversely affected by air and water quality and quantity
- Plants may be impacted, which may adversely effect the ability to gather medicines, berries and other traditional plant uses
- Oil sands and other industrial activities, by themselves and in combination with one another have already resulted in adverse social, cultural, environmental and economic impacts on our First Nations, as well as adverse impacts on human and animal health
- There have already been adverse impacts of such development on air quality, water quality, plants, animals, fish and the ecosystem on which our First Nations rely
- Access to traditional opportunities is restricted by residential and commercial development created to support the massive industrial development in the region. Competition for resources from occasional hunters and recreational users is already very significant.

<sup>3</sup> As has been made clear to Alberta in the MEG 3 and Joslyn North projects (and elsewhere), our Traditional Territories are already inundated with industrial development such as forestry, pipelines, seismic activity, transmission lines and oil and gas. There are large oil sands developments that either exist or are planned within our Traditional Territories which have adversely affected and will continue to adversely affect our rights and interests. The Plan must take into account this existing and planned development in terms of setting thresholds for further development and in the establishment of protected zones in which we can exercise our rights.

- (c) Assess the impact of the grants of tenure throughout our Traditional Territories on our ability to exercise our rights; and
- (d) Identify the lands and resources which our First Nations require to sustain ourselves now and into the future, including identification of protected areas.

These items will be discussed in more detail below. The key point for now is that, in our view, the Plan cannot be developed in a vacuum, as though we have not already paid dearly for existing development within our Traditional Territories and the impacts of that development on our ability to exercise our rights and sustain ourselves from our lands. We need to work together, including establishing work plans, time lines and budgets, to fully determine what is required for us to exercise our rights in the face of ongoing development. We do not see how the Plan can be developed absent this information. **Do you agree that such information must be developed? How will such information be integrated into the Plan?**

3. We wish to work with Alberta to establish local and regional thresholds and benchmarks in the Plan for air and water quality, wildlife/wildlife habitat, fish, plants, etc. Those thresholds help to determine the carrying capacity of the lands and resources on which we rely for the exercise of our rights. It is crucial that the Plan establish legally-enforceable thresholds/measures/targets. Unfortunately, Alberta has a history of committing to setting targets and then not doing so. The lack of regional targets is acknowledged in the LUF. It is our understanding that precedents exist for establishing regional targets/limits, such as in the Muskwa-Kechika (B.C.) and the Deh Cho Region (NWT).
4. With respect to the assessment of cumulative impacts, we wish to work with Alberta to ensure that the direct, indirect and cumulative impacts of existing, planned and reasonably foreseeable residential, commercial and industrial development is assessed on our ability to exercise our rights. Such impacts include social, cultural, environmental<sup>4</sup> and economic impacts of industrial development on our rights and on our communities. We are concerned that under its present approach, Alberta limits the assessment of cumulative impacts such as by employing a narrow focus on what projects must be assessed and by ignoring a number of smaller projects which do not, themselves, trigger an assessment but which nonetheless further affect our rights (seismic activity, camps, power lines, roads, pipelines), etc. This narrow focus on specific projects should not be used for the Plan. Instead, we suggest that aerial “disturbance maps” be used to show the current extent of development and that a broad, mutually agreed-upon definition of “reasonably foreseeable” development be adopted, one which is not based on EPEA or other Alberta legislation. To be meaningful, the assessment of cumulative impacts must be specifically directed at the impacts that matter most to us – on the key lands and resources necessary for us to exercise our rights now and in the future.
5. The LUF says that Alberta will continue to support TUS. While our First Nations regularly participate in the gathering of TUS, in our view, general or even project-

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<sup>4</sup> In our view, “environment” must be defined and construed broadly and includes the direct, indirect and cumulative impacts of industrial activities on our rights and interests, and not just site-specific impacts. This would include, for example, negative or derivative impacts and impacts beyond Reserves and culturally-important sites – and must be based on our historic and current uses of our Traditional Territories.

specific TUS information is not a substitute for the kinds of broad information necessary for development of the Plan. To fully understand our resource and land needs, it is necessary to:

- (a) Develop a pre-disturbance baseline of information concerning our use of lands and resources and to use that information in developing targets, measures and thresholds for the items in (3) above. We note that a pre-disturbance baseline has now been required by the JRP for the Total Joslyn North Project, which we take as a positive sign. A pre-disturbance baseline allows for the presentation of information on the use of lands and resources by our First Nations prior to such development. The use of lands at that time can then be compared against the impacts of development over time on our First Nations' ability to exercise our rights. In our view, this presents a more clear picture of the impacts of development on our First Nations and what is necessary to preserve what is left of our ability to exercise our rights. We have expressed our concern in the past about "post-disturbance" baseline information because such a baseline minimizes the impacts of any new industrial development on our rights – we cannot accept an approach which essentially says "your lands are already disturbed, so what difference would another project make."
  - (b) In our view, we need to work together with Alberta to jointly collect and analyze the necessary pre-disturbance baseline information including working together to develop timelines, work plans and budgets to obtain this information. Again, this is necessary so that Alberta can use this information to fully understand the nature of our rights, the impacts of current development and proposed development on our rights, and the resources on which we rely to carry out those rights now and into the future. Those information requirements are set out in Appendix A to these Submissions.
  - (c) Develop a Traditional Resource Use **Plan** or **Plans** (not simply a TUS) together with our First Nations which would identify traditionally used species (vegetation, fish, wildlife) by our First Nation, assess the baseline levels for those resources and set benchmarks for protection of those resources to preserve our ability to exercise our rights. The collection of information would be based, among other things, on the information in (a) and (b) above and in Appendix "A" of these Submissions. In our view, such a Plan(s) would provide a meaningful and sound foundation for assessment of impacts, mitigation and reclamation strategies in relation to specific projects as well as in respect of decision making and the development of the Northeast Regional Plan as it relates to our First Nations' specific interests and concerns.
  - (d) Develop a Land Use Plan that guides management of future development activities within our traditional territory, based on our First Nation's vision of our land and future land use
6. Developing this information will take time – longer than a one-year framework for development of the Plan. We have also stated, repeatedly, that there should be a moratorium on further development until this information is gathered, analyzed, and

integrated into the Plan. We are concerned that the LUF, at present, seems to take an approach which does not call for a moratorium or even a slowing-down of development. Again, without proper information about the exercise of our rights, how can regulators or Alberta know whether or not parts of our Traditional Territories have already reached or exceeded the point at which development should be stopped or slowed down? **Does Alberta contemplate buying back certain leases already issued to companies if the Plan determines that specific parts of our Traditional Territories should not see further industrial development? Is that a possible means of accommodating our rights?**

**APPENDIX “A”**

**INFORMATION REQUIREMENTS NECESSARY TO UNDERSTAND THE RIGHTS OF THE FIRST NATIONS AND TO ASSESS THE POTENTIAL AND ACTUAL IMPACTS OF DEVELOPMENT ON THOSE RIGHTS IN RELATION TO DEVELOPMENT OF THE LUF AND THE PLAN**

We wish to make it clear that the information contained herein is preliminary in nature. We need input from experts to fully and properly determine the precise nature of the information required to assess impacts of development on our rights.

**A. General Information Requirements**

1. Assessment of uses of the lands contained within the Plan area by all of the ATC First Nations, Métis Groups and other non-Aboriginal peoples within the area. There is already growing pressure on our Traditional Territories from various kinds of land use – exploration, industrial development, camps, recreational and commercial resource use, use of lands for traditional purposes by our First Nations and other First Nations, to name some examples. As more of our Traditional Territories are used for development and other activities, this puts more pressure on those parts of our Traditional Territories that have not been developed.
2. As stated at p. 4 of these Submissions, the following kinds of information must be collected and analyzed as part of the Plan:
  - (a) The extent to which existing industrial development within our Traditional Territories has already adversely affected our ability to exercise our rights;
  - (b) How planned/reasonably foreseeable development has the potential to further adversely affect our ability to exercise our rights;
  - (c) The impact of the grants of tenure throughout our Traditional Territories on our ability to exercise our rights; and
  - (d) Identification of the lands and resources which our First Nations require to sustain ourselves now and into the future, including identification of protected areas.

**B. Baseline Information to Inform Development of the LUF and the Plan**

1. In our view, proper baseline information is needed to understand the potential direct, indirect and cumulative impacts of existing, planned and reasonably foreseeable industrial development on our ability to exercise our rights. We regard 1965, when the impacts of intensive oil sands development began to be felt

in our Traditional Territories, as the data needed to establish the baseline data. The following information is required to inform the baseline:

- (a) Quantitative Information on our Traditional Territories:
  - (i) Traditional Territory study area<sup>5</sup> and size in miles<sup>2</sup> and hecatres<sup>2</sup>
  - (ii) Fixed Sites of Cabins, Camps, Communities, Historical Trails, Graves, Trap Lines, Spiritual sites (locations to be kept private unless authorized by the First Nations) within Traditional Territories
  - (iii) Current and past potable water sources and infrastructure.
  - (iv) Amount of land within Traditional Territory already taken up for development (energy, forestry, agriculture, pipelines, project footprints and related infrastructure, seismic activity, etc.) and analysis of how this affects traditional cycles of use.
  - (v) Traditional activities potentially impacted by reasonably foreseeable industrial development territory.
- (b) Quantitative and qualitative information on Current and Historical Traditional Uses (hunting, fishing, plants and medicines, spiritual use):
  - (i) Hunting
    - (A) Main species hunted for food and domestic purposes and the uses made of those species;
    - (B) Locations and access routes currently used for hunting main species
    - (C) Changes from 40, 20 and 10 years ago in locations and access routes used and costs associated with hunting main species based on such changes, both qualitative and quantitative
    - (D) Estimated amount of current consumption and percentage of total meat intake from hunted animals.

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<sup>5</sup> Traditional territories of historically nomadic First Nations have extended vast distances and are very difficult to limit or measure in conventional terms. Over time traditional activities have focused in various areas associated with camps, summer villages and central areas. One can define a study area which in general will encompass 85 to 95 percent of traditional activities based upon time spent. This traditional study area can be used as a baseline area for the purposes of planning and study.

- (E) Estimate of change in amount of hunted meat as a percentage of total meat consumed from 40, 20 and 10 years ago
- (c) Fishing
  - (i) Main species fished for food and domestic purposes and uses made of those species
  - (ii) Locations currently used for fishing main species
  - (iii) Changes from 40, 20 and 10 years ago in locations used for fishing main species and costs associated with such changes, both qualitative and quantitative
  - (iv) Estimated amount of current consumption and percentage of total fish intake from fishing
  - (v) Estimate of change in amount of fish as a percentage of total fish consumed from 40, 20 and 10 years ago.
- (d) Gathering Plants and Medicines
  - (i) Main species gathered and uses made thereof
  - (ii) Locations currently used for gathering main species
  - (iii) Changes from 40, 20 and 10 years ago in locations used for gathering main species and costs associated with those changes
  - (iv) Changes in frequency of gathering activities.
- (e) Spiritual and Cultural Use
  - (i) Locations currently used for spiritual and cultural practices (locations to remain confidential unless disclosure is authorized by the First Nations)
  - (ii) Changes in location from 40, 20 and 10 years ago and costs associated with those changes, both qualitative and quantitative
- (f) Traditional Economic Pursuits
  - (i) Animals, plants, medicines used for barter or trade
  - (ii) Changes in bartering and trading from 40, 20 and 10 years ago and reasons for change
  - (iii) Estimated cost of purchasing goods previously gathered, hunted, fished, or traded or bartered.

- (g) Traditional Resource Pursuits
  - (i) Current forest and mineral resources gathered and used.
  - (ii) Changes in forest and mineral resources gathered and used from 40, 20 and 10 years ago.
- (h) Socio-Economic Information
  - (i) Current demographics - age, family units, education, sex, private sector employment, FN public sector employment, self-employment)
  - (ii) Changes in demographics from 40, 20 and 10 years ago
  - (iii) Predicted demographics in 10 years based on current trends
- (i) Income
  - (i) Amount and sources (trapping, wage employment, etc.) of income
  - (ii) Changes in amounts and sources of income from 40, 20 and 10 years ago
  - (iii) Number and percentage of individuals and families receiving social assistance
  - (iv) Changes in number and percent of social assistance recipients from 40, 20 and 10 years ago.
- (j) Expenditures
  - (i) Expenditures on food, housing, travel and recreation
  - (ii) Changes in expenditures from 40, 20 and 10 years ago
  - (iii) Resource Sector Employment and Income (energy, forestry, agriculture, other)
  - (iv) Current number of First Nation embers employed in resource sector
  - (v) Changes in number of people employed in resource sector from 40, 20 and 10 years ago
- (k) Health Information:
  - (i) First Nation health problems (including cancer and respiratory illnesses) by age and sex

- (ii) Changes in health problems from 40, 20 and 10 years ago
- (iii) Deaths (ages, causes)
- (iv) Changes in causes of deaths from 40, 20 and 10 years ago
- (v) Health problems and causes of death compared to regional population

### C. Cumulative Impacts

As noted earlier, Alberta assess the cumulative effects of development rather than the cumulative impacts of development and it does so from a very limited and narrow standpoint. In our view, this results in flawed or incomplete predictions. Information required to effectively assess the cumulative impacts of existing, planned and reasonably foreseeable development and their significance on the ability of the First Nations to exercise their rights now and into the future is often missing from this narrow Alberta focus. For example, companies are not required to assess things such as exploration and winter drilling activities, seismic activity, and forestry or parts thereof. We are simply not prepared to accept Alberta's narrow, legislated definition of "cumulative effects" in the development of the Plan. What is needed is a proper study of regional cumulative impacts and not narrow, project-specific effects.

In addition to properly identifying the existing, planned and reasonably foreseeable industrial development that must be assessed in a cumulative impacts assessment, it is also necessary to include in such assessments:

- The full footprint of the existing and future projects at issue
- Cut-blocks and linear developments such as roads, pipelines and power lines, including the impacts of same<sup>6</sup>

Additional information required to properly assess the cumulative impacts of development on our rights includes:

1. Cumulative Impact on our Traditional Territories and their Uses
  - (a) Amount (quantity and percentage) of potential oil sands deposits within our Traditional Territories
  - (b) Amount of land (quantity and percentage) currently leased for oil sands exploration within our Traditional Territories
  - (c) Percentage of oil sands leases developed in our Traditional Territories in past 10, 20, 30, and 40 year increments

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<sup>6</sup> For example, it is known that linear developments including seismic lines and pipelines provide open access that is used by ATVs for decades after they have been constructed. This indicates that there will be long-lasting effects of these developments, much past the closure scenarios indicated in many of the existing project-specific cumulative effects studies. These effects are therefore cumulative and must be included as part of proper information gathering.

- (d) Amount of land within our Traditional Territories potentially impacted by other oil sands developments (reasonably foreseeable development and not simply applied-for projects)
  - (e) Amount of land within our Traditional Territories already taken up for other non-oil sands developments (i.e. converted from natural vegetation)
  - (f) Amount of and within our Traditional Territories that is planned/reasonably foreseeable to be taken up by non-oil sands development
  - (g) Amount of our Traditional Territories lost to Traditional Uses because of direct and indirect impacts of development
2. Impacts of Forestry
- (a) Forest tenure holders in our Traditional Territories
  - (b) Size of forest tenures in our Traditional Territories
  - (c) Estimated size of area of direct and indirect disturbance to wildlife relied upon by our First Nations within our Traditional Territories
3. Linear Corridors
- (a) Identification of all linear corridors (pipelines, transmission lines, roads, seismic lines) in Project area.
  - (b) Estimated size of area of direct and indirect disturbance to wildlife relied upon by our First Nations within our Traditional Territories
4. Other tenure holders
- (a) Identification of all other tenure holders in the Project area including exploration leases.
  - (b) Size of area of held by other tenure holders in our Traditional Territories
5. Reasonably Foreseeable Future Developments
- (a) The identification of all planned and reasonably foreseeable industrial activities within our Traditional Territories
  - (b) The infrastructure required to serve the future developments.
  - (c) The number of access roads, and size of accessible area, for all future developments, including exploration, based upon current averages.
6. Other Information

- (a) Impacts of climate change within the area of the Plan/within our Traditional Territories
- (b) To the extent that Alberta or companies are of the view that there are other viable places within which our Traditional Territories outside of existing, planned or reasonably foreseeable project areas where we can meaningfully and reasonably exercise their rights, there is a need for information and analysis to support those views

## Attachment "B"

### Consultation Guidelines

September 21, 2008

**CONSULTATION GUIDELINES FOR THE FIRST NATIONS OF THE  
ATHABASCA TRIBAL COUNCIL**

**INTRODUCTION**

Northeastern Alberta, particularly the Athabasca Oil Sands Region, is experiencing unprecedented growth from renewable and nonrenewable resource development, predominately oil sands development. Without engaging in consultation with the First Nations, Alberta has granted oil sands leases covering over 49,000 square kilometers and there are over 70 oil sands projects underway. Existing projects have resulted in 1000 square km<sup>2</sup> being mined and another 1000 km<sup>2</sup> taken up for SAGD projects. The amount of land directly impacted by oil sands mining development is expected to at least triple in the next ten years. Timber harvesting, limestone mining and uranium exploration are examples of other land use pressures affecting the area. The region is also being impacted by population growth, increased infrastructure development, and more intensive land use for recreation and other purposes.

The Impacts of this growth and development on the constitutionally-protected rights of the First Nations in the region is of concern to the Parties.

On May 21, 2008, the Government of Alberta released its ***Draft Land Use Framework***. Among other things, the Framework acknowledges that Alberta is facing an environmental “tipping point”, that the “current land management system...risks being overwhelmed by the scope and pace of activity”; that “Alberta does not currently have formalized regional-level planning” in the northeast; and that Alberta’s “project-by-project” approach to controlling the impacts of development “does not adequately address the cumulative effects of all activities under the current pace of development.”

In recognition of these unique circumstances, the five First Nations comprising the Athabasca Tribal Council and Alberta have agreed to develop Consultation Guidelines specific to this region and these First Nations, to address Impacts on the First Nations.

These Guidelines will supersede any *Consultation Guidelines* that have been or may be developed by any ministry, department or agency of the Government of Alberta that pertain to the Athabasca Region

## **I. DEFINITIONS**

ABORIGINAL AND TREATY RIGHTS means, for purposes of these Guidelines, the rights of a First Nation under the Alberta Schedule to the *Constitution Act*, 1930 (also known as the Natural Resources Transfer Agreement), Treaty 8 or under section 35 of the *Constitution Act*, 1982.

ACCOMMODATE, ACCOMMODATES, ACCOMMODATION and ACCOMMODATED means reconciliation, adjustment or adaptation; or a compromise and may include a decision to reject a Proposal, a delay in the regulatory approval of a Proposal or a delay in the implementation of a Proposal, if approved, or a decision to delay or a refusal to issue a Disposition.

CUMULATIVE EFFECTS means the changes to the local and regional environment caused by all past, present, and reasonably foreseeable future human activities and includes the potential social, cultural, health, economic and environmental impacts of these activities on Aboriginal and Treaty Rights and Rights and Traditional Uses

CONSULT AND CONSULTATION means the process by which Alberta consults and where appropriate, Accommodates a First Nation in accordance with the law and these Guidelines.

COMMUNITY PROTOCOL means a protocol for communication and Consultation best practices between a First Nation and Alberta as appended to these Guidelines.

DISPOSITION or DISPOSITIONS includes any disposition as defined in the ***Public Lands Act*** and also includes the grant of an estate or interest in minerals as defined in the ***Mines and Minerals Act***.

FIRST NATION means the Chipewyan Prairie Dene First Nation, the Fort McMurray No. 468 First Nation, the Fort McKay First Nation, the Athabasca Chipewyan First Nation and the Mikisew Cree First Nation; collectively the "First Nations".

FIRST NATION LEADERSHIP means the elected Chief and Council of the First Nation.

IMPACT or IMPACTS are potential adverse effects or impacts on Treaty and Aboriginal rights and/or Rights and Traditional Uses, including Cumulative Effects.

INDUSTRY or INDUSTRY PROPONENT means a person other than government that makes a Proposal.

