As Long as the Rivers Flow

Athabasca River Knowledge, Use and Change

by Craig Candler, Rachel Olson, Steven DeRoy
and the Firelight Group Research Cooperative

with the Athabasca Chipewyan First Nation (ACFN)
and the Mikisew Cree First Nation (MCFN)

November 26, 2010

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Text and figures prepared by Craig Candler (Ph.D.) and Rachel Olson (Ph.D. candidate) of the Firelight Group

Maps prepared by Steven DeRoy (GIS Specialist), the Firelight Group Internal Peer Review by Ginger Gibson (Ph.D.), the Firelight Group. External peer review by David Schindler (Professor, University of Alberta) and Peter Usher (Member, Joint Panel Review for the Mackenzie Gas Project). Any errors are the authors' alone.

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Athabasca Chipewyan First Nation
P.O. Box 366, Fort Chipewyan, AB, T0P 1B0
t: 1.780.697.3730 | toll free: 1.888.420.7011
e: info@acfn.com **www.acfn.com**

Mikisew Cree First Nation
P.O. Box 90, Fort Chipewyan, AB, T0P 1B0
t: 1.780.697.3740 | toll free: 1.800.668.1634
e: chief@mikisew.org **www.mikisew.org**

the firelight group
The Firelight Group Research Cooperative
Victoria office: 864 Dunsmuir, Victoria BC V9A 5B7
t: 250.590.9017 **e:** info@thefirelightgroup.com
www.thefirelightgroup.com

PARKLAND INSTITUTE
Parkland Institute, Edmonton Office
11045 Saskatchewan Drive, Edmonton, T6G 2E1
t: 780.492-8558 **e:** parkland@ualberta.ca
www.parklandinstitute.ca

Disclaimer

The information contained in this report is based on limited research conducted as part of the Athabasca River Use and Traditional Ecological Knowledge Study. It reflects the understanding of the authors, and is not a complete depiction of the dynamic and living system of use and knowledge maintained by ACFN and MCFN elders and members. All mapped information is based on interviews with ACFN and MCFN elders and expert river users conducted within constraints of time, budget and scope. Base map data originate from the National Topographic System and Natural Resources Canada. The information contained herein should not be construed as to define, limit or otherwise constrain the Treaty and aboriginal rights of Athabasca Chipewyan First Nation, Mikisew Cree First Nation or other First Nations or aboriginal peoples.

> "… We assured them that the treaty would not lead to any forced interference with their mode of life…"

David Laird, J.H.Ross, J.A.J. McKenna, Report of Commissioners for Treaty No. 8, 22nd September, 1899.

> "… The commissioner representing the Queen … picked up a blade of grass and said, "In the future, this will never be taken away from you. Don't have any wrong ideas about it. You will always have it. As long as the sun walks and the rivers flow. The way you are making a living in the bush will never be restricted." That was told to us by the Queen from overseas, Queen Victoria. But now the white man is so dishonest. We have lost many things…"

Transcript of interview with MCFN elder, Louis Boucher, age 82, an MCFN member and witness to the signing of Treaty No. 8, conducted in Cree by Richard Lightening on February 6, 1974.

> "…As long as the sun is rising here, the river flowing, the lake is here and the grass is growing, nothing will change. That's the kind of Treaty they made."

Transcript of interview with ACFN elder, Rene Bruno, February 1, 2010.

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PHOTO COURTESY STEVEN DEROY

Foreword

The Lower Athabasca River system, which includes the Peace-Athabasca Delta, is absolutely critical for the ability of our members to practice their Treaty 8 rights, and to sustain their unique aboriginal livelihoods, cultures, and identities as Cree and Dene peoples.

PHOTO COURTESY BRANT OLSON

On July 13, 1899, on the northwest shore of Lake Athabasca in Fort Chipewyan, our grandfathers entered into a Sharing Agreement with the Crown. This Agreement, known as Treaty 8, guaranteed the hunting, fishing and trapping rights of our peoples in support of sustaining our traditional livelihood, in return for our peoples promising to share the land and resources with the Crown. In entering into this agreement, we were assured that our way of life would not be changed and that it would be protected. These rights are guaranteed by the Constitution Act of Canada and courts have declared that the Crown must give priority consideration to these rights where commercial, or other interests, conflict with them. The United Nations Declaration on the Rights of Indigenous Peoples, to which Canada is a signatory, further affirms and upholds our treaty and aboriginal rights. The Treaty 8 rights are integral to the ability of our peoples to sustain their livelihood, culture, and well-being in a rapidly changing world. And it is the goal of our peoples to do so.