INDUSTRY RELATIONS CORPORATION (IRC) means the corporation or organization that each First Nation has created to manage the First Nations relations, including Consultation with Alberta, Canada and Industry.

INFRINGEMENT (of a Treaty or Aboriginal Right) means an interference or limitation upon these rights which is unreasonable, imposes undue hardship or denies the holders of the rights their preferred means of exercising the right.

JUSTIFICATION means the legal criteria necessary to justify an Infringement of a Treaty or Aboriginal Right.

MITIGATE or MITIGATION means to alleviate, reduce the severity of, or to moderate.

NOTICE AREA means the area set out in the map attached hereto as Appendix "A", and constitutes the geographical area in which each First Nation will receive notice of any Proposal under these Guidelines<sup>1</sup>

PARTIES mean Alberta and the First Nations.

PROPONENT means a person who makes a Proposal and may include Alberta, as the context requires

PROPOSAL or PROPOSALS means a proposed decision, project, policy, initiative, agreement, Disposition, statutory or regulatory approval, license, permit or other authorization, and includes any change in or transfer of ownership in respect of a Disposition

RIGHTS AND TRADITIONAL USES includes such uses of unoccupied Crown lands and lands to which there is a right of access such as burial grounds, gathering sites, and historic or ceremonial locations, and the existing constitutionally protected rights of the First Nations.

TRADITIONAL ENVIRONMENTAL KNOWLEDGE (TEK) means local environmental knowledge and beliefs of First Nation peoples transmitted through oral tradition and first hand observation based on their long-term use or occupation of their traditional territory and living in close contact with nature. It includes a system of classification, a set of empirical observations about the local environment, a system of self management that governs sustainable resource use, and an understanding of the relationships of living beings (including humans) with one another and their environment.

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<sup>1</sup>The Notice Area is for purposes of these Guidelines only and may be changed by a First Nation to reflect additional portions of a First Nation's Traditional Territory if the First Nation determines that it wishes to be consulted in a larger portion of that Traditional Territory.

TRADITIONAL TERRITORY means the lands which the First Nations have historically occupied or used and currently occupy or use in Northeastern Alberta.

## **II. PURPOSE OF CONSULTATION**

The overriding purposes of these Guidelines are:

- (a) to cultivate mutually beneficial relationships and to reconcile the sovereignty of the Crown with the pre-existence of the First Nations and the prior occupation and governance of the Athabasca Region by the First Nations. Consultation is more than a process for receiving the views of the First Nations. It is a meaningful process to achieve an end – preserving rights and reconciling interests; and
- (b) to ensure that the First Nations are able to carry out their preferred means of exercising their Treaty and Aboriginal rights now and in the future within their Traditional Territories.

### **Adverse Impacts**

Where Impacts have occurred or may occur, the goal of Consultation is to avoid or minimize those Impacts through Mitigation or Accommodation. .

### **Infringement**

Where Infringement of the First Nations' Treaty and Aboriginal Rights has occurred, Justification is required and includes considerations such as whether the First Nation was consulted, whether it consented to the proposal, whether priority was given to the First Nation's Aboriginal and Treaty Rights, and in some circumstances, whether compensation was paid to the First Nation. The Parties wish to avoid Infringement of Rights and Traditional Uses, and if this is not possible, to ensure that Impacts are avoided, minimized or Accommodated.

### **Interests**

Through the process of Consultation set out in these Guidelines, the Parties will address each other's interests, as set out below.

The interests of the First Nations include:

- Protecting their Treaty and Aboriginal rights, including their Rights and Traditional Uses
- Preserving their cultural, spiritual, economic and material relationship to their Traditional Territories and the resources on those lands, recognizing

that their connection to the land is holistic and is an integral part of their culture and identity.

- Ensuring that any regulatory review of a Proposal incorporates the results of Consultation carried out pursuant to these Guidelines
- Protecting the use and enjoyment of their Reserve lands, Traditional Territories, and lands acquired pursuant to Treaty Land Entitlements for the present and future generations.
- Ensuring the Accommodation of Rights and Traditional Uses.
- Where Proposals are approved, the effective monitoring, minimization and management of the Cumulative Effects of those Proposals and other changes in the region.
- Participating in the management, including use and access, of their Traditional Territories.
- Protecting their evolving cultures and ways of life.
- Building and sustaining healthy communities.
- The meaningful incorporation of TEK throughout all stages of Consultation and through any regulatory processes
- The use of faster, more effective reclamation and First Nation input, including TEK, in reclamation planning and management.
- Developing greater capacity to participate in the economic and social benefits of development, maximizing the potential benefits of development while minimizing Impacts of development.
- Developing cooperative and mutually beneficial relations with other governments and Industry.
- Developing the capacity to Consult so as to better enable the First Nations to identify concerns and to avoid, minimize, Mitigate or Accommodate Impacts.
- Protecting historical and culturally significant sites.

The interests of Alberta include:

- The orderly, efficient and environmentally sustainable development of resources in relation to Alberta Crown lands.
- Respecting the Rights and Traditional Uses of First Nations.
- Increasing regulatory certainty for resource development.
- Having an effective and consistent approach to Consultation with the First Nations.
- Acquiring a better understanding of Traditional land use to better manage public lands.
- Upholding the Honour of the Crown in fulfilling its duty to Consult.

### **III. PRINCIPLES**

Consultation will be guided by the following principles:

- Alberta's right to take up lands for development is subject to the duty to Consult and Accommodate
- It will occur where First Nations' Rights and Traditional Uses may be adversely affected or infringed.
- In any Consultation under these Guidelines, Alberta will conduct, and communicate to the First Nations, a preliminary analysis of the strength of the First Nation(s) claims in respect of any Proposal
- Consultation is an ongoing process of relationship building, information collection and sharing and reconciliation.
- Consultation is not met by only addressing the site-specific impacts of Proposals but must substantially address Cumulative Effects and Impacts
- It is conducted with the genuine intention of seriously considering and substantially addressing the concerns of First Nations in respect of Impacts and Cumulative Effects on Rights and Traditional Uses
- Ensuring that the Parties have or develop sufficient, credible, reliable and comprehensive information regarding the Cumulative Effects and Impacts of any Proposal on Rights and Traditional Uses and that such information

is seriously considered within any Consultation carried out pursuant to these Guidelines and in any regulatory approval process related to any Proposal.

- Alberta's Consultation duties (and any duties of an Industry Proponent, where procedural aspects of Consultation can be delegated) owed to First Nations are separate and distinct from any duties owed to public stakeholders.
- The Parties require adequate resources to Consult pursuant to these Guidelines
- The Parties have reciprocal obligations of reasonableness, good faith and cooperation.
- The First Nations will communicate their concerns with clarity and specificity to the extent reasonable with the time and resources available to them.
- The Consultation process and its outcome will be responsive to the interests and concerns of the First Nation and Alberta.
- The nature of Consultation and Accommodation will vary depending upon the degree of Impacts
- Consultation is specific to the First Nation(s) whose rights, claims and traditional land uses may be adversely affected.
- Communication will be open, honest and clear.
- Consultation will respect the culture of the First Nation and will have regard to:
  - The Consultation Protocols of each First Nation for communications with their communities; and
  - working relationships and communications at an appropriate leadership, technical, and community level.
- The Parties will provide each other with all available relevant information on an ongoing basis within the limitations of confidential information sharing agreements and privacy legislation, including new information as it becomes available or may be required to be developed under the processes set out in these Guidelines, with the goal of ensuring the parties can understand the Impacts of a Proposal before a decision is made.

- The Parties will work together to avoid duplication and overlap between provincial and federal Consultation processes.
- The Parties will strive to develop a responsive, coordinated and efficient administration to support Consultation

#### **IV. DETERMINING WHEN TO CONSULT**

##### **Timing**

Alberta will Consult early in the decision making process for any Proposal, when it is contemplating decisions that may adversely affect Treaty or Aboriginal rights, before irrevocable decisions are made, to ensure a full range of Mitigation and Accommodation options are available. A reasonable amount of time, as agreed to by the Parties, will be allocated for Consultation.

Consultation will be initiated at the level of strategic decision making. This is when the most opportunities exist to avoid Impacts and ensure that Mitigation and Accommodation options are fully available.

Where Consultation is delegated to Industry pursuant to these Guidelines, Consultation should occur before Industry applies for regulatory approval for a Proposal.

#### **V. WHO DOES THE CONSULTATION**

The legal duty to Consult and Accommodate always remains with Alberta. However, Alberta may delegate procedural aspects of Consultation, to the extent that the delegation is consistent with Alberta's duty to Consult and where such delegation is consistent with these Guidelines.

Guidelines that apply to delegated Consultation are described in section X.

#### **VI. THE CONSULTATION PROCESS**

##### **a. Steps to be carried out for all Consultation pursuant to any Proposal falling within these Guidelines:**

The main steps in the Consultation process are:

1. Alberta will send written notice of any Proposal falling within the Notice Area to the applicable First Nation(s) in a manner consistent with the First Nation's Community Protocol. If the First Nation has not appended a

Community Protocol to these Guidelines, the written notice will be sent via email, fax or registered mail to the IRC director with a copy to the Chief and Council. Alberta will confirm receipt of the notice by the IRC director. Confirmation means a fax transmission "OK" or a no return email to the email addressee.

2. For any of the activities set out in Appendix "B" attached hereto, the First Nations will automatically be Consulted on those activities. If Alberta is uncertain as to whether the First Nation wishes to be Consulted on such activities, it will contact the First Nation for clarification.
3. The notice in paragraph 1 will set out Alberta's preliminary assessment of the strength of the First Nation(s) claims in respect of the Proposal, including Alberta's knowledge of Impacts and/ or Infringement and will contain sufficient detail to allow the First Nation to understand the nature and scope of the Proposal.
4. If a First Nation wishes to be Consulted about a matter for which it has not received a notice under paragraph 1 and which does not fall under the mandatory Consultation provisions in paragraph 2, it will communicate its request for Consultation to Alberta, setting out the matter upon which it seeks Consultation and the reasons. Alberta will:
  - a. solicit the views of the First Nation on why Consultation is required and the level of Consultation sought; and
  - b. if Alberta declines to Consult, it will advise the First Nation in writing of the reasons for not Consulting.
5. After receiving a notice under paragraph 1, the First Nation will advise Alberta in writing within 28 clear Calendar Days from receipt of the notice if it wishes to be Consulted and its preliminary concerns. If the First Nation does not respond within 28 clear Calendar Days, and Alberta is satisfied the notice was received, no further Consultation is required of Alberta. Calendar Days excludes statutory holidays and December 20 – January 5 inclusive.
6. Where a First Nation requires more than 28 days pursuant to section 5 above, it will request an extension of time in writing to Alberta. Any request for an extension of the time in section 5 will not be reasonably withheld and any such extension shall not exceed an additional 15 days.
7. For any mandatory Consultation under paragraph 2, Alberta will provide the same information to the First Nation as required in paragraph 3 and the First Nation will provide Alberta with a statement of its preliminary concerns within 28 clear Calendar Days from receipt of such information

from Alberta or any further time pursuant to an extension of time under paragraph 6. Time lines for any mandatory Consultation will be established pursuant to the work plan in paragraph 9 below. Where no such work plan is requested by the First Nation, the time lines will be established pursuant to section IV of these Guidelines.

8. For any Consultation under part VI of these Guidelines, a reasonable amount of time will be allocated for the Consultation, as agreed to by the Parties.
9. The Parties will, if requested by a First Nation(s), develop a work plan for the Consultation. The work plan will include the identification of any further information required to assess Impacts; set out any technical advice and other resources that may be required; an estimate of the time required for the Consultation; a budget for this work and a meeting schedule.
10. After the First Nation has reviewed the information provided about a Proposal including, where applicable, the further information developed pursuant to paragraph 9, it will submit its detailed comments and concerns to Alberta, for consideration and discussion.
11. The First Nation will be provided an opportunity or, as the context requires, opportunities, to present and discuss its views with Alberta in relation to the Impacts of any Proposal and the Parties will Consult to determine appropriate measures to avoid, or Mitigate or Accommodate the Impacts of a Proposal on Rights and Traditional Uses.
12. Through Consultation in respect of a Proposal, the Parties will identify their respective interests, strive to develop a mutual understanding of those interests and a means to Mitigate or Accommodate any Impacts of a Proposal.
13. Alberta will endeavour to resolve any outstanding concerns of the First Nations through Consultation. Where appropriate, and where the First Nation(s) agrees, the Industry Proponent of a Proposal may be involved at this stage to assist in resolving any outstanding concerns.
14. Where Alberta requires further information from a First Nation in respect of the First Nation's concerns about a Proposal, Alberta shall communicate such a request to the First Nation in writing, early in any Consultations, and prior to any approval of a Proposal.
15. The Parties recognize that their ability to assess Impacts and to carry out meaningful Consultation is related to the sufficiency of the information

- provided under this section of these Guidelines and, if applicable, the information that is developed pursuant to part 9 of these Guidelines.
16. The Parties further recognize that the timelines for Consultation under these Guidelines will be determined, among other things, by timelines set out in paragraph 9 above and pursuant to section IV of these Guidelines.
  17. If the Parties and, where appropriate, the industry Proponent of a Proposal are unable to resolve the First Nation's concerns, prior to making a decision, Alberta will:
    - a. Provide the First Nation with a summary of the relevant information it will rely upon and Alberta's view of how the First Nation's concerns have been addressed;
    - b. Provide the First Nation with sufficient time to review the information in 17(a) above and for the First Nation to provide further input, if desired;
    - c. Indicate when a decision will be made on the Proposal; and
    - d. If requested by the First Nation and prior to a decision being made on the Proposal, meet with the First Nation to attempt to resolve any outstanding concerns, through further Consultation.
  18. When making a decision on a Proposal, Alberta will set out in writing how the concerns of the First Nation were addressed, and to the extent they were not addressed, the reasons why those concerns were not addressed.

**b. Consultation on oil sands Proposals**

19. The Parties recognize the unique circumstances surrounding development of the oil sands in the Athabasca Region.
20. In addition to the steps set out in section (a) of Part VI of these Guidelines, the Parties agree that any Consultation in respect of Proposals regarding further development of the oil sands will include the following steps:
  - a. Where requested, Alberta will engage in face-to-face Consultation with the First Nations prior to issuing final terms of reference for an Environmental Impact Assessment Report ("EIAR") for a Proposal. Such Consultation will be focused on identifying the information required for the Parties and regulators to properly and fully assess the Impacts of the Proposal on Rights and Traditional Uses. The provisions of

paragraph 20 will also apply to any final terms of reference that have already been issued for a Proposal, where the Proposal has not been approved by the appropriate regulator or decision maker within Alberta when these Guidelines come into effect. For greater certainty, in respect of terms of reference for any Proposal that have been finalized but where the Proposal has not been approved, the Consultation under paragraph 20 shall take place prior to any approval of a Proposal by the appropriate regulator or decision maker within Alberta.

- b. As part of the Consultation under paragraph 20, the Parties will identify the information that shall be furnished by the industry Proponent as part of the EIAR (or any additional information where an EIAR has been completed but an approval has not yet been granted for a Proposal) as well as what other information is required to be furnished by the First Nation and Alberta to assess the Impacts of the Proposal; timelines for the identification, collection and analysis of the information; required funding and how the information produced will be used in further Consultation about Impacts and how such information will be integrated into the regulatory review of the Proposal.
  - c. Alberta will also engage in Consultation with the First Nations in respect of the development of any generic terms of reference for the development of EIARs and such Consultation will be carried out in accordance with the information requirements set out in paragraphs 20(a) and (b) above.
  - d. Where requested, Alberta will engage in face-to-face Consultation with the First Nation(s) prior to determining that an EIAR for a Proposal is complete pursuant to the ***Environmental Protection and Enhancement Act***. Any Consultation as to whether an EIAR is complete shall take into account the information developed in accordance with paragraphs 20(a) and (b) above.
21. In order to ensure that an industry Proponent of a Proposal, the First Nation(s) and Alberta (and any applicable regulatory body) have full, credible and meaningful information to assess Impacts and ultimately to decide on whether or not to approve a Proposal, the Parties agree to Consult in respect of the following matters prior to the approval of any further Proposals and prior to the approval of any regional land use plan created further to the Alberta Land Use Framework :

- a. The establishment of local and regional targets for wildlife populations, vegetation, water, air quality, fish and other resources on which the First Nations rely to carry out their Rights and Traditional Uses;
- b. The establishment of quality baseline data, benchmarks and meaningful effects modeling, to ensure that the full social, cultural, health, environmental and economic Impacts of Proposals are assessed against the Rights and Traditional Uses of the First Nations;
- c. The establishment of credible and detailed reclamation measures;
- d. The development and carrying out of a study to determine health Impacts of oil sands developments in the Athabasca Region;
- e. The establishment of a traditional resource plan or some other study or studies which examine the current and future resource, environmental and ecosystem needs of the First Nations to carry out their Rights and Traditional Uses including, but not limited to:
  - i. Quality and quantity of species required;
  - ii. Quality and quantity of plants or other things gathered;
  - iii. Quality and quantity, as the context requires, of air, water and ecosystems required to support the exercise of the Treaty and Aboriginal rights; and
  - iv. The preferred means and places to enable the meaningful carrying out of Rights and Traditional Uses.
- f. The establishment of a system that will provide for the meaningful incorporation of Traditional Use and Traditional Environmental Knowledge information in relation to the assessment of Impacts in any Consultation under these Guidelines and in respect of the regulatory review of any Proposal;
- g. The establishment of a process to ensure that information gaps in any EIA are identified and addressed during the regulatory review process and prior to any approval of a Proposal;
- h. The development and carrying out of a study of Cumulative Impacts, including proper baseline data requirements (i.e., a pre-disturbance baseline) which will provide the Parties,

Industry Proponents and regulatory decision makers with meaningful information:

- i. To ensure that they fully understand the Impacts of existing and planned Proposals on Rights and Traditional Uses, including changes in the patterns of resource use and the exercise of Rights and Traditional Uses by the First Nations and the reasons for such changes; and
    - ii. To ensure that the full social, cultural, environmental, health and economic Impacts of Proposals are assessed against the Rights and Traditional Uses of the First Nations; and
  - i. The development and carrying out of a legally-enforceable land use plan for the Athabasca Region which includes, without limitation, the items in paragraphs 20 and 21 of part VI of the Guidelines, as the context requires.
22. The Parties recognize that Proponents (industry) will play an important role in collecting and developing the information in this part of the Guidelines and will develop ways of engaging industry Proponents in such Consultation.
23. The Parties will develop a work plan, timelines and budgets to carry out any work under this part of the Guidelines.

24. While the outcome of any Consultation in respect of the items set out in part VI of the Guidelines cannot be presumed, the Parties recognize that legislative and regulatory change may be necessary to implement any outcomes flowing from such Consultation.

**c. Consultation on Dispositions**

25. The Parties will Consult prior to any Disposition of Crown land including, without limitation, in respect of any grants of subsurface rights to Crown lands. Where such Disposition(s) have already been made as of the date on which these Guidelines come into force, the Parties will develop a mechanism for Consultation in respect of the Impacts of those Dispositions on First Nations Rights and Traditional Uses, prior to the approval of any further Proposals.
26. The Parties will Consult prior to Alberta approving the transfer of any oil sands leases from the current holder of those leases to any other party.

**Determining the Level of Consultation**

The degree of Consultation varies depending on the significance and severity of the Impacts of a Proposal. At minimum, the duty requires giving notice of the Proposal and soliciting the views of the affected First Nation and generally requires substantially addressing those concerns. As Impacts are determined to be more significant through the Consultation carried out pursuant to these Guidelines, Accommodation may be required.

The level of Consultation under these Guidelines will be determined with regard to the following considerations:

- the importance or significance of the potentially affected rights to the First Nation;
- the views of the Parties regarding the magnitude, duration and severity of the potential impacts;
- other available information on the magnitude, duration and severity of the impacts;
- other information that is required to be developed under these Guidelines;
- the Impacts of the Proposal; and

- such other considerations as may be relevant to the Proposal.