The Lower Athabasca River system, which includes the Peace-Athabasca Delta, is absolutely critical for the ability of our members to practice their Treaty 8 rights, and to sustain their unique aboriginal livelihoods, cultures, and identities as Cree and Dene peoples. Our First Nations have depended upon the bountiful ecology of the Delta to sustain our families, cultures, and livelihood for generations. The Athabasca River itself is our main travel route into the heart of our Traditional Lands. Without adequate water quality or quantity in the river system, we cannot access our important cultural, spiritual, and subsistence areas and we cannot sustain the health and well-being of our families on the traditional foods that we have always obtained from it.

As Leaders, we are relatively young. But yet, in our lifetimes, we have seen drastic changes in the quality and quantity of water in the Athabasca River. When we were children we still drank the water from the river channel flowing out from the Delta, past our on-reserve

communities and Fort Chipewyan. The abundant fish, game and waterfowl of the Delta fed our families. The rich harvests of muskrat and beaver helped to clothe, shelter, and feed us.

Today, we will not allow our loved ones to drink the water from the river. The abundance of the past is now only a memory as the water levels in the delta have dropped significantly since the WAC Bennett Dam was developed in the late 1960s. We have experienced oil spills whereby our Elders were exposed to toxic chemicals during the clean-up, and our reserves became dumping grounds for the toxic waste. As water levels continue to decline and water quality and health concerns continue to grow, we wonder what has happened to our Treaty Rights and the sharing agreement we entered into with the Crown so many years ago.

Yet, despite this, our people continue to nurture the seeds of hope for change and a brighter future than can be had for simply the price of oil. Our vision for a better future is one in which our people and communities are healthy, our Cree and Dene cultures are alive and vibrant, and our needs are met and our traditional lands are pristine. In this vision, we picture our grandchildren swimming in the river without fear of contamination and once again drinking water by merely scooping it up in a cup from the lake. We see them learning the rivers secrets and rewards, as we did as children, as they travel upon it to practice their rights of hunting, fishing and trapping.

The issue is not what is causing water levels to decline, but how we can plan for, manage, and sustain this important resource for our future generations.
PHOTO COURTESY STEVEN DEROY

We invite all Albertans, and Canadians everywhere, to join us in the pursuit of this vision. In the spirit of sharing our culture and knowledge with the interested public and policy-makers, we are very pleased to release this study, ***As Long as the Rivers Flow: Athabasca River Knowledge, Use and Change***, prepared by the Firelight Group and published by the Parkland Institute. We also wish to extend our sincere thanks to the ACFN and MCFN Elders and Members that shared their knowledge and experience of the river with us for this study; without them this study would not have been possible. We also wish to acknowledge and thank the staff of the ACFN IRC and the MCFN GIR for their dedication to our vision, and for their hard work laying the groundwork for, and coordination, this study.

This study captures the importance of the Lower Athabasca River system to the practice of our Treaty Rights. Because of this importance, the Governments of Alberta and Canada must clearly consider and protect our Treaty Rights in the rules governing water allocations from the Lower Athabasca River. The issue is not what is causing water levels to decline, but how we can plan for, manage, and sustain this important resource for our future generations. The thresholds and recommendations developed in this study offer a way to “translate” our treaty rights and cultural needs into a format that can be used to inform policy and decision-making on the Lower Athabasca River.

Chief Allan Adam,
Athabasca Chipewyan
First Nation

We are extremely proud to be proactive in developing methods for implementing our Treaty Rights in planning and decision-making processes. We see this as part of our responsibility in honouring our Treaty relationship with the Crown and our responsibility to our future generations.

Please assist us in ensuring that the Crown honours their Treaty obligations as well. After all, we are all in this together.

- Chief Allan Adam, Athabasca Chipewyan First Nation

- Chief Roxanne Marcel, Mikisew Cree First Nation

- Fort Chipewyan, Alberta, November 30, 2010

Chief Roxanne Marcel,
Mikisew Cree
First Nation

Introduction

PHOTO COURTESY PETER METTLER

This report is based on limited research conducted for the Athabasca Chipewyan First Nation (ACFN) and the Mikisew Cree First Nation (MCFN) as part of the Athabasca River Use and Traditional Ecological Knowledge Study (the Study). The report focuses on community knowledge of the Athabasca River, how it has changed over past decades, and how ACFN and MCFN use of the river and its many tributaries has changed as a result. Key issues raised by participants in the Study include issues of lower water levels and reduced water quality.

The ACFN and MCFN worked together to commission the Study, each community followed the same methods, and the original ACFN and MCFN community reports were written as separate stand-alone documents. While unintentional, this process provided an excellent opportunity to compare the experiences of these two Fort Chipewyan First Nations. Following completion of analysis and the initial community reports, both First Nations felt that the similarities in their member's experiences lent strength to the Study overall, and emphasized a mutual concern to protect the rights of both ACFN and MCFN members on the Athabasca River. The First Nations decided to jointly make the Study more widely available, and to present the ACFN and MCFN data alongside each other and within the same document. This report is the result of that cooperation. This report is based on the understandings of the authors, and is not intended to be a full or complete depiction of the dynamic and living system of use and knowledge maintained by ACFN elders and members.

Part A provides context and background for the Study, and the key questions that inform it. It includes a brief discussion of Treaty No. 8, and the importance of boat transportation for ACFN and MCFN members, as well as a summary of methods.

Part B and C provide the results of the ACFN and MCFN studies, including a description of maps, perceptions of ecological change on the Athabasca River, discussion of the challenges low water levels in the Athabasca River present for navigation and access to large portions of ACFN and MCFN territory, and lost use along the Athabasca river because of concerns regarding contamination related to oil sands operations.

Part D provides an analysis of results and proposes two thresholds (an aboriginal base flow, and an aboriginal extreme flow)[1] for use in understanding the effects of water levels and the ability of ACFN members to access their territories, and recommends steps for implementing and refining management. The report concludes with recommendations for implementation of these thresholds.

1 The Aboriginal Base Flow (ABF), estimates a level on the Athabasca River and adjacent streams where ACFN members are able to practice their rights, and access their territories fully. The second threshold, an Aboriginal Extreme Flow (AXF), estimates a level at which widespread and extreme disruption of Treaty and aboriginal rights occurs along the Athabasca River, delta, and tributaries due to a loss of access related to low waters.

Part A

Background to the report

This report is based on specific information collected by the ACFN and MCFN through an Athabasca River Use and Traditional Ecological Knowledge (TEK) study conducted in Spring 2010. The ACFN and MCFN, acting jointly, engaged The Firelight Group Research Cooperative to assist with the Study. The primary goal was to provide an evidence-based, written submission designed to effectively inform consultation with the Crown regarding plans for managing industrial water withdrawals from the lower Athabasca River. The Study addresses knowledge of the Athabasca River, use of the Athabasca River by community members, and possible effects of river change on the practice of treaty and aboriginal rights by ACFN and MCFN members.

The results of the Study suggest that, for both the Cree and Dene peoples of the ACFN and MCFN, the Athabasca River continues to be central to their lives, their ability to access their territories, and their conception of themselves as aboriginal peoples, despite historical change. The Study has also demonstrated, and mapped, how reductions in the quantity and quality of the Athabasca River's flow are having adverse effects on the ability of ACFN and MCFN members to access territories, and to practice their aboriginal and Treaty rights, including hunting, trapping, fishing, and related activities. Adverse effects are particularly evident where the preferred manner, or location, of exercising rights involves access to territories by boat, or where the right relies upon confidence in the quality, or safety, of foods or other resources procured on traditional lands influenced by industrial use.