## **VII. FUNDING FOR NON-DELEGATED CONSULTATION**

### **Capacity Funding**

First Nations require funding to develop the capacity to carry out Consultation regarding specific Proposals and for ongoing relationship building and communications. Alberta will provide funding for Consultation capacity through its First Nations Consultation Program (FNCCIP) or other programs developed by Alberta from time to time.

### **Proposal Specific Funding**

When Consultation is triggered under these Guidelines and funding is required by the First Nation, the First Nation will request funding by providing a budget to implement the work plan developed by the Parties pursuant to paragraph 9 of Part VI of these Guidelines as well as any funding required pursuant to paragraphs 20 and 21 of part VI of these Guidelines. Once the amount of funding has been agreed upon, the work plan will be implemented. If the Parties disagree about the scope of any work plan, the required funding, or the necessity of a work plan, they shall attempt to resolve the disagreement through the Dispute Resolution Process in these Guidelines.

### **Other Source of Funding Not Replaced**

The funding under these provisions is not intended to duplicate, replace or reduce any funding the First Nations receive from Industry or other non-Alberta government sources.

## **VIII. MECHANISMS FOR GATHERING INFORMATION AND CONSIDERING IMPACTS AND CUMULATIVE EFFECTS**

### **Traditional Use Studies**

Alberta has provided funding for the First Nations to facilitate the preparation of Traditional Land Use Studies. Alberta will provide, where possible, funding to periodically update these studies. Alberta and First Nations may enter into data sharing agreements in relation to TUS data. The Parties recognize that any such funding is not a substitute for funding to gather information related to any specific Proposal and that such further funding may be required to supplement the existing information from Traditional Land Use Studies or to engage in new TUS/TEK work related to such Proposals.

## **New Environmental or Regulatory Review Processes**

In addition to Consultation under these Guidelines, the Parties also recognize that Consultation will be required in relation to the design of an environmental or regulatory review process for any Proposal, including the role of the First Nation in any such process.

### **IX. DISPUTE RESOLUTION**

If a disagreement arises regarding the interpretation or implementation of these Guidelines, the Parties will make good faith efforts to resolve the disagreement extra-judicially. However, the Parties reserve their respective rights to seek any remedies available to them at law.

**[THIS SECTION NEEDS TO BE DEVELOPED BASED ON WHAT THE PARTIES WISH TO ACHIEVE]**

### **X. DELEGATED CONSULTATION ON REGULATED ACTIVITIES TO INDUSTRY PROPONENTS**

#### **Alberta's Role**

Alberta maintains regulatory control over resource, commercial and industrial development in the province and Consultation with respect to it. Where Alberta delegates procedural aspects of Consultation to Industry Proponents, the ultimate legal duty to Consult and Accommodate remains with Alberta and is not obviated.

When Alberta delegates procedural aspects of Consultation to Industry Proponents, Alberta will:

- Notify the First Nation IRC Director in writing of the individual who will be responsible for supervising the delegation on Alberta's behalf and the nature and scope of procedural aspects that have been delegated
- Monitor the outcomes of delegated Consultation and ensure that these Guidelines are properly followed in light of such delegation
- Consult with the First Nation(s) where the First Nation(s) raises concerns about whether or not these Guidelines have been complied with in respect of any such delegation
- Ensure the First Nation concerns are substantially addressed and, where a First Nation questions whether such concerns have been substantially addressed, Consult with the First Nation in respect of those concerns

- If requested by either a First Nation or an Industry Proponent, participate in the development and implementation of mitigation and Accommodation measures within the control of an Industry Proponent in relation to a Proposal; and
- Ensure First Nations have an opportunity to verify the accuracy or completeness of any records of Consultation submitted to it by Industry and ensure that the principle of open, honest and clear communication is met. The Proponent will copy the First Nation First Nation on all correspondence to and from the Crown relating to Consultation.

### **Industry Consultation: Timing and Process**

Where an Industry Proponent is permitted to Consult with the First Nations under these Guidelines, the Industry Proponent will Consult early in the development of a Proposal. Industry will Consult before it applies to Alberta for any authorization, permit or approval required for a Proposal.

The Principles, Interests, process and procedures in these Guidelines will apply to those aspects of Consultation lawfully delegated to Industry by Alberta. Some of the First Nations have Industry Consultation protocols that have been in place for several years. The First Nations expect Industry will continue to use them, unless inconsistent with these Guidelines.

### **Industry Consultation Plans**

Where Alberta requires or Industry undertakes to develop a Consultation plan for a Proposal, the IRC and Industry will jointly develop an appropriate Consultation plan based on the scale, magnitude and duration of the project and ensuring compliance with these Guidelines.

### **Industry Consultation Records and Communications**

Where delegation of procedural aspects of Consultation is permitted under these Guidelines, Alberta will direct the Industry Proponent to copy the First Nation, on a monthly basis, on any consultation related communication directed to Alberta so that the First Nation may verify the accuracy or completeness of that information and to ensure that the principle of open, honest and clear communication is met. If the First Nations has any disagreement with the accuracy or completeness of the communication they must communicate such concerns in writing (Fax or email) to the Alberta government staff member responsible for supervising the delegation by the end of 28 clear business days from the time of receipt or it will be understood that the First Nation has no issue with that information. Where a First Nation raises such concerns, Alberta will Consult with the First Nation.

## **Mitigation and Accommodation**

If an agreement on avoidance or mitigation of the Impacts of a Proposal cannot be reached between the First Nation and an Industry Proponent, or an Accommodation is required that is not within the control of an Industry proponent, or Industry and the First Nation otherwise agrees, they will request Alberta's participation in the development of any such Mitigation or Accommodation.

## **XI. CONSULTATION PROCEDURES**

The Procedures set out in this section of the Guidelines are intended to supplement the Consultation Process set out in section VI of these Guidelines.

### 1. Relationship Building

Developing and maintaining an effective government-to-government relationship between Alberta and the First Nations is a crucial first step in the Consultation process. The following principles and guidelines reflect the First Nations' experience in developing successful Consultation relationships:

- Relationships can only be built over time and require a foundation of mutual trust and respect. This requires ongoing, transparent communications between parties to the Consultation.
- Effective relationships are built on an understanding of each other's history, views and aspirations. It is critical that Alberta and the First Nations become familiar with the other parties history, culture, structure, jurisdictional issues, political make up and context, key concerns and Consultation protocols.
- It is important for Alberta to have a strong community presence not only when engaged in Consultation activities but on an on-going basis. This includes getting to know community members, Elders, formal and informal leaders, community organizations and administration. Community events such as Treaty Days and grand opening celebrations are a good opportunity to do this.
- The Parties will endeavor to communicate at the appropriate level of representation: Chief and Council to Ministers and Deputy Ministers, senior management to senior management, management to management and technical to technical.
- Alberta and the First Nation will strive to maintain consistency in their representatives for the purposes of Consultation. The primary

contacts will be between the Aboriginal Relations or other designated staff from the department responsible for the Consultation each and IRC staff from the First Nation. The representatives from Alberta and the First Nation will have an appropriate level of decision-making authority. A Party will advise the other within ten business days if a representative has changed.

## 2. Information Sharing and Communication

Ongoing information exchange is important to fostering an effective Consultation process. This includes activities such as:

- Regular meetings, at least annually, between Alberta and the First Nations to identify issues arising from Consultation implementation. Industry representatives may be invited to attend to facilitate information sharing and communication.
- Providing forecasts of resource development and growth and long-term plans.
- Providing access to information on the location and ownership of mineral leases, surface rights, and well site and pipeline locations, using, but not limited to, the Alberta Energy's Aboriginal Community Link.
- Information sessions on general matters such as government regulatory processes, resource development practices, governance structures, First Nation's history and cultural awareness.
- Timely notice of press releases or public announcements regarding Proposals affecting First Nation Traditional Territories.
- Advance notice of press releases and other public announcements about a First Nation or a matter about which Alberta is Consulting a First Nation

Information relevant to a Consultation will be exchanged as early in the process as possible. The following points guide the communication process:

- All parties to a Consultation will provide all available relevant information and adequate time and capacity to respond.

- Consultation notices will be provided in plain language and will identify the scope, magnitude and duration of the Proposal and its potential short and long-term impacts.
- Any timing constraints will be communicated as early possible in the Consultation process.
- When communicating information to the community, the IRC and Alberta will work together to determine the appropriate methods for doing so. These may include open houses, presentations, advertisements or flyers.
- When making presentations to a First Nation community, visual aides, pictorial formats and use of minimal written materials is encouraged.
- The IRC Director and Alberta staff responsible for the Consultation will be copied on any correspondence between the First Nation and Proponent. When correspondence is sent to a First Nation or the IRC, the Proponent will confirm that it is received.

### 3. Role of the IRC

- The IRC facilitates and administers Consultation on behalf of the First Nation. The IRC will facilitate communications between the community and the Proponent.

### 4. Confidentiality and Publication of Information

- Individual consent is required when using pictures of First Nation community members or staff or the staff or officials of a Proponent in promotional materials, or presentations, pamphlets.
- The sharing of any traditional use information or traditional knowledge will be done according to a data sharing or TEK Agreement between the Proponent and the First Nation.
- Where TEK is provided to a Proponent it will be treated with respect and used only for the purpose for which it was communicated. This applies also to traditional land use studies because TEK is inherently captured in these studies.
- The First Nation reserves its right to own and use intellectual property created by, or on behalf of the IRC or First Nation. Any use of such information must first be approved by the IRC and acknowledged by the Proponent in their materials. Maps or other

materials created by a Proponent for the First Nation will be properly acknowledged.

- The integrity of TEK will be maintained by the following principles:
  - a. the information must be collected in person;
  - b. the information may only be used for the purpose for which it was shared by the TEK holder;
  - c. the information must be kept in intact and recorded in its original form to the extent possible.

## 5. Reviewing Information

Once a Consultation has been initiated, adequate time will be allotted for First Nations to review and assess the Proposal. This may require a detailed technical review of the information provided and Consulting with traditional knowledge holders. If requested, the Proponent will make available knowledgeable representatives to assist with explaining the project or initiative.

## 6. Community Meetings

Community meetings may be appropriate at different stages of the Consultation. If a Proponent agrees to attend a community meeting or meeting with the First Nation leadership, the following procedures apply:

- The Proponent and the IRC will work together to determine the appropriate community members who will attend the meeting.
  - The Proponent will provide a fee for service when meeting with First Nation environmental experts, such as Elders, trappers or other traditional knowledge holders.
  - If required, transportation and interpreter(s) will be provided to facilitate Elders and trappers participation in meetings. The costs of interpretation and transportation will be covered by the Proponent. Focus groups may be used to Consult with a group of First Nation community members on a specific topic, to ensure an appropriate level of participation from a cross-section of the community, typically with a specific interest or expertise on the subject matter.
7. Where a Proposal is approved and where Mitigation in the form of maintaining pre-disturbance levels of traditional foods or opportunities for pursuing livelihood and cultural activities is not possible or uncertain, the First Nations' goal is to ensure that its activities can be

maintained or their cultural and quality of life benefits replaced in alternative forms. Options for Accommodation strategies from the First Nations' perspective may include:

- a) opportunities to improve quality of life factors such as health, education, employment and recreation;
- b) protection for undisturbed portions of First Nation's traditional Territories, archeological sites, graves, sacred places and culturally significant harvesting areas; and
- c) compensation.

8. The First Nations' historical and current occupancy or use of its Territories and understanding of the environment uniquely qualifies its members to contribute knowledge and expertise relevant to the protection, management, monitoring and mitigation of social, health, economic, environmental and cultural impacts resulting from increased access and resource development. The First Nations should have a meaningful role in such activities.

9. Creating a Record of the Consultation

Both the Proponent and the IRC will take attendance and minutes at meetings involving Elders or trappers. If either Party takes minutes or makes a recording of any meeting, it will send, if requested, the minutes or record to the other party and will finalize an agreed official record of the meeting.

The Proponent will compile the comments and concerns communicated to it and any proposed or agreed avoidance, mitigation or Accommodation measures. The First Nation will be provided with an opportunity to review and validate the accuracy of the record to ensure mutual understanding.

9. Determining the Adequacy of Consultation

Reviewing the adequacy of the Consultation provides an additional opportunity to ensure Consultation is meaningful and to foster positive relationships. Some of the items that will be considered in assessing adequacy are:

- Whether these guidelines were followed in good faith;
- If the Consultation was conducted in a responsive manner;
- If information was provided to the First Nation in a timely manner and was presented in a plain language format;

- If there was sufficient engagement by the Proponent and the First Nation;
- If the nature and scope of the Impacts of a Proposal were effectively communicated and understood by all parties;
- If the Impacts were specifically identified and understood; and
- If reasonable efforts were made to avoid, Mitigate or Accommodate.

In determining the adequacy and completeness of a Consultation, Alberta may contact the First Nation for more information for verification of the adequacy and completeness.

#### 10. Decision Making and Reporting

Alberta will make good faith efforts to achieve consensus with the First Nation on the assessment of the adequacy of Consultation and to Mitigate or Accommodate the concerns of the First Nation raised through Consultation. Alberta's representative will consider the comments and concerns of the First Nation, as well as proposed or agreed avoidance, Mitigation or Accommodation options. Prior to rendering a decision Alberta will advise the First Nation in writing how their concerns were addressed and demonstrate how they were or were not integrated into the Proposal. If the First Nation's concerns were not addressed, Alberta will provide the reasons.

#### **Other Items required in Guidelines or "letter of engagement"**

- **Term of agreement**
- **Termination provisions**
- **Review and Amendment**

**APPENDIX "A" – FIRST NATION NOTICE AREAS**

**APPENDIX “B” – LIST OF ACTIVITIES REQUIRING MANDATORY CONSULTATION PURSUANT TO PARAGRAPH 2 OF PART VI OF THESE GUIDELINES**

1. All activities that require an environmental impact assessment pursuant to the ***Environmental Protection and Enhancement Act***, ss. 44(1)(b)(i) or is designated as a Mandatory Activity by ***Alberta Regulation*** 111/93;
2. The issuance of a reclamation certificate for an oil sands or other mine and a commercial oil sands, heavy oil extraction, upgrading or processing plant;
3. Any Disposition of an interest in Public Lands that results in the land no longer being lands of the Crown in right of Alberta, prior to the Disposition of any such lands (and for greater certainty, any activity set out in part VI, paragraphs 25 and 26 of these Guidelines);
4. Any dispositions granting an interest in Minerals, as defined in the ***Mines and Minerals Act***.
5. The construction, operation or reclamation of a plant, structure or thing for
  - a. the processing of coal, heavy oil, oil sands or minerals,
  - b. the manufacture or processing of petroleum products,
  - c. the manufacture or processing of natural gas, its products or its derivatives,
  - d. the manufacture or processing of chemical and allied products,
  - e. the manufacture or processing of pulp and paper products,
  - f. the manufacture or processing of cement and lime products,
  - g. the manufacture or processing of fertilizer products,
  - h. the manufacture or processing of primary metal or metal products,
  - i. the manufacture or processing of wood or wood products
  - j. the manufacture of asphalt or ready-mixed concrete,
  - k. the generating of thermal electric power or steam,
  - l. the generating of hydro-electric power,
  - m. the storage, treatment, processing or disposal of hazardous waste,
  - n. the storing and processing of hazardous waste or recyclables, and
  - o. the manufacture or processing of sulphur products,
6. The construction, operation or reclamation of
  - a. a pipeline, transmission line, telecommunication line or battery,
  - b. a mine or quarry ,
  - c. a heavy oil site, oil sands site or oil production site,
  - d. a waste management facility,

- e. land farms for petroleum, drilling or other waste,
  - f. a highway, railway or aircraft landing strip,
  - g. a site for subsurface disposal of solid or liquid waste, except private subsurface sewage disposal systems,
  - h. facilities for recreational or tourism purposes, and
  - i. any structure forming part of a broadcasting undertaking as defined in the *Broadcasting Act* (Canada), including a microwave tower.
7. Any activity, diversion of water, operation of a works or transfer of an allocation of water under a licence for which an approval, licence or an approval of a transfer of an allocation of water under the **Water Act** is required.

# Athabasca Chipewyan First Nation

## Questions to Alberta

### Regarding the Lower Athabasca Regional Plan

April 16, 2009

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As noted in our submissions respecting the LARP, it is our view that information must be gathered as part of the development of the Plan which will establish thresholds for the environmental, social and economic conditions necessary for the exercise of our rights now and for future generations. As part of the development of that information, we have set out below a number of questions which, in our view, are essential in the planning process. We wish to discuss these questions and receive answers to them when we meet with you.

#### Exercise of Rights

1. Does Alberta dispute whether or not ACFN has existing, constitutionally-protected rights within the Lower Athabasca Regional Planning area?
2. What lands, if any, does Alberta say have been taken up under *Treaty 8* or occupied under the *NRTA*:
  - a) Within ACFN's Traditional Lands?
  - b) Within the Lower Athabasca Regional Planning area?
  - c) For any lands taken up or occupied, is Alberta aware of any consultation that was carried out by the Crown in respect of such taking up of lands? Please provide details.
3. Has Alberta conducted a preliminary assessment of the strength of claim of ACFN:
  - a) Throughout the parts of ACFN's Traditional Lands where oil sands and other development, such as forestry, conventional oil and gas, are being contemplated/have been applied for?
  - b) What information, guidelines and/or policy has Alberta looked at if such an assessment has been made?
4. Does Alberta agree that one of the purposes of planning related to the LARP is to ensure the meaningful exercise of ACFN's constitutionally-protected rights now and into the future?

## Impacts of Industrial Activities on ACFN Traditional Lands

5. Can you identify on a map the activities associated with any planned or reasonably foreseeable oil sands and other industrial activities (forestry, conventional oil and gas) within the Lower Athabasca Region planning area, including any approved or applied-for oil sands and forestry activities including, but not limited to:
  - a) Infrastructure
  - b) Roads
  - c) Gates
6. Have you conducted an assessment of where Alberta would consider it safe or unsafe for ACFN members to hunt, trap, fish and gather based on the information in 4 above?
7. What steps has Alberta taken to determine the extent to which industrial development within ACFN's Traditional Lands, which has already been authorized by the Crown, has already deprived ACFN of a meaningful opportunity to exercise their rights?
  - a) How does Alberta define "meaningful opportunity" in terms of the exercise of ACFN's rights?
  - b) Has Alberta consulted with ACFN on what ecosystem/environmental/socio-cultural conditions are required to sustain ACFN's ability to exercise its rights now and into the future and to provide a meaningful opportunity to exercise their rights?
  - c) Is Alberta prepared to work cooperatively with ACFN to develop a traditional resource use plan based on the kinds of questions/information requirements set out at pp. 6 of the joint Mikisew-Chipewyan Prairie submissions?
8. What steps has GoA taken to determine the extent to which approval of any oil sands projects that have already been approved and/or applied for within ACFN's Traditional Lands, would deprive ACFN of a meaningful opportunity to exercise their rights?
9. Are you of the view that there will be or already is increased human and financial hardship and expense to ACFN members to exercise their rights as a result of industrial development within ACFN's Traditional Lands?
10. Have you assessed what lands and associated resources (wildlife, fish, water, air quality, access) ACFN requires to carry out its constitutionally-protected rights now and in the future? If so, what specific information did you assess?

11. Have you identified any lands within ACFN's Traditional Lands that will permit ACFN to exercise their rights now and into the future, based on the answers to 4-9?
  - a) If the answer is no, why not?
  - b) If the answer is yes, what criteria did you use to make this determination and did you consider what use other First Nations, Métis and other persons are making of these areas and what their future needs are?
  - c) Did you consider the direct and cumulative impact of other industrial activities within ACFN's Traditional Lands when making that assessment?
  - d) Are you prepared to consult with ACFN to protect lands that ACFN requires to carry out its rights, prior to any further approvals, based on the information in (i.) and (ii.) above, and if not, why not? If so, does the LARP/LUF contemplate buying back leases from companies in order to ensure such protection of lands? Is there a legal mechanism for buying back leases/tenures?
12. Do you have a record of any consultation between ACFN and Alberta related to the development of any previous regional land use plans? Please provide copies of the existing consultation record.
13. Based on the information provided by ACFN to GoA in the past several years, what accommodations have you planned in respect of potential impacts on ACFN's rights in relation to industrial development of the Lower Athabasca planning region? See, in particular, various submissions made by ACFN related to the Richardson Backcountry.
14. What provincial permits, licenses and approvals have already been granted for industrial activities within ACFN's Traditional Lands?
15. What provincial permits, licenses and approvals have been applied for that have not yet been approved within ACFN's Traditional Lands?