Treaty No. 8: A Living Document

The Cree and Dene speaking peoples of Fort Chipewyan signed Treaty No. 8 in 1899. The Treaty confirms the rights of First Nation peoples, including those of the Athabasca Chipewyan First Nation (ACFN) and Mikisew Cree First Nation (MCFN), and those of the Canadian crown, in relation to lands covered by the Treaty and is recognized and affirmed every year through payment of Treaty monies by the Canadian government. Amongst many other promises

that the Crown made at Fort Chipewyan[2] on entering into Treaty No. 8, the Crown's own negotiators confirmed, shortly after signing, that, "We had to solemnly assure them [First Nations] that only such laws as to hunting and fishing as were in the interest of the Indians and were found necessary in order to protect the fish and fur-bearing animals would be made, and that ***they would be as free to hunt and fish after the treaty as they would be if they never entered into it***." (Laird, Ross and McKenna, Report of Commissioners for Treaty No. 8, 1899, emphasis added).

The Athabasca River occupies a central role in the culture and economy of the aboriginal peoples of the Fort Chipewyan area, and is critical to the ability of the ACFN and MCFN to hunt, trap, fish, and otherwise practice their aboriginal and treaty rights in a preferred manner. Largely because of the role of the river in transportation, the unique transportation needs of ACFN and MCFN hunters and river users, and the long history of aboriginal rights practice on the river, delta, and adjoining tributaries, meaningful exercise of aboriginal and treaty rights, including hunting, trapping, fishing, and other rights, within a large portion of ACFN and MCFN traditional lands, relies upon the quality and quantity of water in the Athabasca River.

One ACFN participant described the Athabasca River this way:

> "When we were younger the Athabasca River was … a wild beast … 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)

One MCFN participant stated that the Athabasca River is:

> "… important to me because we do lots of hunting in that river, not only for ducks, for moose and we do lots of fishing also. It's for our livelihood, living out of it. It's not the commercial. You go out there to feed your kids, to feed the family and then Athabasca River is really important for us. I've been doing that for many years and I still do it. And now, the moose is not fit to eat, the fish is not fit to eat, even ducks. What else are we to live on now? There's not anything fit to eat." (M03)

Another participant described the importance of the river, succinctly, as:

> "…it is the passage to go to the hunting grounds and … to go and stock up on groceries in Fort McMurray. That's important." (M09)

At the time of Treaty, the Crown was well aware of the extent of resources that lay beneath the area encompassed by Treaty No. 8 (Fumoleau 2004). In 1888, the director of the geological survey of Canada, Dr. Robert Bell, confirmed, "the existence in the Athabaska and Mackenzie valleys of the most extensive petroleum field in America, if not in the world… it is probable this great petroleum field will assume an enormous value in the near future and will rank among Canada's chief assets." (quoted in Hein 2000: 2-3).

2 For a detailed history of Treaty 8 and its signing, see Fumoleau 2004. For a detailed history of Fort Chipewyan, see McCormack 2010.

Ten years later, Treaty No. 8 was signed. Almost seventy years later, in the late 1960's, the first large scale oil sands mining operation (what would become Suncor) opened north of Fort McMurray. As industrial oil sands operations have expanded, and with more planned for the future, all have depended heavily on the flow of the Athabasca River.

Study Goals and Context

The primary goals of this Study were to effectively and respectfully involve the key elders and knowledge holders of the ACFN and MCFN to:

- Complete a preliminary submission regarding navigation concerns, and their relationship to the practice of Treaty rights.
- Complete a final non-confidential report, and customize reports for ACFN and MCFN containing confidential information, and summarizing the results of a more comprehensive study of Athabasca River Use and Traditional Ecological Knowledge, including navigation concerns, but also addressing broader water quality and quantity issues related to the practice of treaty rights on the Athabasca River, and how those may be impacted by the Phase 2 Framework.

Key topics addressed in the Study include perceived changes in the river including quantity and quality of waters that have resulted in, or contributed to, changed patterns of community use. The role of the river as a transportation corridor for accessing traditional lands, and for traveling between Fort Chipeywan and Fort McMurray was a key focus of the Study. The implications of change in this corridor, including limited access, reduced quality of lands or waters for subsistence use, and erosion of opportunities for cultural transmission are considered below.