#### Grants of Tenure

16. Has Alberta undertaken an assessment of the impacts of Alberta's grants of tenure throughout ACFN's Traditional Lands, to determine the actual or potential impacts of those grants of tenure on ACFN's ability to exercise their rights now and in the future?
  - a) If so, then what information did Alberta assess? What criteria did it use to make those determinations?
  - b) If not, why not?

## Regional Benchmarks / Targets

17. Are there any regional benchmarks or targets in place to assess the impacts of industrial activities on the rights of ACFN?
  - a) If so, then what are they?
  - b) How are they aimed at assessing impacts on the rights of ACFN?
18. If the answer to 17 is no, will Alberta agree to defer consideration of the LARP until such benchmarks/targets are developed?

## Parallel Process Consultations

19. For any questions herein where Alberta is not prepared to deal with those questions in the development of the LARP, by what process will Alberta consult with ACFN on those issues prior to the finalization of the LARP?
  - a) For any of those issues or items, what information does Alberta require to determine the potential impacts of the LARP on the rights of ACFN in “parallel process” consultations?
20. What information, if any, will Alberta use to decide whether or not to approve the LARP?
21. Is Alberta prepared to consult with ACFN in “parallel process” consultations or in respect of the LARP, itself, on the following, prior to finalization of the LARP, if Alberta is not prepared to deal with those items through consultation with ACFN on the LARP, itself:
  - a) To identify the key resources (species, numbers, uses, air quality, water quality and quantity, etc.) and lands that ACFN requires to sustain the exercise of its rights, such as through the development of and funding for a Traditional Use Resource Plan?
  - b) The development of appropriate baseline data, benchmarks or related measures for wildlife, fish, associated habitat, air, water quality and quantity and other resources on which we rely to carry out our rights, to ensure that potential impacts of on ACFN’s rights are properly and fully assessed and accommodated?
  - c) To prepare a baseline inventory of all such key resources?
  - d) To establish effects modeling and proper scientific rigour that can be used to test the conclusions reached in the EIA?
  - e) To implement regional targets/benchmarks/measures for ACFN’s key resources and habitat to preserve ACFN’s ability to exercise its rights in the face of the development of its Traditional Lands/to serve as an appropriate and meaningful measure against which to assess potential impacts of the LARP, and industrial development, on those rights?
  - f) To identify critical lands that should be protected from further development, to ensure that ACFN retains a meaningful opportunity to exercise its rights?

- g) To work with ACFN to identify and assess the cumulative impacts of all existing and reasonably foreseeable development on the rights of ACFN including, for example:
    - i. Projects which do not themselves trigger an assessment under EPEA or CEAA?
    - ii. Projects beyond those that have been applied for or approved?
    - iii. The tenures that have already been granted, the potential development of the same, and the potential impacts on ACFN's rights?
  - h) To implement rigorous monitoring and assessment programs, on a regional basis, to ensure that ACFN's key resources and lands do not fall below the levels required to sustain those rights?
  - i) To develop credible and detailed reclamation measures for land, water, air, wildlife, habitat, vegetation and other important matters on a local and regional basis?
  - j) To determine how the grants of tenure to Industry in ACFN's Traditional Lands has adversely impacted or infringed ACFN's rights and how further development can be done to avoid or minimize such impacts or infringements?
22. To the extent that Alberta is prepared to engage in consultations on all or any of these items, could Alberta please identify:
- a) The statutory and regulatory mechanism(s) by which the contents of any such consultations will be integrated into decision-making process for the LARP?
  - b) The means by which the contents of such consultations will be integrated into an existing/on-going regulatory/approval processes for existing applications under review?
  - c) How such consultations and any necessary follow-up will be carried out in sufficient time to be taken into account in all relevant statutory decision-making processes?
  - d) The means by which the information provided by ACFN in such consultations will be analyzed and considered in light of the information gathered and analyzed in the course of preparing the LARP?
  - e) The process and timelines by which consultations be carried out, including when and by whom?
23. If Alberta is not prepared to do so on any or all of these items, please explain why not?

#### Moratorium on Development

- 24. Is Alberta prepared to withhold any project-related approvals on oil sands or other industrial projects until the LARP is in place?
- 25. If not, why not, given the clear acknowledgment in the *Land-use Framework* as to shortcomings in the current planning and decision-making process?

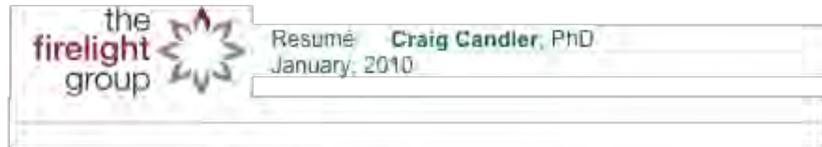
## Other Questions

26. On October 22, 2008, we tabled with you a proposal concerned management of the Richardson Backcountry. We have still not received a response.
27. We note that Ms. Heather Kennedy, ADM of the of the Oil Sands Sustainable Development Secretariat has “encouraged ACFN to participate in upcoming First Nations consultations for the Lower Athabasca Regional Plan,” and to ASRD’s regulatory approval process, in order to deal with our concern regarding the long-term regional effects of the proposed construction of a bridge over the Clearwater River<sup>1</sup>. Are issues such as long-range regional transportation planning to be dealt with in the LARP? If so, how?
28. How will the LARP be related to or integrated into any project-specific regulatory review processes? In other words, would decision makers within Alberta, as well as the ERCB or other regulatory bodies, be bound by the LARP?
29. What is the timeline for completion of the LARP and how will Alberta consult with ACFN in relation to the development of the Plan so that ACFN’s issues and concerns, including in relation to the information needs raised herein and in the attached joint Mikisew-CPDFN LUF Submissions, are properly accommodated in relation to the LARP?

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<sup>1</sup> Letter dated March 13, 2009 from Heather Kennedy, Assistant Deputy Minister, Oil Sands Sustainable Development Secretariat, to Ms. Lisa King, Athabasca Chipewyan First Nation Industry Relations Corporation.

## Appendix 7: Curriculum Vitae, Dr. Craig Candler



Education
Ph.D. Cultural Anthropology, University of British Columbia, Vancouver, BC, 2006
M.A. Anthropology, University of Alberta, Edmonton, AB, 1999
B.A. (First Class Honours) Anthropology, University of Alberta, Edmonton, AB, 1996

### Craig Candler, Ph.D. (anthropology)

Director, Community Studies and First Nations Consultation

#### Employment History

##### **The Firelight Group Research Cooperative-Victoria, BC Director/Community Studies and First Nations Consultation Specialist (2009 to date)**

Responsible, as a founding member and director, for helping establish The Firelight Group, a group of aboriginal and non-aboriginal research professionals providing respectful and respected environmental and social science research, consulting, and support services in processes where aboriginal and non-aboriginal interests interact, and where good relationships and quality research tools are desired by all sides. Currently serving as the president of the Firelight Group, tasks include business and organizational development, as well as design, development, and delivery of technical services including community-based traditional knowledge research and documentation systems, environmental and socio-cultural impact assessments and monitoring programs, indigenous land use mapping, archival research, community involvement processes, and First Nations consultation support services.

##### **Golder Associates Ltd. – Victoria, BC Senior Anthropologist/Traditional Studies and Community Consultation Specialist (2005 to 2009)**

As Senior Anthropologist, provided technical leadership to the cultural sciences division of Golder in the fields of traditional studies and First Nations consultation, particularly within the context of environmental impact assessment. Responsible for design, development, and oversight of community-based traditional knowledge research and documentation systems, capacity building initiatives, environmental and socio-cultural impact assessment and monitoring, indigenous land use mapping, public involvement processes, archival research, and First Nations consultation support services. Tasks included leading baseline data collection, environmental assessment, and community involvement components related to community-based traditional use studies and First Nations consultation support, including projects with estimated capital costs in excess of one billion dollars. Projects included mines, wind and other energy developments, civil infrastructure, environmental remediation, and linear energy transmission projects. Key clients and partners included First Nations across BC and western Canada, private industry, and government agencies.

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Resumé **Craig Candler, PhD**  
January, 2010

**University of British Columbia, PhD Researcher – Vancouver, BC**  
*Lead Researcher, Changing Land Use and Children’s Health in Mae Chaem, Northern Thailand (2000 to 2008)*

Responsible for designing, grant writing, coordinating, and conducting anthropological research within a multi-method (qualitative and quantitative) and community-based research project on oral histories of land use and child health change in Northern Thailand since the 1950s.

**Third Stone Community Research – Edmonton, AB**  
*Anthropological Consultant (1995 to 2005)*

Founder and Principal of a private consulting company offering applied anthropological, community-based research and consultation services, specializing in First Nations land use documentation and mapping, and comprehensive socio-cultural and community impact assessment and mitigation. Projects included leading a large multi-year traditional use study for the Treaty 8 Tribal Association of BC, as well as smaller projects for communities and research agencies based in Alberta, BC, Manitoba, and the Northwest Territories.

**National Centre for Excellence in Sustainable Forest Management, University of Alberta – Edmonton, AB**  
*Research Coordinator (2000)*

Research and funding coordinator for socio-economic, community sustainability, and integrated and cumulative effects related projects supported through the NCE-SFM.

**Centre for the Cross-Cultural Study of Health and Healing, University of Alberta – Edmonton, AB**  
*Coordinator and Consultant Liaison (1995 to 1999)*

Coordinator of office activities including development of a consulting program for academic and contract research, project proposal development, grant applications, reporting, financial administration, marketing and managing a publishing series, organizing public workshops and lectures, and coordinating volunteer involvement.

**Project Experience – Traditional Ecological Knowledge (TEK) and Traditional Use Studies (TUS)**

<p><b>Mikisew Cree First Nation and Athabasca Chipewyan First Nation</b> Northwest Alberta</p>	<p>Primary Researcher and Project Manager for a TEK/TUS project involving documentation of community use and knowledge along the Athabasca River to inform decisions regarding water withdrawals and oil sands production. Jointly funded through two First Nations, the project involves documentation of First Nations use and interests through interviews and mapping, and understanding the effects water quality and water level change on the practice of aboriginal and treaty rights along a major river and within an ecologically sensitive delta and lake area.</p>
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	Resumé: <b>Craig Candler, PhD</b> January, 2010
<b>British Columbia Transmission Corporation</b> Southwest British Columbia	Component Lead for an overview-level TUS for planning of a linear transmission project involving archival review, field interviews, and coordinated research with more than forty First Nations with traditional territories in the Fraser Valley, Fraser Canyon, and in the area of Nicola Lake. Tasks included methodology development, interview protocols, First Nations liaison, supervising and participating in mapping interviews and archival review, and leading analysis and reporting.
<b>Kwoiek Creek Hydroelectric Project</b> Southwest British Columbia	Component Lead for community-based TUS conducted for environmental assessment of a run-of-river project, including transmission line, proposed by a First Nation joint venture. The project involved generation of energy and transmission through multiple First Nations territories. Tasks include methodology review, supporting First Nations interviewers to complete baseline, and leading community-based impact assessment and reporting.
<b>Western Canadian Coal</b> Northeast British Columbia	Project Manager for the completion of Socio-Economic and Aboriginal Interests and Use chapters for an Environmental Assessment (EA) application to the BC Environmental Assessment Office (BC EAO) regarding a proposed coal development in northeast BC. The project involved working with First Nations and Metis groups and included methodology review, First Nations and aboriginal liaison, and reporting.
<b>Peace River Coal</b> Northeast British Columbia	Component Lead for overview-level TUS and TEK work conducted for EA purposes for two coal mines and related developments. The project involved working with six First Nations and Metis groups. Tasks have included methodology development, First Nations liaison, archival review, community-based mapping, focus group interviews, and reporting.
<b>North Coast Wind Energy</b> Northwest British Columbia	Component Lead for overview and operational-level TUS proposed within a harmonized BC Environmental Assessment Act (BCEAA)-Canadian Environmental Assessment Act (CEAA) process on the north coast of BC. The project involved a large generation area and more than 100 km of linear transmission corridor involving the traditional territories of three First Nations. Tasks included methodology development, archival review, First Nations liaison, and preliminary coordination of overview-level TUS interviews.
<b>Asaniwuche Winewak Nation</b> Grande Cache, AB	Project Manager and lead researcher for a gap analysis of TUS data used for First Nations consultation purposes, providing specialist support for the optimization of an internal First Nations consultation and referral system, and providing research services in support of oral history interviews and document preparation related to a comprehensive claim.
<b>Treaty 8 Tribal Association</b> Northeast British Columbia	Project Coordinator for all aspects of a large multi-community, multi-year traditional use study (TUS) with a budget in excess of one million dollars, including mapping and TEK interview components, training, project management, site visits, GPS data collection, archival review, GIS and database design, digitization, indigenous toponomy, and oral history. Facilitated negotiation of community consultation and information protection protocols.
<b>Sawridge First Nation and Kapawe'no First Nation Traditional Use Study</b> Central Alberta	Methodology development, interview protocols, First Nations liaison, and proposal development.
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Resumé **Craig Candler, PhD**  
January, 2010

<p><b>Bigstone Cree Nation TUS Gap Analysis</b> Northwest Alberta</p>	<p>Assisted with gap analysis, evaluating community goals and needs, and the potential of an existing TUS data set to meet those goals and needs. Review of digital data, methodologies, and community goals.</p>
<p><b>Beaver First Nation Traditional Use Study</b> Northwest Alberta</p>	<p>Methodology development, First Nations liaison, training and capacity building workshops on community-based research, mapping strategies, GIS/GPS technology, and proposal writing.</p>
<p><b>Dene Tha' Consultation Pilot Project</b> Northwest Alberta</p>	<p>Methodology development and expert review of TUS data collection and mapping, digital data capture, and database design. Assisted negotiation of final information sharing and consultation protocols.</p>
<p><b>Halfway River First Nation Traditional Use Study</b> Northeast British Columbia</p>	<p>Designed and delivered TUS methodology, field work, training, and capacity building in mapping and land use research.</p>
<p><b>Dene Tsaa Tse K'nai (Prophet River) First Nation Traditional Use Study</b> Northeast British Columbia</p>	<p>Designed and delivered TUS methodology, field work, interviews, design of field recording and GPS strategies, coordination of field visits, training, reporting and capacity building.</p>
<p><b>Canadian Circumpolar Institute</b> Edmonton, AB</p>	<p>Literatura review and critique of emerging GIS and GPS technologies in the context of traditional knowledge research in Canada's north.</p>
<p><b>Gwich'in Tribal Council and the Sustainable Forest Management Network</b> Winnipeg, MN</p>	<p>Archival research in the Hudson's Bay Archives, archival documentation and report writing on historic environmental change and resource use along the Mackenzie Delta.</p>

**Project Experience – Socio-Economic and Cultural Impact Assessment**

<p><b>Western Canadian Coal</b> Northeast British Columbia</p>	<p>Project Manager for the completion of Socio-Economic and TUS chapters for an Environmental Assessment (EA) application to the BC Environmental Assessment Office (BC EAO) regarding a proposed coal development in northeast BC. The project has involved working with First Nations and Metis groups. Tasks have included methodology review, First Nations liaison, and reporting.</p>
<p><b>Public Works and Government Services</b> Victoria, BC</p>	<p>Design and implementation of public and First Nations involvement, including social studies, related to a risk assessment of contaminants in a heavily used urban industrial waterway.</p>
<p><b>Treaty 8 Tribal Association</b> Northeast British Columbia</p>	<p>Assisted with design and development, including fundraising, criteria and indicators, and determination of community-relevant VECs (Valued Ecosystem Components) for a community-based and First Nations-led centre for cumulative impact assessment, geared particularly towards the oil, gas, and forestry sectors, and utilizing both community- and science-based knowledge.</p>
<p><b>World Agroforestry Centre</b> Chiang Mai, Thailand</p>	<p>Design and delivery of a two-year study working within a multidisciplinary team to develop community-based methods for tracing environmental and community health changes over time, particularly with regards to pesticide use and early child health. Methodology development, training, field interviews, analysis, reporting.</p>

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	Resumé: <b>Craig Candler, PhD</b> January, 2010
<b>Treaty 8 Tribal Association</b> Northeast British Columbia	As-and-when needed technical support and recommendations to local governments towards the resolution of community concerns involving forestry, oil and gas, highways, and agriculture sectors.
<b>Sustainable Forest Management Network</b> Edmonton, AB	Worked as part of a multidisciplinary management team to support and manage socio-economic and cumulative effects related to boreal forest industries and communities. Team included industry, academic, and government representatives.
<b>Bigstone Cree First Nation</b> Northern Alberta	Extended field work and community-based research on the effects of northern industry, particularly pulp and paper development, upon social relations, community factionalism, and the practice of traditional medicine in a Northern Cree community.
<p style="text-align: center;"><b>Project Experience – First Nation Consultation and Negotiation</b></p>	
<b>BC Hydro Aboriginal Relations and Negotiations</b> Northwest BC	Assisted in leading a consultation team providing specialist First Nations consultation services in relation to the environmental permitting of a large transmission line project in northwestern BC. The project involved multiple First Nations in the area of Terrace, BC, as well as the Nisga'a Nation. Tasks included procedural consultation support, acting as point of contact for First Nation consultation, coordination and documentation of consultations within the environmental assessment process, supporting negotiations regarding memorandums of understanding and provision of capacity funding, as well as support, where appropriate, for negotiation of long-term impact and benefits agreements (IBAs) or other agreements related to project construction and operation.
<b>Mount Hays Wind Farm LP</b> Northwest BC	Component Lead for First Nations consultation services in relation to permitting of a proposed development through provincial and federal processes. The project involved three First Nations and traditional territory interests within an existing municipal boundary. Tasks included procedural consultation support, acting as point of contact for First Nation consultation, coordination and documentation of consultations, facilitation of negotiation regarding letters of understanding and development of accommodation packages including non-financial and financial accommodations, and support for negotiation of a long-term impact and benefits agreement (IBA).
<b>North Coast Wind Energy</b> Northwest British Columbia	Component Lead for First Nations consultation services in relation to a multi-billion dollar project being processed through a harmonized provincial-federal process. The project involved supporting consultation and accommodation discussions involving three First Nations and related traditional territory interests south of Prince Rupert, BC. Tasks included procedural consultation advice, acting as point of contact for First Nation consultation, coordination and documentation of consultations, facilitation of negotiation regarding letters of understanding and development of accommodation packages including non-financial and financial accommodations, and negotiation of long-term impact and benefits agreement (IBA).
<b>Catalyst Paper Corp.</b> Vancouver Island, BC	Project Manager for provision of Public and First Nations consultation support, including analysis of First Nations consultation requirements
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	and strategic advice. Tasks included delivery of consultation tools including letters, contact matrices, project website development, and open house coordination.
<b>Public Works and Government Services</b> Victoria, BC	Project Manager for provision of expert consultation support, including analysis of First Nations consultation requirements under federal policy and recent court decisions. Tasks included project and document review and reporting.
<b>Aseniwuche Winewak Nation</b> Grande Cache, AB	Project Manager for conducting a gap analysis of TUS data used for consultation purposes, and providing expert support for the optimization of an internal First Nations consultation and referral system.
<b>Treaty 8 Tribal Association</b> Northeast British Columbia	Assisted with the design and development of a TUS data system designed for referral and consultation purposes. Tasks included design and implementation of GIS and databases, and negotiation of information sharing protocols.
<b>Dene Tha' Consultation Pilot Project</b> Northwest Alberta	Methodology development and expert review of TUS data collection and mapping, digital data capture, and database design. Assisted negotiation of final information sharing and consultation protocols.
<b>Project Experience – Training and Capacity Building</b>	
<b>North Coast Wind Energy</b> Northwest British Columbia	Designed and delivered a week-long training workshop to three north coast First Nations on community-based TUS/TEK research, including traditional use mapping, for environmental assessment purposes. Training included classroom and field components and was taught in collaboration with four community Elder instructors.
<b>Treaty 8 Tribal Association</b> Northeast British Columbia	Design and development (including fundraising) for a community-based and First Nations-led centre for cumulative impact assessment utilizing both traditional and scientific knowledge and criteria for evaluating and monitoring environmental, socio-economic, and health changes.
<b>University of British Columbia</b> Vancouver, BC	Design and delivery of a senior university-level course on the ethnography of Southeast Asia.
<b>University of Alberta</b> Edmonton, AB	Design and delivery of senior university-level courses in the School of Comparative and Religious Studies, and Department of Anthropology.
<b>Northern Lights College</b> Inuvik, NT	Design and delivery of a college-level course on anthropology, community research, and natural resource management for post-secondary Gwich'in and Inuvialuit students.

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January, 2010

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**Professional Affiliations**

- Canadian Anthropological Society (CASCA) – Member of the CASCA Executive, effective June 2010, representing applied and practicing anthropologists in Canada at the national level.
- Canadian Asian Studies Association – Canadian Council for Southeast Asian Studies (CASA-CCSEAS)
- American Anthropological Association (AAA)
- Society for Applied Anthropology (SfAA)

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**Selected Publications**

<b>Peer Reviewed Publications, Journal Articles, and Proceedings</b>	<p>Craig, Candler, et al. 2010. <i>As long as the Rivers flow: Athabasca River knowledge and use study</i>. Alberta: Parkland Institute, University of Alberta.</p> <p>Craig, Candler, Rachel Olson, Steven Derov and Kieran Broderick. Participatory GIS as a Sustained (and Sustainable?) Practice: The Case of Treaty 8 BC. <i>Participatory Learning and Action</i>, 54 (2006), p. 325-356.</p> <p>Young, David and Craig Candler. 1997. "The Paradoxes of Northern Development in Canada: An Anthropological Perspective," in <i>The Proceedings of the 11th International Abashiri Symposium on Peoples and Cultures of the North</i>, Abashiri, Japan.</p> <p>Candler, Craig, David Young, Cliff Pompana and Denise Spitzer. A Hermeneutic Exposition of a Plains Healer's Concept of "The Grandfathers". <i>Anthropos</i>, 92 (1996), 115-128.</p>
<b>Books and Theses</b>	<p>Candler, Craig. 2006. <i>Changing Land Use and Children's Health in Mae Chaem, Northern Thailand</i>, Ph.D. thesis, University of British Columbia.</p> <p>Candler, Craig. 1999. <i>Healing and Cultural Formation in a Bush Cree Community</i>. M.A. thesis, University of Alberta.</p>
<b>Scholarly Conference Presentations</b>	<p>Invited Roundtable member for: Anthropological Connections: Networking Practising Anthropologists in Canada, Canadian Anthropological Society (CAS-SCA), Montreal, Canada (2010).</p> <p>The Good, the Bad and the Glossy: Anthropology, Land Use Mapping and 'Adequate' First Nations Consultation and Accommodation. Presented at the annual meetings of the Society for Applied Anthropology, Vancouver, Canada (2006).</p> <p>Incorporating TEK and Aquatic Toxicity Science. Interactive Workshop Presentation for the Aquatic Toxicity Workshop, Jasper, Canada (2006).</p> <p>Transcendent Life (and) Science: Medicine, Ecology, and Flexible Biotechnical Citizenship in a Northern Thai Valley. Presented at the</p>

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	Résumé: <b>Craig Candler, PhD</b> January, 2010
	32nd Congress of the Canadian Anthropological Society (CAS-SCA), Merida, Mexico (2005).
	Globalization in a Pill: Opium, Yaa Baa, and Addictive Modernity in Northern Thailand. Presented at the joint meetings of the Canadian Council for Southeast Asian Studies (CCSEAS) and the Canadian Asian Studies Association East Asian Council (CASA-EAC), Université de Montréal, Canada (2003).
	Maps, Dreams, and GIS: Telling Stories with New Technology. Presented at the 27th Congress of the Canadian Anthropological Society (CAS-SCA), University of Calgary, Canada (2000).
	The Concept of Significance in Cultural Resource Management: Protecting What Past for Whose Future? Presented at the 1999 ChacoMool Conference on Indigenous Peoples and Archaeology, University of Calgary, Canada (1999).
	Paper, Pipes and the Pentecost: Healing and Change in a Northern Cree Community. Presented at the 25th Congress of the Canadian Anthropological Society (CAS-SCA), Toronto, Canada (1998).
<b>Reviews and Other</b>	Craig Candler has provided external and/or internal peer review on specialist technical reports, academic articles, and book length works, including peer review of chapters and contributions to Terry Tobias' (2010) landmark work, <i>Living Proof: the Essential Data-Collection Guide for Indigenous Use-and-Occupancy Map Surveys</i> .

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## Education

*PhD Social Anthropology (in progress), University of Sussex, Brighton, UK, 2012*

*Master of Research in Social Anthropology, Ethnology and Cultural History, University of Aberdeen, Scotland, UK, 2003*

*Bachelor of Arts in Anthropology, University of Alberta, Edmonton, AB, 1999*

## Rachel Olson

Director

## Employment History

### ***The Firelight Group – Victoria, BC***

***Director (2009 to date)***

Responsible, as co-founder and director, for helping establish the Firelight Group, a firm of aboriginal and non-aboriginal professionals specialized in providing respectful and respected environmental and social science research, consulting, and support services in processes where aboriginal and non-aboriginal interests interact, and where good relationships are desired by all sides. Tasks include business development, as well as design, development, and delivery of technical services including community-based traditional knowledge research and documentation systems, environmental and socio-cultural impact assessments and monitoring programs, indigenous land use mapping, GIS technical support and training, archival research, community involvement processes, and First Nations consultation support services.

### ***National Aboriginal Health Organization – Ottawa, ON***

***Research Officer (2007 to 2008)***

As a member of the First Nations Centre research team, my primary research areas were the topics of maternity care and environmental health. Also held the research proposal development and workshop development files.

Tasks included primary research, technical writing, and participating in various committees and workshops across Canada. Was primary author of NAHO's series entitled, "Celebrating Birth".

### ***United Nations Educational, Scientific and Cultural Organization - Paris, France***

***Consultant (2006-2007)***

Worked with the LINKS (Local and Indigenous Knowledge Systems) program in the Science Sector and facilitated ongoing projects with indigenous communities in New Zealand, Micronesia, and Central America. Also focused on proposal development and editing and publishing various LINKS documents, including edited volumes.

### ***School of Nursing Research, University of British Columbia – Vancouver, BC***

***Social Science Researcher (2004-2005)***

Position of Health Research Associate for the research project, "Access to Primary Care Services for Aboriginal People in an Urban Centre". Duties include literature reviews, project coordination, and data collection, including participant observation of an Emergency Department, and in-depth interviews with Aboriginal Patients and



Health Professionals.

***Ecotrust Canada – Vancouver, BC  
Aboriginal Mapping Network Coordinator (2003-2004)***

Managed the Aboriginal Mapping Network program by meeting and engaging with like-minded individuals and organizations at various conferences and workshops. Coordinated of over 120 Aboriginal mapping professionals from across North America, Malaysia and Panama for the “Mapping for Communities: First Nations, GIS and the Big Picture” conference, held on November 20-21, 2003 in Duncan, BC. Conducted a comprehensive evaluation of the Aboriginal Mapping Network.

***Dene Tha’ First Nation - Chateh, AB  
Data Collection Manager (2001 to 2003)***

Developed and implemented Traditional Use Study in two First Nations communities, Chateh and Meander River. Included developing research design, methodology, training community researchers, and reporting to the Steering Committee of the Dene Tha’ Consultation Pilot Project.

***Treaty 8 Tribal Association - Fort St. John, BC  
Interview Coordinator (1999-2000)***

Coordinated land use mapping and life history interviews with community researchers in two communities, Halfway River and Doig River, focusing on qualitative methodologies and mapping processes.

**Project Experience – Traditional Ecological Knowledge (TEK) and Traditional Use Studies (TUS)**

**UNESCO-LINKS** Coordinated the Maori language version of the CD-ROM project, The  
New Zealand Canoe is the People, entitled He Waka He Tangata. The goal of the CD-ROM is to revitalize the transmission of indigenous knowledge by strengthening the dialogue between elders and youth. New ICT tools like CD-ROMs are recognized as powerful vehicles for traditional knowledge and the bolstering of oral traditions. The CD-ROM includes 70 videos, 41 stories and accounts, 40 images and diagrams, of which 11 are animated, in addition to numerous maps, photos and texts.

**Dene Tha’ Nation** Developed and implemented Traditional Use Study in two First  
Alberta Nations communities, Chateh and Meander River. Included developing research design, methodology, training community researchers, and reporting to the Steering Committee of the Dene Tha’ Consultation Pilot Project.

**Halfway River First Nation** Coordinated land use mapping and life history interviews with  
community researchers. Included training in qualitative



British Columbia	methodologies and mapping processes.
<b>Doig River First Nation</b> British Columbia	Coordinated land use mapping and life history interviews with community researchers. Included training in qualitative methodologies and mapping processes.
<b>Tr'ondek Hwech'in First Nation</b> Yukon	Oral History Project (1999), focused on collecting life history interviews with elders, and stories of life in fish camps along the Yukon River.
<b>Halfway River First Nation</b> British Columbia	Completed site reports for the Halfway River First Nation Traditional Use Study as a research assistant for Third Stone Community Research.

### Project Experience – Health and Social

<b>National Aboriginal Council of Midwives</b> Canada-wide	Assisted in the organization of the annual meeting, and wrote the annual report for the Council. Ongoing participation with the Council and continue to support through technical writing/proposal development as requested.
<b>Norway House Cree Nation</b> Manitoba	On-going engagement with the community and local midwifery program. Designing and implementing a body mapping workshop with mother's focused on their childbirth experiences. Working collaboratively with the midwifery program and students on a broader project with regards to rural and remote maternity care.
<b>National Aboriginal Health Organization</b> Canada-wide	Celebrating Birth Series. Researched and wrote all papers and documents associated with the National Aboriginal Health Organization's series on maternal health.
<b>Opaskwayak Cree Nation</b> Manitoba	Assisted in the conducting of interviews for a qualitative study on mother's experiences of childbirth from a northern Manitoban community. Part of the Strengthening Families: Maternal Child Health Program Evaluation program.
<b>Red Road HIV/AIDS Network</b> British Columbia	Researcher for the "Mapping the Road to Healthier Communities" map directories of health services for the City of Vancouver and the Northern British Columbia region. Guest Editor for "Bloodlines" magazine. Continuing support in research and writing as requested.
<b>Mother Saradadevi Social Service Society</b> Tamil Nadu, India	MSSSS is a grassroots NGO working with HIV/AIDS, both in prevention and care, in the Dindigul District of Tamil Nadu. Conducted a baseline survey of youth and sexual health issues to aid in the development and implementation of prevention programmes in the district.



## Selected Publications

Olson, Rachel and Carol Couchie. (2010). Clearing the Path: An Implementation Plan for Midwifery Services in First Nations and Inuit Communities. Ottawa: Government of Canada. Forthcoming.

Olson, Rachel. (2010). Restoring the Connection: Exploring Aboriginal midwifery and the context of the relocation for childbirth and in First Nation communities in Canada. In, *Reproduction, Migration, and Identity*. Unnithan-Kumar, Maya, and Sunil Khana (eds). Forthcoming.

National Aboriginal Health Organization. (2009). Celebrating Birth- Aboriginal Midwifery in Canada. Ottawa: National Aboriginal Health Organization. [Primary Author]

National Aboriginal Health Organization. 2008. Celebrating Birth - Exploring the Role of Social Support in Labour and Delivery for First Nations Women and Families. Ottawa: National Aboriginal Health Organization. [Primary Author]

Olson, Rachel. (2008). Exploring the Potential Role of Doulas and Doula Training for the Children and Youth Division of First Nations and Inuit Health, Health Canada. Ottawa: Government of Canada. Internal circulation only.

Corbett J. M., , Giacomo Rambaldi, Peter A. Kwaku Kyem, Daniel Weiner, Rachel Olson, Julius Muchemi and Robert Chambers (2006). Overview - Mapping for Change the emergence of a new practice." *Participatory Learning and Action* 54. 13-20.

Candler, Craig, Rachel Olson, Steven DeRoy, and Kieran Broderick. (2006). PGIS as a Sustained (and Sustainable?) Practice: The Case of Treaty 8 BC. *Participatory Learning and Action* 54.

Guest Editor. *Participatory Learning and Action*. Issue 54, April 2006. International Institute for Environment and Development. London, UK.

Guest Editor. *Bloodlines Magazine*. Issue 5: Spring 2005. Red Road HIV/AIDS Network Society. West Vancouver, BC.

Olson, Rachel (Contributor). (2003). Arctic Slope Regional Corporation, Bureau of Land Management, Council of Athabasca Tribal Governments, Gwich'in Council International, Northwest Alaska Regional Corporation, Project Chariot. In, *Encyclopaedia of the Arctic*. Ed. Mark Nutall. Fitzroy Dearborn, Routledge: New York, NY.

## Employment Equity

- Registered with Indian Status through the Tr'ondek Hwechin First Nation.



## Education

*BA Geography (in progress), University of Winnipeg, Winnipeg, MB, 2011*

*GIS/Cartographic Technology, Sir Sandford Fleming College, Lindsay, ON, 1998*

## Steven DeRoy

Director, GIS/Mapping and Technical Services

## Employment History

### ***The Firelight Group – Victoria, BC***

#### ***Director, GIS/Mapping and Technical Services (2009 to date)***

Responsible, as co-founder and director, for helping establish The Firelight Group, a firm of aboriginal and non-aboriginal professionals specialized in providing respectful and respected environmental and social science research, consulting, and support services in processes where aboriginal and non-aboriginal interests interact, and where good relationships are desired by all sides. Tasks include business development, as well as design, development, and delivery of technical services including community-based traditional knowledge research and documentation systems, environmental and socio-cultural impact assessments and monitoring programs, indigenous land use mapping, GIS technical support and training, research, community involvement processes, and First Nations consultation support services.

### ***Centre for Indigenous Environmental Resources – Winnipeg, MB***

#### ***Research Associate/GIS Specialist (2007 to 2010)***

As a Research Associate/GIS Specialist, my primary role was to build a mapping and GIS service at CIER that would support both internal staff and external clients with technical, advisory and professional support on a range of projects. Responsible for design, development, and oversight of an Ontario-wide risk assessment inventory of fuel systems and waste site inventory project; managed, researched and documented good practices for setting up GIS offices in Aboriginal communities across Canada; conducted an assessment of land use planning issues for First Nations in Ontario; indigenous land use mapping; GIS data manager for the Pimachiowin Aki world heritage site nomination; capacity building initiatives; development of environmental monitoring tools; species at risk tool development; delivery of comprehensive community planning services; place names mapping; advisory support to Clean Energy and Community Adaptation Program; wind farm tenure applications; and internal IT liaison. Clients included First Nations, Ivey Foundation, RBC Blue Water Foundation, INAC, Parks Canada, and GeoConnections/Natural Resources Canada.

### ***Treaty 8 Tribal Association – Fort St. John, BC***

#### ***GIS Advisor (2005 to 2006)***

Provided mapping and GIS advisory support to six member First Nation communities (Fort Nelson, Prophet River, Halfway River, Doig River, Saulteau, and the West Moberly First Nations), chiefs and councils, internal staff, and to the Treaty 8 negotiations team. Aided in the storing and mapping of traditional use information and maintained a comprehensive digital data library containing numerous datasets from



diverse government agencies, conservationists & industry; expedited the consultation referral and permitting process through ongoing training and technical support for Treaty 8 land use offices; researched, wrote proposals and secured funding for an online mapping application; participated in joint planning and management activities involving government agencies, industry and Treaty 8 First Nations; and acted as Information Technology manager for 25 client users.

***Red Road HIV/AIDS Network – West Vancouver, BC  
GIS Technician/Consultant (2004 to 2007)***

Managed the web-based mapping system, utilizing ESRI's ArcIMS software, to map out the locations of HIV and AIDS service organizations throughout the province of British Columbia. Also designed and developed 30,000 map guides highlighting HIV/AIDS and health services for both the city of Vancouver and northern British Columbia; represented the Red Road interactive mapping project at various conferences, workshops and meetings; and coordinated the redesign and maintainance of [www.red-road.org](http://www.red-road.org).

***Ecotrust Canada – Vancouver, BC  
Aboriginal Mapping Network Coordinator and GIS Mapping Analyst  
(2002-2004)***

Manager for the Aboriginal Mapping Network, with responsibilities including management of program initiatives, presentation of the program to funders, members, and organizations at various conferences and workshops, and co-facilitation of two workshops with national and international participation addressing issues of concern to aboriginal mappers. Supported identification of funding sources relating to land use and occupancy research (this resulted in publication of "A New Trail: Fundraising for Cultural Research and Land Use and Occupancy Studies - A Reference Guide For Securing Funds."), provided mapping and GIS training and technical support to First Nation communities involved with developing land use plans and bioregional atlases, and maintained the Ecotrust Canada and Aboriginal Mapping Network websites ([www.nativemaps.org](http://www.nativemaps.org)).

***DrakeGIS & Mapping Ltd. – Kelowna, BC  
Marketing Manager (2000 to 2002)***

Assisted in the development of the company in response to the increasing need for mapping and GIS services in BC. Cultivated strategic affiliations and joint ventures with small consulting companies and First Nation bands; researched, identified and wrote proposals for contract opportunities; project leader for a traditional use study for the Nazko Band Government; responsible for the completion of all mapping phases for fish & fish habitat inventory mapping projects and watershed assessment maps for various clients as well as administrative duties.

***Urban Systems Ltd. – Kelowna, BC  
GIS/Cartographic Technologist (1999)***

Performed tasks for the Digital Information Management and Resource Systems (DIMARS) project including editing watermain, sanitary sewer and storm sewer drawings using AutoCAD 14; setting up databases for



each drawing in ArcView; and linking data to scanned drawings in PDF.

***Computer Master – Mississauga, ON  
MicroStation Operator (1999)***

Acted as a consultant for the Regional Municipality Of Peel by adding, updating and editing watermain plans and files using MicroStation SE. Involved recording and updating changes made to waterplans into graphic conversion databases using Excel.

***Toronto Hydro Electric Commission – Scarborough, ON  
CAD Operator (1999)***

Produced and created small site plans, single line diagrams, and updated and revised landbase files, strip maps and subdivision maps using IRAS/B within MicroStation SE. Also assisted in training MicroStation SE to co-op students.

## Project Experience – Traditional Ecological Knowledge (TEK) and Traditional Use Studies (TUS)

- God's Lake First Nation**  
Eastern Manitoba  
GIS Manager for the digitization of all Traditional Use Study data collected for the Historical Resources Branch of Manitoba. The project involved working with First Nation researchers and included methodology review, GIS pre- and post-processing, and reporting.
- Manto Sipi Cree Nation**  
Eastern Manitoba  
GIS Manager for the digitization of all Traditional Use Study data collected for the Historical Resources Branch of Manitoba. The project involved working with First Nation researchers and included methodology review, GIS pre- and post-processing, and reporting.
- Wabanong Nakaygum Okimawin**  
Eastern Manitoba  
GIS Manager for 13 First Nations involved in the collection of Traditional Use Study data for the Wabanong Nakaygum Okimawin East Side Planning Authority. The project involved working with First Nation researchers and included methodology review, GIS pre- and post-processing, and reporting.
- Little Grand Rapids First Nation**  
Eastern Manitoba  
Project leader for the development of a Saulteaux/Syllabics place names map for the Little Grand Rapids First Nation. The project involved working with two First Nation researchers to document and verify toponyms. Tasks have included methodology development, First Nations liaison, training, community-based mapping, GIS pre- and post-processing, and reporting.
- Mikisew Cree Nation**  
Northeast Alberta  
Facilitated the development of a community-based, environmental monitoring program using Indigenous Knowledge and Western Science, to record changes in the environment, and to create tools to assist in environmental monitoring. Tasks included conducting community-based research to develop traditional knowledge indicators of environmental health, customization of CyberTracker software to enable the Mikisew Cree First Nation to collect TEK observations in the field, and reporting.