Water-Based Access and Preferred Mode of Practice

Figures 1 and 2, in sections B and C, below, show the first and last times participants from the ACFN and MCFN used the Athabasca River. For both First Nations, these figures show a pattern of long term and continuous use stretching from childhood to old age. The majority of ACFN study participants first used the river when they were less than five years old, and had last used it within a week of the time of interview. This provides an indication of how important boating and water based access is to the mode of life of the ACFN and MCFN. In Spring, Summer and Fall (the primary seasons for hunting, fishing, and subsistence procurement), boat access is still the only option for moving between Fort Chipewyan and seasonal camps and villages, Indian Reserves, and core ACFN and MCFN territories along the Athabasca delta, the river itself, and its tributaries, including large portions of Wood Buffalo National Park.

Even where road access is possible, water-based access by boat is the preferred mode of practicing aboriginal and Treaty rights, including hunting, trapping, and fishing. The ecology of the delta and Athabasca river means that, at good water levels, a web of interconnected waterways exists that can be used to 'go anywhere' in the delta area. At good water levels, tributaries to the Athabasca River also allowed access deep into adjacent watersheds.

Moose, the preferred game sought by most ACFN and MCFN hunters, tend to congregate near water in summer months, so boats make for an ideal means of locating, shooting, and carrying the many hundreds of pounds of meat that results from a successful kill. Boats also allow for procurement of fish or other resources adjacent to river banks, and allow ACFN and MCFN members to access territories without disturbance from industrial traffic associated with many of the roads closer to Fort McMurray and the oil sands developments. These advantages, combined with familiarity with, and enjoyment of, water navigation for subsistence practices along the Athabasca River and associated waterways, helps explain why boat access is the preferred means by which ACFN and MCFN members choose to exercise rights such as hunting, trapping, and fishing.

While the Athabasca River is also used extensively for transport of goods and people between Fort Chipewyan, Fort McKay, and Fort McMurray, navigation for the purpose of transport is quite different from navigation for the purpose of subsistence. Navigation for transport may tend to follow the most direct channel available between two points. Navigation for subsistence, and particularly hunting, by ACFN and MCFN river users relies upon access to smaller side channels of the Athabasca River, and adjoining tributaries. Participants from both First Nations explained that moose and other game prefer to be near rivers and streams as the water provides relief from biting insects, and a refuge from carnivores like wolves. However, moose also tend to avoid banks facing the main channel of the Athabasca because of regular boat traffic and noise. Because of this, the best hunting locations tend to be those accessible by boat, but away from the main channel of the Athabasca River including along side channels, tributaries, and on the far side of islands away from the main channel. As discussed below, these smaller channels and tributaries are especially vulnerable to loss of access due to low water levels and climate warming (Schindler and Donahue 2006).

Road access to the Athabasca Delta area, and Fort Chipewyan, is limited to ice road, and is only possible in winter. Permanent road access (from Fort McMurray) is possible to some southern portions of the ACFN and MCFN territory, including areas near Ft. McKay, portions of the Muskeg River and Poplar Point (IR Chipewyan 201G), as well as more southern areas. However, even in these cases, boat is frequently the preferred mode for hunting and practicing other rights, particularly for members resident in Fort Chipewyan.

Methods

Data collection for the Study was primarily interview based. Interviews were conducted with individuals, and included documentation of prior informed consent, and used a standardized interview guide (see **Appendix 1**) designed to meet the needs of the study and to provide a consistent, but flexible, framework for soliciting and recording responses.

Map data were collected on acetate overlays using standardized map coding on custom 1: 50,000 maps incorporating satellite imagery, and based on standard techniques (Tobias 2010). Interviews were recorded on digital audio recorder, and through interview notes captured on interview forms, or in notebooks. Questions were designed to gain an understanding of perceived river change, and to collect data that was location specific (point, line, or polygon) where possible, and temporally grounded (season and year was recorded where possible). The study was designed so that disaggregation of community data (MCFN or ACFN) and individual participant data was possible. The study area focused on lands and waters

within an area 5km on either side of the Athabasca River from Fort McMurray north to Fort Chipewyan, and the Athabasca River was defined to include all those areas influenced by the flow of the Athabasca River, including delta lakes and areas, such as Lake Claire and Lake Mamawi (see **Map 1** In sections B and C). A more complete account of the Study methods, including the digitization and mapping process, can be found in **Appendix 2**. A copy of the informed consent form used can be found in **Appendix 3**.