- Keeseekoowenin Ojibway First Nation**  
Southern Manitoba  
Conducted community-based research for the development of an environmental monitoring program using Indigenous Knowledge and scientific monitoring techniques. Tasks included methodology development, First Nation liaison support, training, customization of CyberTracker software, GIS pre- and post-processing, and reporting.
- Coalition of First Nations with Interest in Riding Mountain National Park**  
Southern Manitoba  
Completed a needs assessment for completing an Anishnabe Knowledge Study. The report outlined two potential approaches for the Anishnabe Knowledge Study, which differed primarily in the technical skills required for data collection and in the nature of the products that would be developed from the study. Tasks included interviews, literature reviews, methodology development, technical writing, and reporting.
- Saulteau First Nation and the West Moberly First Nations**  
Northeast British Columbia  
Conducted a cultural values assessment by integrating land use and occupancy research findings from past studies into the Peace Moberly Tract Land Use Plan. The planning committee consisted of representatives from the BC provincial government, industry and First Nations. Tasks included methodology development, gathered data from numerous research studies from both SFN and WMFN, developed maps that showed the distribution of cultural heritage, and created buffered zones for areas of cultural sensitivity. Also facilitated training workshops for land use personnel from the WMFN to create the maps to be used in the land use plan.
- Prophet River First Nation**  
Northeast British Columbia  
Provided technical expertise for the development of maps to be used in a land use planning initiative for a 5 square kilometre area around the PRFN's reserve lands. Created a series of maps that integrated scientific and cultural heritage data for a planning initiative between the Oil and Gas Commission (OGC) and the PRFN. The maps were produced for community input on issues affecting hunting, fishing, and other activities.
- Doig River First Nation**  
Northeast British Columbia  
Provided technical expertise for integrating land use and occupancy research findings from past studies into the communities Treaty Land Entitlement process. Tasks included facilitating training workshops to land use personnel from DRFN to create maps of cultural heritage, and provide technical support during the community consultation process for identifying potential land parcels that would be added to the DRFN reserve lands.
- Fort Nelson First Nation**  
Northeast British Columbia  
Provided technical and training expertise for the development of a community atlas and mapping of traditional use study research findings. Tasks included facilitating training workshops for a community GIS Trainee, and the development of a community atlas that integrated scientific and cultural data, and digitize traditional use study research findings to create deliverables to the OGC on behalf of the community.
- Halfway River First Nation**  
Northeast British Columbia  
Provided technical expertise to land use personnel to identify a RCMP historic trail route. Involved researching and identifying maps of historic data highlighting the trail, along with a field reconnaissance with land use personnel from HRFN to GPS the exact location of the trail.
- Bigstone Cree Nation** Assisted with gap analysis, evaluating community goals and needs, and



- TUS Gap Analysis**  
Northwest Alberta  
the potential of an existing TUS data set to meet those goals and needs. Assessed community land use and occupancy study (CLUOS) data and provided GIS training to staff members.
- Aboriginal Mapping Network**  
Vancouver, BC  
Interviewed practitioners and researched funding sources that would support Traditional Use Study research activities in First Nation communities that resulted in the development of "A New Trail: Fundraising for Cultural Research and Land Use and Occupancy Studies - A Reference Guide For Securing Funds."
- Nazko Band Government Traditional Use Study**  
Central British Columbia  
Initiated a Traditional Use Study in accordance with the BC Traditional Use Study guidelines. Project leader for the development of a Traditional Use Study for the Nazko Band Government, coordinating literature reviews, and managing budgets and personnel.

### Project Experience – Land Use Planning, Atlases and Bioregional Mapping

- Fisher River Cree Nation**  
Manitoba  
Facilitated workshops for the development of a community vision for watershed planning. Involved methodology development, community consultations, coordination with First Nation Liaisons, mapping, and synthesizing responses for inclusion into a community vision.
- Ivey Foundation**  
Northern Ontario  
Conducted an assessment of Ontario-based First Nation land use issues to gain a deeper understanding of community-driven, participatory land-use planning priorities. Involved working with First Nations by traveling to and interviewing practitioners, synthesizing data and reporting.
- Treaty Relations Commission of Manitoba**  
Manitoba  
Produced and designed a 24-page portfolio for the Historical Atlas of First Nations in Manitoba, 2009 Map Portfolio. Involved collaborating with academic researchers and writers, conducting archival and historical research, graphic design and layout, GIS analysis and cartography.
- Little Black Bear First Nation**  
Southern Saskatchewan  
Provided advisory, technical and training support to the Little Black Bear First Nation for the development of a comprehensive community plan. Involved designing implementation strategies for First Nations involvement, including workshop facilitation, mapping, and synthesizing responses for inclusion into a community vision.
- Parks Canada**  
Northwest Territories  
In support of the public participation program for the expansion of Nahanni National Park Reserve, develop a 22-layer atlas showing conservation and other values of the area. Prepared relevant data and edited maps for the final production of the Greater Nahanni Ecosystem Atlas. Also prepared satellite imagery suitable for draping on a 3D model.
- Whitesand First Nation**  
Northwest Ontario  
Collaborated with the Aboriginal Strategy Group to work with the Whitesand First Nation to develop a land use plan vision in Armstrong, Ontario. Involved workshop facilitation and synthesizing responses for inclusion into a community vision document.
- Doig River First Nation**  
Collaborated with Herb Hammond to identify forestry resources within



- Northeast British Columbia DRFN's territory to give the community options for economic independence. Involved the creation of a series of maps that highlighted forest data (age, species, site class, etc.) that could be analyzed for the visioning process.
- Tahltan First Nation**  
Northwest British Columbia Provided technical expertise for the production of maps for the Tahltan First Nation's territory. Involved the creation of a series of maps to support the community's interest in identifying potential economic opportunities and protection from encroaching industrial development activities.
- Heiltsuk Nation**  
Central Coast of British Columbia Provided technical and training expertise for the production of the Heiltsuk Nation's land use plan. Tasks included obtaining, filtering and managing all relevant information (scientific and cultural data), resulting in the production of indicator data, spreadsheets and maps. It also involved facilitating training workshops to the land use personnel to identify and filter cultural data from past TUS research for inclusion into the land use plan.
- Sencot'en Alliance**  
Southern British Columbia Provided technical and training expertise for the development of a bioregional atlas for 5 communities of the Sencot'en Alliance. Involved researching and gathering information and digital data for inclusion into the bioregional atlas. It also involved facilitating training workshops to support land use personnel from 5 communities to create maps for the atlas.
- Tsleil Waututh Nation**  
Southern British Columbia Provided technical and training expertise for the development of a park atlas for Say Nuth Khaw Yum (Indian Arm Provincial Park). Researched and gathered information and digital data for inclusion into the park atlas, resulting in over 45 map layers. It also involved facilitating training workshops with the community GIS technician to create maps for the park atlas.
- Hupacasath First Nation**  
Southern British Columbia Provided technical and training expertise for the development of the Hupacasath First Nation's land use plan. Obtained, filtered and managed all relevant information (scientific and cultural data), resulting in the production of indicator data, spreadsheets and maps. Also facilitated training workshops with land use personnel to create maps that would be included in the land use plan.
- Nazko Band Government**  
Central British Columbia Produced a land interest document that provided an overview of the Ndazkoht'en people and their long-term goals and vision. Involved community-based research, interviews and synthesizing results into a comprehensive report.

## Project Experience – Capital Infrastructure

- Indian and Northern Affairs Canada (INAC) – Ontario region**  
Ontario Development of a risk assessment inventory database tool for fuel tank systems and wastes disposal sites on Indian reserves throughout Ontario for Indian and Northern Affairs Canada (awarded the ESRI Canada 2009 Award of Excellence). Involved developing a



comprehensive implementation plan detailing methodology, managing GIS consultants, provided training and technical support to data collectors, conducted quality assurance, developed training manuals and final reporting.

- Swan Lake First Nation**  
Southern Manitoba  
Provided technical expertise for the development of a 5-megawatt wind farm on the Swan Lake First Nation. Involved the production of mapping products.
- Treaty 8 Tribal Association**  
Northeast British Columbia  
Provided technical expertise for the development of a wind farm tenure application in Treaty 8 territory. Involved laying out the site location using 3D modelling and developing mapping products.
- DIMARS - Summerland**  
Central British Columbia  
Conducted GIS data entry and analysis for the Digital Information Management And Resource Systems (DIMARS) project. Involved editing watermain, sanitary sewer and storm sewer drawings and setting up databases that linked to scanned drawings.
- Regional Municipality of Peel**  
Southern Ontario  
Conducted GIS data entry and analysis for the adding, updating, and editing of water main plans and files for the entire Regional Municipality of Peel.
- Toronto Hydro**  
Southern Ontario  
Conducted GIS data entry and analysis for small site plans and single line diagrams, and updated and revised land base files, strip maps and subdivision maps.

## Project Experience – Health and Social

- National Aboriginal Health Organization**  
Canada-wide  
Technical lead for the production of numerous mapping products designed for use in highlighting Aboriginal midwifery in Canada. Involved methodology development, pre- and post-GIS analysis, quality assurance, map development and reporting.
- Red Road HIV/AIDS Network**  
British Columbia  
Technical Lead for the development of a comprehensive listing of HIV/AIDS and health services available to First Nations for the province of British Columbia. Involved methodology development, pre- and post-GIS analysis, quality assurance, map development and reporting.
- Red Road HIV/AIDS Network**  
Northern British Columbia  
Technical Lead for the development of 10,000 pocket book guides highlighting HIV/AIDS and health services available to First Nations for the northern region of British Columbia. Involved methodology development, pre- and post-GIS analysis, quality assurance, map development, managing graphic design consultants, coordination with print shop, and reporting.
- Red Road HIV/AIDS Network**  
Southern British Columbia  
Technical Lead for the development of 20,000 pocket book guides highlighting HIV/AIDS and health services available to First Nations for the city of Vancouver. Involved conceptualizing and planning, methodology development, pre- and post-GIS analysis, quality assurance, map development, managing graphic design consultants, coordination with print shop, and reporting.



## Conferences/Workshops

- Presenter, Central Boreal Learning Network, November 4-6, 2009 in Montreal, Quebec;
- Presenter, Working Forum on the Duty to Consult: Now What?, October 22-23, 2009 in Edmonton, Alberta;
- Presenter, Keepers of the Water III, August 13-17, 2008 in Fort Chipewyan, Alberta;
- Presenter, Wabanong Nakaygum Okimawin Traditional Area Land Use Plans, June 24-25, 2008 in Winnipeg, Manitoba;
- Presenter, Northern British Columbia GIS Conference 2006, May 30-31, 2006 in Prince George, British Columbia;
- Presenter, Mapping for Change, September 7 – 11, 2005 in Nairobi, Kenya, Africa;
- Presenter, Indigenous Communities Mapping Initiative Conference, March 10 – 15, 2004 in Vancouver, British Columbia;
- Presenter, Geotec Event “A Spirit of Collaboration”, May 16-19, 2003, in Vancouver, British Columbia;
- Presenter, Natural Resources Information Management Forum: Putting Knowledge to Work, 2003 in Richmond, British Columbia;
- Presenter, Intertribal GIS Council Conference 2003, in Coeur D’Alene, Idaho;
- Presenter, Sto:lo Environment Conference, April 16, 2003 in Chilliwack, British Columbia;
- Presenter, UBCIC Land Claims Research Conference, 2003 in Vancouver, British Columbia;
- Presenter, Northern British Columbia GIS Conference 2002, May 2002 in Prince George, British Columbia.

## Selected Publications

### Journal Articles

Craig, Candler, Rachel Olson, Steven DeRoy and Kieran Broderick. Participatory GIS as a Sustained (and Sustainable?) Practice: The Case of Treaty 8 BC. *Participatory Learning and Action*, 54 (2006), 325-356.

### Other

“Good Practices Guide: Setting up and keeping an Aboriginal Mapping Program” guidebook produced by CIER for GeoConnections and Natural Resources Canada (2010).

Rachel Eni, Gladys Rowe, and Steven DeRoy. Assessing the Social, Cultural, Health Impacts of Hydro-electric Construction in Fox Lake. Poster presentation at the 10th annual Health Impact Assessment Conference in Rotterdam, Netherlands.

## Employment Equity

- Registered with Indian Status through the Ebb & Flow First Nation, Registry Number: 280 00936 01

# **Petr E. Komers, Ph.D., P.Biol.**

## ***Wildlife Ecology and Environmental Impact Assessment***

### **Overview**

Dr. Komers specializes in the assessment of disturbances of wildlife movements, regional habitat use and population ecology. Regional planning projects that address impacts to wildlife movements and habitat use involve Oil Sands development in Alberta, Diamond Mines in the NWT, Oil and Gas exploration in the Mackenzie Delta and Mackenzie Valley NWT, and international Oil and Gas Operations. Dr. Komers has led ecological assessments in Canada, USA, Europe, Asia and Africa. His experience includes multimillion dollar industry and research projects in wildlife ecology, leading of international and multidisciplinary teams, and development of environmental standards. During more than 20 years of working experience he resided in six countries and is fluent in four or five languages. Dr. Komers worked with proponents, First Nations, governments, and NGOs. He routinely acts as an expert witness, a referee of scientific manuscripts, and as an examiner at university thesis defenses. Dr. Komers is an Adjunct Associate Professor at the University of Calgary, supervising graduate research on the effects of landscape disturbances on large mammals. He offers lectures in environmental science and conservation biology.

### **Key Projects**

Dr. Komers analyzed effects of fragmentation and habitat loss and designed mitigation measures including revegetation plans and wildlife crossing structures. He also managed and integrated multiple disciplines for EIAs and research projects. Projects include:

- Regional Land Use planning and mapping analyses for First Nations in Northern Alberta, 2002 to present.
- Third party reviews of EIAs on behalf of Aboriginal communities for projects in the Athabasca Oil Sands, Alberta, and Diamond Mines in the NWT, 2002 to present.
- Scientific Advisor to the Environmental Impact Review Board, Inuvialuit Settlement Region, NWT, for the Inuvik to Tuktoyuktuk Road development, 2010 to present.
- Scientific Advisor (wildlife) to the Mackenzie Valley Environmental Impact Review Board, the GahCho Kue mine project and the Taltson Hydroelectric Project, NWT, 2008 to present.
- Lead for the Wildlife impact assessment for the Mackenzie Gas Project, NWT, 2003 – 2007.
- Scientific Advisor to the Environmental Monitoring Advisory Board, Diavik Diamond Mine, NWT, 2003 to present.
- Lead for the Wildlife and vegetation impact assessment, Parsons Creek Resources, 2007-2010.
- Scientific Advisor to the Energy Resources Conservation Board, Encana Suffield project 2007-08.
- Ecosystem Goods and Services Assessment by Alberta Environment, third party review and PowerPoint presentations on the strategy, 2007-2008.
- Research on industrial disturbances in Southern Alberta and the Foothills Natural Region; supervision of a Graduate Research Project, University of Calgary, 2002 to present.
- Lead for the wildlife impact assessment of two mining projects in Alaska, 2004-2006.
- Road construction in urban and rural areas throughout Alberta providing solutions for landscape connectivity and wildlife crossings, 1998 to present.
- Environmental impact assessment and environmental management plan in Kirthar National Park (Pakistan), 2001.

- Wildlife impact assessment, Gregg River mine, Jasper National Park (World Heritage Site), 1999.

## **Areas of Specialization**

### **Biodiversity**

- Identified biodiversity indicators and developed plans for ecosystem management and environmental protection.
- Analyzed effects of emission deposition, habitat clearing and fragmentation, assessing disturbance effects on species composition and performing population viability analyses for the mining and oil & gas industries, urban development, and agriculture.
- Completed cumulative effects assessments.

### **Wildlife Ecology**

- Conducted current and relevant research on landscape ecology in the Foothills Natural Region, shows effects of habitat loss and fragmentation and suggests the potential implementation of threshold values for ecosystem management.
- Conducted research on the dynamics of small populations and the success of re-introductions.
- Published research in over 40 articles in peer reviewed and popular journals.

### **Protected Areas**

- Conducted research on terrestrial ecology.
- Advised on area management and prepared environmental assessments and reports in Jasper, Banff, Wood Buffalo National Parks, Kananaskis Country Improvement District, Mackenzie Bison Sanctuary, Tsavo East National Park (Kenya), Kirthar National Park (Pakistan), Etosha National Park (Namibia).
- Taught conservation biology and environmental science treating the design and management of protected areas, based on landscape ecology and professional experience.

### **Expert Witness**

- Testified as an expert witness in public hearings defending development plans proposed for ecologically significant areas.
- Routinely reviews scientific papers on wildlife ecology and reviewed reports for the International Union for the Conservation of Nature (IUCN), the Convention on the International Trade of Endangered Species (CITES), and the Commission on the Status of Endangered Wildlife in Canada (COSEWIC).

### **Management of applied science**

- Over twenty years of management experience in national and international projects: Designed research and consulting projects, secured funding, implemented and completed all projects on schedule and within proposed budgets.
- Manager Biophysical Services at IEG; supervisor of graduate student research; president of a professional association.
- Responsible for the budgeting, administration and logistical support of up to 30 staff; formally trained in project management.

### **Working with multi-disciplinary teams**

- Managed and lead teams of multiple disciplines including terrestrial and aquatic fauna, flora, soil science, hydrogeology, socio-economics, restoration ecology, and GIS.
- Produced comprehensive environmental reports and management plans.
- Published research of multinational teams in scientific journals.

## **Employment Experience**

- 2002 - present    **MSES Inc.: President and Principal Consultant**  
*(International Project Development, Environmental Evaluation and Planning, Management of Environmental Science Teams)*
- 2003 - 2007    **AMEC Earth & Environmental Ltd., Calgary, Alberta: Casual Consultant**  
*(Wildlife Ecology for the Mackenzie Pipeline Environmental Group, Project Planning, Implementation and Management; Environmental Assessment and Planning)*
- 2001 - 2002    **Inuvialuit Environmental & Geotechnical Ltd.: Manager Biophysical Services**  
*(Project Planning and Implementation, Senior Review, Science Advisor, Public Consultation)*
- 1997 - 2001    **AMEC Earth & Environmental Ltd., Calgary, Alberta: Senior Consultant**  
*(Environmental Assessment and Planning, Project Planning, Implementation and Management, Public Consultation, Environmental Regulation)*
- March 1998    **University of Calgary, Alberta: Sessional Lecturer**  
*(Preparation And Delivery Of Lectures in Conservation Biology, Student Advisor)*
- 1995 - 1996    **University of Uppsala, Sweden: Research Fellow**  
*(Fundamental / Applied Research, Project Development and Management, Student Supervision, Public Consultation, International Team Leadership)*
- 1993 - 1995    **University of Cambridge, England: Research Fellow**  
*(Fundamental Research, Project Development and Management, International Collaboration)*
- 1988 - 1992    **University of Saskatchewan, Canada: Sessional Lecturer; Teaching Assistant**
- 1985 - 1987    **University of Alberta, Canada: Teaching Assistant**

## **Education**

- 1993 - 1997    Post-doctorate, University of Cambridge, UK and University of Uppsala, Sweden
- 1988 - 1992    Doctor of Philosophy, University of Saskatchewan, Canada  
*(Thesis: Mating strategies of male wood bison)*

**Komers, Petr**

- 1985 - 1987      Master of Science, University of Alberta, Canada  
(Thesis: Mate choice in black-billed magpies)
- 1981 - 1984      Bachelor of Science, University of Berne, Switzerland
- 1977 - 1981      Swiss Federal Baccalaureate, Berne, Switzerland

**Affiliations**

- Past-President*    Alberta Society of Professional Biologists (ASPB)
- Adjunct*            Adjunct Associate Professor, University of Calgary, Biological Sciences
- Member*            Editorial/Advisory Board for the Journal of ETHOLOGY, ECOLOGY & EVOLUTION

**Publications**

**Presentations**

- Gavin, S., S. Hechtenthal, A. Stewart, T. Whidden, Z. Stanojevic and P.E. Komers. 2010. **Maintaining wildlife movement: the need for regional planning.** Presented at International Association for Impact Assessment, Geneva, **Switzerland**, April. Best Poster Award.
- Kienzle S.W., J. Byrne , D. Schindler and P. Komers, 2005. **Do Massive Oil Sands Developments in a Northern Watershed Lead to an Impending Crisis? Results from a Gap Analysis of Environmental Impacts Assessments. American Geophysical Union (AGU) Conference Poster**, Section "Watershed resilience and sustainability", 5-9 December 2005, San Francisco, California.
- Gavin, S. and Komers P.E. 2005. **Pronghorn behaviour in response to roads in southern Alberta, Canada.** Animal Behaviour Society, 42nd Annual Meeting, Snowbird, Utah, August 6-10, 2005.
- Komers, P.E. and Shih, S. 2005. **From Science to Governance**, presented at the IAIA Western and Northern Canadian Affiliate series, Calgary, March 2005.
- Komers P.E. and Clayton D. 2003. **Reclamation Challenges North of 60 – Wildlife, Regulations and Traditional Knowledge**, presented at the Canadian Land Reclamation Association, Calgary, Alberta.
- Komers, P.E. 2002. **Replacing Opinion with Measurement in Environmental Assessments.** Presented at the National Energy Board, June in Calgary, Canada.
- Komers, P.E. and Archie, B. 2001. **Dealing with Traditional Land Use and Northern Heritage Issues in Development Projects** *Conference for the Mackenzie Oil & Gas Development Strategies*, October in Calgary, Canada.
- Komers, P.E. 2000. **Non-Linear Responses of Ecosystem Components to Provide Threshold Values for Cumulative Effects Management .** *Cumulative Effects Management Conference*, November in Calgary, Canada.