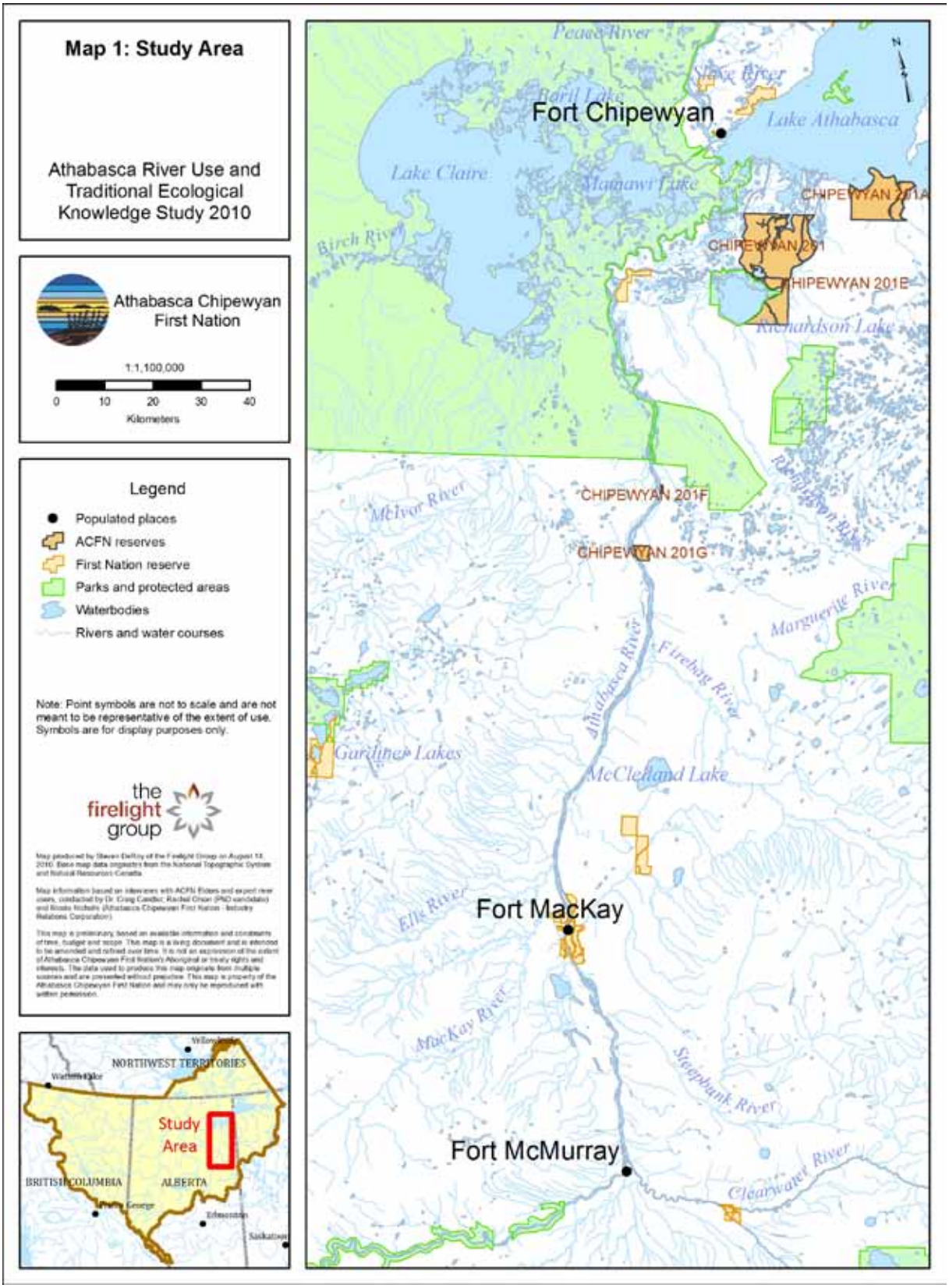
After preliminary analysis and synthesis of the information gathered, community engagement meetings were held separately with ACFN and MCFN participants and knowledge holders in Fort Chipewyan in early July 2010. At these meetings information on the preliminary study results, as well as information on proposed management frameworks for the Athabasca River were presented for community consideration and input.