Komers, P.E. 2000. **The break-up of habitat continuity indicates a threshold for ungulate responses to landscape changes.** *Annual Conference of the Society for Conservation Biology*, June in Missoula, Montana, USA.

**Lectures, University of Calgary**

**Komers, P.E. ,Environmental Impact Assessment, on regulatory underpinnings and practical approaches to measurement in Canada and internationally.** Recurring since Winter Semester 2002.

**Komers, P.E. Impacts on Wildlife, on the measurement and analysis of disturbance effects,** recurring since Autumn 2000.

**Peer-reviewed Publications**

Stewart. A, and P.E. Komers. 2012. **Testing the Ideal Free Distribution Hypothesis: Moose Response to Changes in Habitat Amount.** International Scholarly Research Network (ISRN) Ecology. Volume 2012, Article ID 945209, 8 pages, doi:10.5402/2012/945209.

Komers, P.E., A. Stewart; Shannon Gavin; S. Hechtenthal; T. Whidden; Z. Stanojevic; 2010. **Participatory Management In The Canadian Oil Sands.** 'IAIA10 Conference Proceedings' Submission ID: 56; The Role of Impact Assessment in *Transitioning to the Green Economy* 30th Annual Meeting of the International Association for Impact Assessment 6-11 April 2010, International Conference Centre Geneva - Switzerland (www.iaia.org)

Stewart. A, P.E. Komers and D.J. Bender. 2010. **Assessing Landscape Relationships for Habitat Generalists.** *Ecoscience*, 17: 28-36.

Gavin, S.D. and P.E. Komers. 2006. **Do pronghorn (*Antilocapra americana*) perceive roads as a predation risk?** *Canadian journal of Zoology*, 84:1775-1780.

Brotherton, P.N.M. & Komers, P.E. . 2003. **Mate Guarding and the Evolution of Social Monogamy in Mammals.** In: *Monogamy: Mating Strategies and Partnerships in Birds, Humans and other Mammals.*, U. Reichard and C. Boesch eds., University of Cambridge Press, Cambridge. Pp. 42-58.

Komers, P.E. and G.P. Curman. 2000. **The Effect of Demographic Characteristics on the Success of Ungulate Re-introductions.** *Biol. Cons.* 93: 187-193.

Komers, P.E., B. Birgersson and K. Ekvall. 1999. **Timing of Estrus Influenced by Male Age in Fallow Deer.** *Am. Nat.* 153: 431-436.

Pélabon, C., P.E. Komers and J. Höglund. 1999. **Do leks limit the frequency of aggressive encounters in fallow deer? Linking local male density and lek occurrence.** *Can. J. Zool.* 77: 667-670.

Pélabon, C., P.E. Komers, B. Birgersson and K. Ekvall. 1999. **Social Interactions of Yearling Male Fallow Deer During the Rut.** *Ethology* 105: 247-258.

Komers, P.E. and P.N.M. Brotherton. 1997. **Female Space Use Is the Best Predictor of Monogamy in Mammals.** *Proc. R. Soc. B.* 264: 1261-1270.

- Komers, P.E. 1997. **Behavioral Plasticity in Variable Environments.** *Can. J. Zool.* 75: 161-169.
- Brotherton, P.N.M., J.M. Pemberton, P.E. Komers and G. Malarky. 1997. **Genetic Evidence of Monogamy in an Antelope, Kirk's Dik-Dik (*Madoqua kirkii*).** *Proc. R. Soc. B.* 264: 675-681.
- Komers, P.E., C. Pélabon and D. Stenström. 1997. **Age at First Reproduction in Male Fallow Deer: Age- Vs. Dominance-specific Behaviors.** *Behav. Ecol.* 8: 456-462.
- Komers, P.E. and P.N.M. Brotherton. 1997. **Dung Pellets Used to Identify the Distribution and Density of Dik-Dik.** *Afr. J. Ecol.* 35: 124-132.
- Pélabon, C. and P.E. Komers. 1997. **Time-Budget Variations in Relation to Density-Dependent Social Interactions in Female and Yearling Male Fallow Deer During the Rut.** *Can. J. Zool.* 75: 971-977.
- Komers, P.E. 1996. **Obligate Monogamy Without Paternal Care in Kirk's Dik-Dik.** *Anim. Behav.* 51: 131-140.
- Komers, P.E. 1996. **Conflicting Territory Use in Males and Females of a Monogamous Ungulate, the Kirk's Dik-Dik.** *Ethology* 102: 568-579.
- Komers, P.E., F. Messier and C.C. Gates. 1994. **Plasticity of Reproductive Behavior in Wood Bison Bulls: On Risks and Opportunities.** *Ethol. Ecol. Evol.* 6: 481-495.
- Komers, P.E., F. Messier and C.C. Gates. 1994. **Plasticity of Reproductive Behavior in Wood Bison Bulls: When Subadults Are Given a Chance.** *Ethol. Ecol. Evol.* 6: 313-330.
- Komers, P.E., F. Messier, P. Flood and C.C. Gates. 1994. **Reproductive Behavior of Male Wood Bison Related to Female Progesterone Level.** *J. Mammal.* 75: 757-765.
- Komers, P.E., F. Messier and C.C. Gates. 1993. **Group Structure in Wood Bison: Nutritional and Reproductive Determinants.** *Can. J. Zool.* 71: 1367-1371.
- Komers, P.E., K. Roth and R. Zimmerli. 1992. **Interpreting Social Behavior of Wood Bison Using Tail Postures.** *Z. Säugetierk* 57: 343-350.
- Komers, P.E., K. Roth and C.C. Gates. 1992. **Search or Relax: The Case of Bachelor Wood Bison.** *Behav. Ecol. Sociobiol.* 31: 195-203.
- Komers, P.E. and E.J. Komers. 1992. **Juvenile Male Magpies Dominate Adults Irrespective of Size Differences.** *Can. J. Zool.* 70: 815-819.
- Dhindsa, M.S., P.E. Komers and D.A. Boag. 1989. **Nest Height of Black-Billed Magpies: Is it Determined by Human Disturbance or Habitat type?** *Can. J. Zool.* 67: 228-232.
- Komers, P.E. 1989. **Dominance Relationships Between Juvenile and Adult Black-Billed Magpies.** *Anim. Behav.* 37: 256-265.
- Komers, P.E. and M.S. Dhindsa. 1989. **Influence of Dominance on Mate Choice in Black-Billed Magpies: An Experimental Study.** *Anim. Behav.* 37: 645-655.
- Dhindsa, M.S., P.E. Komers and D.A. Boag. 1989. **The Effect of Familiarity with an Environment on the Dominance Relationships Between Juvenile and Adult Black-Billed Magpies.** *Orn. Scan.* 20: 187-192.

- Dhindsa, M.S., D.A. Boag and P.E. Komers. 1989. **Mate Choice in Black-Billed Magpies: The Role of Male Quality vs. Quality of Defended Resources.** *Orn. Scan.* 20: 193-203.
- Komers, P.E. and D.A. Boag. 1988. **The Reproductive Performance in Black-billed Magpies: Is it Related to Mate Choice?** *Can. J. Zool.* 66: 1679-1684.

## Reports and Proceedings

- Komers, P.E. 2002. **Non-Linear Responses Of Ecosystem Components To Provide Threshold Values For Cumulative Effects Management .** *Proceedings of the Cumulative Environmental Effects Management Conference in Calgary*, November 2000.
- Komers, P.E. 2002. **Book Review: Repairing Damaged Wildlands; A Process Oriented Approach, by S.G. Whisenant** BIOS, The Alberta Society of Professional Biologists, Volume 17 (1) : 8.
- Patriquin, D.L. and Komers, P.E. 2000. **An Ecosystem Approach to Reclamation: The Gregg River Mine Project.** *Canadian Land Reclamation Association, Conference Proceedings, Edmonton*, October 2000.
- Komers, P.E., G.P. Curman, B. Birgersson and K. Ekvall. 2000. **The Success of Ungulate Re-introductions: Effects of Age and Sex Structure.** In: L. Darling, ed. *Proceedings of the Species and Habitats at Risk Conference*, Kamloops, BC, Canada, February 15-19, 1999.
- Komers, P.E., J. Gilson. 1998. **The Development of Wildlife Corridors and Green Spaces; an Information Package.** Environmental Committee, Municipal District of Foothills No. 31, Alberta, Canada.
- Komers, P.E. and S. Ulfstrand. 1997. **Behavioral Plasticity in Fallow Deer Related to the Management of Fragmented Populations. Final report.** Roche Research Foundation, Annual Report, 1996. Basel: Editiones.
- Komers, P.E. 1994. **Monogamy in Dik-Dik Antelopes and its Relation to Population Parameters and Territory resources. Final research report.** National Council for Science and Technology, and the Office of the President, Kenya.
- Gates, C.C., N.C. Larter and P.E. Komers. 1991. **Size and Composition of the Mackenzie Wood Bison Population in 1989.** Government of the NWT, DRR, File Report No. 93.

## Popular Publications

- Komers, P.E. 1997. **Property Rites.** *Natural History*, March 106: 28-31.
- Komers, P.E. 1996. **Fallow Deer Breeding: What Can We Learn from Observing Deer Behavior?** [Swedish] *Svensk Hjortavel* 3/1996: 14-16.
- Komers, P.E. 1991. **A Wood Bison Summer.** Educational video, 31 minutes. Presented at the International Behavioral Ecology Congress, Princeton, 1992; Award Winner of the 1993 Animal Behavior Society Film Festival.

**Komers, Petr**

Komers, P.E. and H. Erdmann. 1990. **Waldbisons: Die Geschichte Eines Wenig Bekannten Grosswildes.** *Das Tier* 1990: 11.

Komers, P.E. 1989. **Schreikraniche vom Aussterben Bedroht: Hürde für Amerikanischen Naturschutz.** *Die Tierwelt.* 99(28): 13.

Komers, P.E. 1988. **Wood Buffalo National Park.** Video copy available at the Wood Buffalo National Park interpretive centre, Fort Smith, NWT.

Komers, P.E. 1988. **Elstern und Rabenvögel.** *Die Tierwelt.* 98(14): 13-14.

# Zoran Stanojevic, B.Sc, M.Sc.

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## *GIS Mapping, Landscape Analysis*

### Overview

Mr. Stanojevic is a forest engineer that develops applications of effective methodologies and statistical analyses to examine the impacts of anthropogenic disturbances of landscapes and wildlife. Particularly to Alberta and the Oilsands, he analyzed the usefulness of near-infrared and thermal bands in discriminating the presence of bitumen. He also analyzed the relationship between infrastructure development and the distribution of caribou, and he prepared methods for the vegetation analysis that will be used in the understanding of the dynamics of the chronic wasting disease. He is experienced with MS Excel, MS Access, SAS and Paradox. Among many large-scale national and international GIS analysis projects, Mr. Stanojevic led the world's largest area analysis of anthropogenic changes based on remote sensing. Internationally he collaborated with the World Resource Institute and Global Forest Watch to map intact areas in boreal forests across the northern hemisphere. An atlas presents his work on the remaining world wilderness. Relevant samples of his work include:

### Key Projects

- Corroborated on the Commercial Forest Tenure of Canada 2003 and Canada's Forest Product Mills, 2003 project. The projects were conducted to collect all data available through Canada and compile it in one spatial database file.
- Developed the methodology and was involved as a Project manager –GIS/Remote sensing specialist in Canada's Change Analysis project. As a GIS/Remote sensing specialist, he was a part of international team that mapped large intact forest landscape in the Boreal region of the world. Canada's in Large Intact Forrest Landscape 2001-2003 was part of the project. The purpose of the projects was to identify "intact" forest landscapes -polygons larger than 50,000 ha. Most of the identified polygons contain old growth forest or high conservation value forest.
- Estimated industrial and urban development influence on the woodland caribou habitat in Fort McMurray region.
- Mapping intact forest fragments 10,000 to 50,000 ha in size within the Boreal forest (2004-2005).
- Developing and applying models and methodologies for monitoring changes in forest landscapes such as change analyses. The results have been used by environmental organizations, Federal and Provincial governments, as well as the forest and oil and gas industry (2005-2006).
- Developing methodologies and analyses for GPS-tracked radio-collared wildlife, and performing remote sensing, GIS spatial and statistical analyses. He conducted spatial analyses to predict interactions among four groups of deer to monitor any overlap of their habitats to control the spread of chronic wasting disease.
- Produced, analyzed and maintained GIS maps for the Oil and Forest Industry.

### Highlight of Qualification

- Experienced with statistics and software for statistics, Microsoft Excel and Access, Paradox, SAS, Sigma Plot.
- Performing data validation and quality control - accuracy assessment.

- Developing and applying models and methodologies for different project (example: Change analysis).
- Project management experience - technical and financial.
- An expert for ArcView/ArcGIS (including extensions-Spatial Analyst, Image Analyst, Grid), and Erdas Imagine.
- Experienced with Remote Sensing and Image Interpretation (Landsat 5 and 7, Aster).
- Experienced in creating and maintaining data library.
- Experienced in creating meta data - MetaLite Satellite Image program and ArcCatalog.
- Experienced in data conversion and digitizing.
- Experienced with various GPS units, digital cameras, plotters and laptop computer.
- Experienced with Adobe Photoshop, Corel Draw, Power Point.
- Experienced with Windows NT, 2000, SP and Unix.
- Manipulating and analyzing GPS-tracked radio-collared wildlife data.
- Producing and maintaining maps, posters and power points presentations.
- Acquiring data: Aster, Landsat 5 and 7 and other satellite images as well as spatial data sets.
- Strategy planning and developing.
- Training: use of ESRI products, use of remote sensing data and applications.
- Software installation and advising on computer configuration (hardware).

## Employment History

Summer 2007	University of Alberta: Research Associate-GIS/Remote Sensing Specialist, Web developer-technical support <i>(Department of Biological Sciences)</i>
Feb 2002 – May 2006	Global Forest Watch Canada: Project Manager-GIS/Remote Sensing specialist
Fall 2001	Complete Land Services, Calgary: GIS Analyst
Dec 2000 – Apr 2001	Northern Forestry Centre, Edmonton: Spatial Data Analyst
Jan. 2000 – Dec 2000	University of Alberta: Research Assistant <i>(Department of Earth and Atmospheric Science)</i>
May 1999 – Aug. 1999	University of Alberta: Research / Field Assistant <i>(Department of Renewable Resources)</i>

## Education

2001	Master of Forestry, University of Alberta, Canada Major: GIS and Remote Sensing
1992	Bachelor of Science in Forest Engineering, University of Belgrade Major: Hydrology and Erosion Control
1986	Technologist in Applied Ecology

## Publications

Stanojevic, Z., P. Lee and J. Gysbergs. 2006. ***Recent Anthropogenic Changes within the Boreal Plains Ecozone of Saskatchewan and Manitoba***, May 5.

Lee, P., J. Gysbergs and Z. Stanojevic. 2006. ***Canada's Forest Landscape Fragments: A First Approximation***, March 22, <http://www.globalforestwatch.ca/>

Stanojevic, Z., P. Lee and J. Gysbergs. 2006. ***Forest Landscape Change Analysis***, February 9, <http://www.globalforestwatch.ca/>

Lee, P., Z. Stanojevic and J. Gysbergs. 2004. ***Canada's Green Miles***, Earth Imagine Journal, May/June: 22-25.

Coauthor and/or map designer for reports listed below and downloadable from <http://www.globalforestwatch.org/english/pan-boreal.htm>

Commercial Forest Tenures of Canada, 2003 – April 5, 2004 ***Where Land and Waters Meet: Understanding and Protecting Riparian Areas in Canada's Forests*** – January 19, 2004.

Commercial Forest Tenures of Canada, 2003 - ***Aboriginal Peoples in Forest Regions in Canada: Disparities in Socio-Economic Conditions*** – November 10, 2003

Canada's Large Intact Forest Landscapes – September 15, 2003.

Petr Cizek, BES, MSc.  
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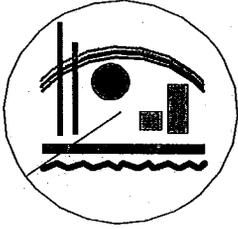
Petr Cizek is an award-winning land use planner, who started the independent environmental consulting firm Cizek Environmental Services in 1996. For over a dozen years, he lived in the Northwest Territories, working primarily with First Nations and environmental organisations.

Petr is a graduate of the land use planning schools at the University of Waterloo (BES, 1988) and the University of Guelph (MSc, 1992). He is currently working on a PhD at the Collaborative for Advanced Landscape Planning, Faculty of Forestry, University of British Columbia in Vancouver.

Petr specializes in the application of Geographic Information Systems, Remote Sensing, and 3D Visualisation to mapping of aboriginal wildlife harvesting/cultural sites, design of protected areas, regional land use planning, and modelling the cumulative impacts of mega-projects such as oil/gas fields, pipelines, mines, and hydro-electric dams.

In 2003, his work with the Dehcho First Nations designing a 10 million hectare conservation area network and successfully negotiating interim legal protection from the federal government was recognised by WWF International in Switzerland as a Gift to the Earth – its highest award for a “globally significant conservation achievement.” In 2007, he received an honourable mention in the Grand Visualization Challenge from the International Society for Digital Earth for his visualizations of Meta Cumulative-Effects: Mapping Cumulative Impacts of Resource Extraction and Development Throughout the Northwest Territories.

Petr has also recently been involved in the production of nationally televised documentaries, including Ghosts of Futures Past, a film about the Mackenzie Gas Project, as well as Somba Ke: The Money Place, a film about uranium mining at Port Radium, both of which featured his maps and landscape visualizations.



## **Patricia M. Larcombe - Resume** **Partner, Symbion Consultants**

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Tel (204) 982-2941 Fax (204) 982-2949 Email [pl.symbion@shawbiz.ca](mailto:pl.symbion@shawbiz.ca)

### **Education**

Masters of Science, Geography. University of North Dakota, 1985  
Bachelor of Science, Geography. University of Winnipeg, 1980

### **Present Position**

**Partner. Symbion Consultants, Winnipeg, Manitoba.**

Twenty-five years experience working in the areas of social, economic and cultural impact assessment and land claims resolution.

### **Environmental Assessment Experience**

**Athabasca Chipewyan First Nation IRC and Mikisew Cree First Nation GIR (2012).** Technical sufficiency review of Tech Resources Ltd. Frontier Mine Integrated Application relative to the terms of reference issued by the Government of Alberta dealing with subject areas concerning traditional use and knowledge and cultural resource sites/places.

**Metis Nation of Ontario (2012-Ongoing) Traditional Land Use and Knowledge Study for the Treaty 3, Lake of the Woods/Lac Seul and Rainy Lake/Rainy River Territories.** Designed and in the course of implementing a traditional use, values and knowledge study to document regional Metis use, values and knowledge as part of a region-wide baseline data gathering initiative and in connection with a proposed gold mine.

**Manitoba Metis Federation (2010-11) Berens River Road Traditional Land Use and Impact Study.** Designed and implemented a traditional use, values and knowledge study to document Manitoba Metis use, values and knowledge on the east side of Lake Winnipeg, Manitoba, in an area of influence of a proposed all-weather road to Berens River. Work included 30 detailed interviews and workshops with Manitoba Metis living in various parts of the province and a report.

**Manitoba Metis Federation (2010-11) BiPole III Traditional Land Use Study.** Designed and carried out a traditional use, values and knowledge study to document Manitoba Metis use, values and knowledge in the proposed transmission line corridor study area. Work included 50 detailed interviews, mapping and non-spatial data analysis.

**Tsilhqot'in National Government Community Impact Assessment of Prosperity Mine (2009-10).** Prepared and presented a traditional use report to the Federal Review Panel. This report examined and synthesized past traditional use studies and provided commentary on the strengths and weaknesses of the existing data collection as a basis for assessing project impacts on traditional use and values. As well, a professional opinion-based presentation on the likely impact the proposed project would have on traditional use and cultural values, was verbally presented to the Federal Panel at a technical hearing.

**Innu Nation, Labrador – Lower Churchill Hydroelectric Generation Project (2010).** Conducted a third party review of the project proponent's draft socio-economic and community profile baseline chapters, the Innu Nation scoping report, and prepared a deficiency review report regarding the socio-economic chapters of the proponent's final environmental impact statement.

**Tsilhqot'in National Government-Deficiency Review of Taseko Mines Ltd. Prosperity Mine Environmental Impact Statement (2009-10).** Conducted a deficiency review of the socio-economic (including traditional use and traditional knowledge components) chapters of the proponent's environmental impact statement relative to the Federal Panel guidelines.

**Taku River Tlingit-Tulsequah Chief Mine Barge Proposal (2008).** Conducted a traditional land use impact assessment of the proponent's proposal to move supplies to and ore concentrate from the Tulsequah Chief Mine on the Taku River using a shallow tug and air-cushion barge technology. This assessment included documentation of Tlingit rights, interests, traditional land use and traditional knowledge, land use map production, assessment of impacts and development of mitigation measures.

**Taku River Tlingit-Ruby Creek Molybdenum Mine Environmental Assessment (2007).** Designed and implemented a traditional land use baseline and impact assessment of a proposed open-pit molybdenum mine situated within their traditional territory. This assessment included documentation of Tlingit rights, interests and land use through a traditional land use study, assessment of impacts and development of mitigation measures. Also conducted a community impact assessment and prepared a design for a community-based monitoring and adaptive management program (on-going).

**Taku River Tlingit First Nation Community Impact Assessment (2006-2007).** Assisted the First Nation in assessing the social, cultural, economic and health impacts of a proposed molybdenum mine. The study involved conducting a comprehensive literature review, interviews with TRTFN government managers, and participation as a technical team member at the BC Government's Environmental Assessment Office community impacts working group table.

**Cree Regional Authority Eastmain 1-A and Rupert River Diversion Environmental Impact Statement (EIS) Conformity Review (2005).** Retained by the Cree Regional Authority in March, 2005, to review the chapters of Quebec Hydro's EIS for the Eastmain 1-A and Rupert River Diversion project pertaining to Hunting, Fishing and Trapping against the directives issued by the Panel concerning the content and organization of the EIS.

**Innu Nation, Labrador - Voiseys Bay Nickel Company Environmental Impact Assessment (1997).** Assisted and trained a team of eight Innu Nation researchers in developing and implementing a comprehensive questionnaire to obtain demographic, social, economic, cultural, and traditional activity baseline information for the communities of Sheshatshiu and Utshimassits. The questionnaire, written and delivered by the Innu researchers in the Innu-aimun language, was administered to a sample of 300 individuals (100% household coverage). Information obtained from the survey was synthesized into a report format and incorporated into a video for presentation to the Federal/Provincial Environmental Impact Assessment Panel appointed to review the Voisey Bay Nickel Mine proposal.

**Innu Nation, Labrador - Voiseys Bay Nickel Company Environmental Impact Assessment (1997).** Critical review of the social and economic components of the Environmental Impact Statement for conformance with the Panel's Terms of Reference. Written report delivered to the Panel and summary of findings produced on an audio tape for airing on community local radio.

**Yukon Socio-Economic Effects Assessment Workshop (2005).** *The Yukon Environmental and Socio-Economic Assessment Act* requires socio-economic effects assessment in all project evaluations and reviews. In preparation for operationalising the legislation, the Yukon Government Development Impact Branch hosted a three day workshop in February, 2005, for territorial and federal government, industry and First Nations representatives. Delivered two presentations at the workshop, entitled "An Introduction to Social Effects Assessment" and "Relationships between Social and Ecological Systems."

**Aboriginal First Nations Perspectives of "Significance" of Environmental Impacts.** When working for the Centre for Indigenous Environmental Resources Inc., secured research funds from the Canadian Environmental Assessment Agency to document the differences in perspective and approach that First Nations and western scientist and government have regarding determination of the significance of environmental impacts. Study included the development of criteria for determining significance and best practice approaches to involving First Nations in determining significance.

**Strategy for the Creation of Traditional Knowledge Guidelines in Federal Environmental Assessments.** When working for the Centre for Indigenous Environmental Resources Inc., was retained by the Canadian Environmental Assessment Agency to consult with Aboriginal people and organizations concerning their interest in traditional knowledge guidelines, to identify major issues to consider in the creation of the guidelines, and how First Nations should be involved in the guidelines development.

**Five-Year Review of the Canadian Environmental Assessment Act.** When working for the Centre for Indigenous Environmental Resources Inc., was retained by the Assembly of First Nations to prepare recommendations on changes/amendments to the Act. Work involved cross-Canada workshops with First Nations groups, review of past Panel and Comprehensive Study experiences by Aboriginal peoples, and consultation with Aboriginal practitioners of environmental assessment.

## **LAND AND OTHER CLAIMS ASSESSMENT**

**Cross Lake and Norway House Community Council Hydroelectric Settlement Agreement.** Provided technical and negotiation assistance to two northern Manitoba aboriginal communities in reaching a comprehensive settlement agreement with Manitoba and Manitoba Hydro for impacts associated with the Lake Winnipeg Regulation hydro project. Settlement agreement provides for cash compensation and land, a role in resource management, on-going communications and implementation, future pre-determined compensation arrangements, and alternative dispute resolution.

**Saugeen First Nation, Quantification of Treaty Fishing Rights.** In association with Dr. Peter Usher, assisted Saugeen First Nation in developing a negotiating position concerning their fishing rights in light of the Ontario Court of Justice decision (Jones and Nadjiwon, 1993) which confirmed that the Saugeen Ojibway First Nation (including the Chippewas of Nawash and Saugeen First Nation) held a Treaty right to commercially fish. The work involved developing a negotiating position on what quantum of fish should be allocated to the First Nation for food and commercial purposes, and a proposal for First Nation management of the allocation as well as its role in the overall lake fisheries management.

**Socio-Economic Analysis for Cumberland Sound Beluga and DU8 (Great Lakes) Sturgeon.** Socio-economic analysis is required at several stages in the *Species at Risk Act* (SARA) decision-making process. Stages in SARA decision-making can be broadly categorized into pre-listing and post-listing. The first level or tier of socio-economic analysis occurs at the pre-listing stage where it contributes to the decision of whether listing should occur. Retained by Department of Fisheries and Oceans to conduct tier one analyses to assist decision-makers in determining whether to list Cumberland Sound Belugas and sturgeon in DU 8 as a 'threatened' species under SARA.

**Assessment of Country Food Losses at South Indian Lake.** In 1976, the Aboriginal community of South Indian Lake was flooded by some 3 metres by a hydroelectric project. Flooding reduced the capacity of the area to support wildlife and made shoreline hunting and fishing difficult. Assessing traditional resource use losses involved consultation/interviews with elders and resource harvesters to determine the impact of flooding on harvesting activities and harvest success. Interview results provided a basis for estimating the total value of subsistence losses over a fourteen year period.

**Fort William First Nation-Avenor Inc. Bark Dump Assessment.** As project manager for the Centre for Indigenous Environmental Resources (Winnipeg), managed a study team consisting of individuals with expertise in hydrogeology, water quality and aquatic sciences, biophysical sciences, occupational health, landscape architecture, traditional knowledge and activities. This project involved assisting the First Nation in documenting and assessing past and ongoing impacts of a solid waste landfill adjacent to the Reserve and participating in a joint planning process with Avenor's engineers to design an acceptable closure plan for the landfill.

**Sagkeeng First Nation - Loss of Land and Land Use Study (1992).** Documented impacts associated with erosion of Reserve lands bordering the Winnipeg River and Traverse Bay on Lake Winnipeg; preparation of an estimate of retroactive compensation, and development of a mitigation/remedial works program to stabilize shoreline areas. Extensive interviews with community Elders were required in order to reconstruct and document the relative importance and value of shoreline areas in comparison with the balance of the Reserve, identify and map pre-erosion shoreline based activities, and identify impacts (physical, social, cultural and aesthetic) on traditional activities normally carried out on shoreline areas in the community.

**Grand Rapids Hydro-Electric Project (1993).** Reviewed and critiqued a *post facto* assessment of impacts to trapping activities resulting from the operation of the Grand Rapids hydro project at the mouth of the Saskatchewan River. A proposal for retroactive compensation was developed utilizing a model which projected harvest levels with and without hydro impacts and estimated net annual income and income-in-kind losses.

**Norway House First Nation Trapping and Domestic Fishing Claims (1990-1993).** Assisted the local Trappers Association and Chief and Council in preparing evidence of adverse impacts on trapping and domestic fishing activities and products, reconstructing pre hydro-electric development biophysical environment, including sustainable yields of fish and furbearers, and quantifying the level of activity involved in harvesting by community members. Research involved extensive interviews with Elders and other harvesters, review of historic Department of Natural Resources diaries, data and reports, and preparation of monetary estimates for retroactive compensation and forward looking mitigation programs.

**Swampy Cree Tribal Council Traditional Territory-Valuation of Natural Resources Uses.** Conducted an economic assessment of natural resource use activities and values located within the boundaries of the Tribal Council's traditional territory. Resource uses examined included: commercial, sport and domestic fishing and hunting, commercial trapping, gathering and alternative forest products, commercial and domestic forestry, hydroelectric power, minerals and mining, agriculture, and tourism. Resource use values were estimated in absolute and relative terms by sector and user (First Nation and non-First Nation) and future potentials were examined. The study also included a review of government programs providing financial resources for development or enhancement of natural resources based industries or activities.

**The Nez-Perce - Idaho Power Corporation Negotiation.** Technical assistance provided to Dr. Hugh Brody, the mediator of a joint committee of the Nez Perce Tribe and Idaho Power Corporation. This assignment involved quantifying the monetary value of salmon losses experienced by the Nez Perce people as a result of adverse impacts to fishing opportunities and fish populations associated with regulation of the Snake River for hydro-electric generation purposes. Three models were developed to provide a range of compensation estimates. Annual and total losses were estimated for the period 1958-1995 as follows: net cash income losses from commercial harvesting operations; net cash income losses from fish wholesaling opportunities; and net income-in-kind losses from loss of subsistence fishing activities.

**Nishnawbe-Aski Nation/Grand Council Treaty #3/Teme-Augama Anishanabai Coalition.** Preparation of evidence for submission to the Ontario Environmental Assessment Board describing how Ontario Hydro's proposal to construct another transmission line through Treaty territory represented yet another of a long history of development activities. Project involved documenting the historical sequence of development activities and their progressive impact on Treaty rights. This study involved identification and review of a variety of information and data, including Hudson Bay archives files, Indian Affairs archives, historic and contemporary Ontario Ministry of Natural Resource information, Ontario Hydro data, and interviews with First Nation government representatives and Elders.

**Grassy Narrows First Nation/Ontario Hydro Joint Problem Solving Team.** Conducted a retrospective assessment concerning how development and regulation of the English River had impacted upon muskrat and wild rice resources and developed estimates of the monetary value of lost resource harvesting opportunities. Research involved interviews with community elders and Ontario Department of Natural Resource staff, examination of historical records concerning community population, fur sales records, hydrologic reports, surveyor reports, Hudson Bay Company archival documents, and federal and provincial correspondence files.

**Cross Lake Domestic Fishing.** Assisted Cross Lake First Nation with the successful 2-year negotiation of a \$5.6 million settlement to resolve past domestic fishing losses and cover implementation of a four year mitigation program. The project involved interviewing community elders and former fishermen, holding public meetings, analysing and interpreting data concerning sustainable yield, quantifying the decline in fishing activities and consumption, and developing a bush food replacement proxy to measure the loss. The mitigation program offers residents the opportunity to practice domestic fishing at alternative lakes or acquire fish from a local "country food" store.

**Lac Seul First Nation - Specific Claim, Loss of Use Study.** Jointly for Lac Seul First Nation and Canada, conducted the first phase of a Loss of Use assessment study. This claim involves the loss of use of approximately 11,000 acres of Reserve land due to flooding dating back to 1930. The loss of use assessment includes examination of losses related to agriculture, forestry, tourism and recreation, community infrastructure, and traditional activities (hunting, trapping, fishing, wild rice, and other gathering). The research involves oral testimony of community Elders, adults and youth, examination of archival documents and contemporary documents.

**Value of Treaty Land Entitlement in Manitoba on the Basis of Restitution (1994).** Examined and assessed the benefits which had accrued to the Federal and Provincial government over a period of 100 years as a consequence of having ownership of lands which should have been set aside as Reserve lands under the terms of the Treaties. The assessment involved identifying and quantifying the direct revenues which had accrued from land sales, resource rents, and revenues from taxation of private property.

**Rainy River First Nations Traditional Activities Loss of Use Study.** Retained by tri-party negotiating team composed of Rainy River First Nations, Canada and Ontario representatives to perform a loss of use assessment associated with the First Nations specific claim for improper alienation in 1915 from six Reserves totaling 46,000 acres. Study involved assembling and analyzing archival documents, conducting Elders interviews, examining the biophysical capacity of the claim lands to support fishing, hunting, trapping, wild rice harvesting, and other plant and material gathering activities as a basis for developing a model to estimate the economic value of traditional activities the First Nation would have realized had they not been alienated from the Reserve lands over the course of some eighty-six years.

## **POLICY AND ECONOMIC ASSESSMENT**

**Critical Review of Agreements between Aboriginal Groups and Government and/or Proponents of Energy Related Natural Resource Development.** Report prepared for the Moose River/James Bay Coalition (the Coalition) to inform about nine Agreements (6 in Canada and 3 in the U.S.). Contents included: the processes of negotiation and implementation, their substance, and effectiveness. The report provided the Coalition with an informed background so that they could respond effectively to proposals from Ontario Hydro or the Province of Ontario for remedial, mitigatory or compensatory measures for impacts from the proposed development of the Moose River basin.

**Inuvialuit Harvest Study Evaluation.** In association with Dr. Peter Usher conducted a comprehensive evaluation of the Inuvialuit Harvest Study (IHS). The IHS is an ongoing survey of the harvesting activities of the communities who are party to the Inuvialuit Comprehensive Land Claim Agreement. All aspects of the IHS were evaluated against the stated objectives of the program, the expectations of the Hunters and Trappers Committees, the supporting agencies, and the wildlife co-management boards, to determine whether the objectives and expectations had been met in the most cost-effective and efficient manner. Findings and recommendations for future changes in the implementation of the IHS were reported to the IHS Evaluation Administration Group, consisting of representatives of the Inuvialuit Game Council, Wildlife Management Advisory Councils, and Fisheries Joint Management Committee.

**Report to the Royal Commission on Aboriginal Peoples (1995).** As a member of a national team engaged to document the origins and success/failure of contemporary Treaties, was engaged to conduct a case study of the Northern Flood Agreement. Focussing on the land, resource and environmental provisions of the Agreement, the nature of rights and benefits provided for in the Agreement were documented, how the Agreement was implemented in practice versus how it was intended to be implemented on paper was analysed, and recommendations were made regarding content, dispute resolution mechanisms, and implementation for future agreements.

**Historic Research on the Early History of Mixed-Ancestry Populations Located in the Northern Lake Winnipeg Region (2005).** Retained by Justice Canada in October, 2004, to conduct archival research and prepare a report on the pre 1900 mixed-ancestry populations at Grand Rapids and Norway House. The research involved identifying information concerning the ethnogenesis of the populations, and possible indicators of distinctive cultural features and "effective European control." Primary data sources at the Hudson Bay Company Archives, Manitoba Archives, National Archives, and Church Archives, as well as fonds housed at various locations across Canada were investigated.

**Water Rights in Contemporary Native Land Claims Settlements (1994).** Retained by the Treaty Land Entitlement Chiefs Committee of Manitoba to advise on how to secure, protect and enhance First Nation rights and interests in water and shoreline areas. Report included a non-legal explanation of the law and theory surrounding First Nation water rights, an examination of how such rights have been addressed in selected modern day Treaties and agreements and a synthesis and comparative evaluation of the nature and extent to which First Nation water rights and interests have been defined within Agreements negotiated in the past twenty-five years. Research involved examination of 16 Agreements.

**Review of Wauzhushk Onigum Traditional Activities Loss of Use Study (1996).** Retained by First Nation to conduct a critical review of a traditional activities loss of use report prepared in connection with a Specific Claim. Review involved examining the comprehensiveness of historic and contemporary data sources relied upon to develop factual account of traditional activities and examination of methods, assumptions, and data used in quantifying both the traditional activity impacts/losses and valuing such losses.

**Nishnawbe-Aski Nation/Grand Council Treaty #3/Teme-Augama Anishanabai Coalition.** Preparation of evidence for submission to the Ontario Environmental Assessment Board describing how Ontario Hydro's proposal to construct another transmission line through Treaty territory contributed to a long history of cumulative development. Project involved documenting the historical sequence of development activities and their progressive impact on Treaty rights. This study involved identification and review of a variety of information and data, including Hudson Bay archives files, Indian Affairs archives, historic and contemporary Ontario Ministry of Natural Resource information, Ontario Hydro data, and interviews with First Nation government representatives and elders.

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**Professional Experience** 1990- : **Partner**, Symbion Consultants, Winnipeg, Manitoba  
1998-2002: **Senior Manager**, Winds & Voices Environmental Services,  
Centre for Indigenous Environmental Resources (part time)  
1987-1989: **Resource Analyst**, Symbion Consultants, Winnipeg  
1985-1987: **Planner**, Fairbanks North Star Borough, Alaska  
1982/1984: **Planning Aide**, Benton County, Corvallis, Oregon  
1981-1982: **Research Assistant**, Midwest Environmental Services  
Grand Forks, North Dakota  
1981: **Research Assistant**, Interdisciplinary Systems Ltd. (IDS),  
Winnipeg, Manitoba

**LISA KING**  
**TECHNICAL QUALIFICATIONS**

- Ms King is an ACFN member and an active land user.
- As Executive Director of the ACFN Industry Relations Corporation (“IRC”), Ms. King oversees all aspects of the IRC, including consultation activities with the Crown and industry.
- As an Environmental Specialist for the IRC from 2004 – 2009, Ms. King dealt with consultation issues, directly and indirectly, through reviewing environmental reports and regulatory matters, participating in regional environmental and other planning committees, and through working with governments on environmental matters on behalf of ACFN.
- Ms. King has a Bachelor of Science in Environmental and Conservation Sciences from the University of Alberta.
- In addition to participating directly in consultations described herein, Ms. King has reviewed many of ACFN’s consultation-related files.