PHOTO COURTESY BRANT OLSON

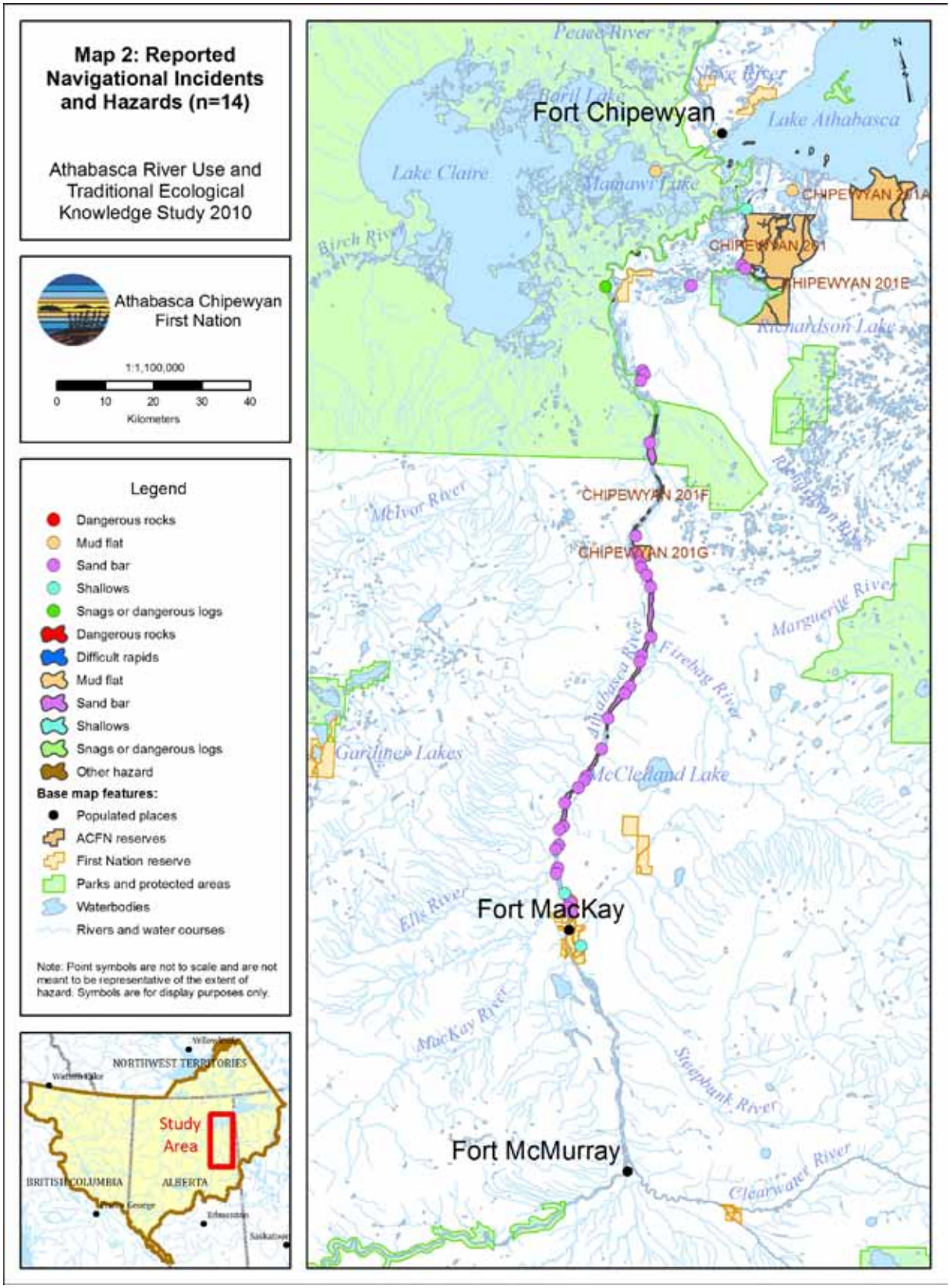
Part B

Athabasca Chipewyan First Nation Data

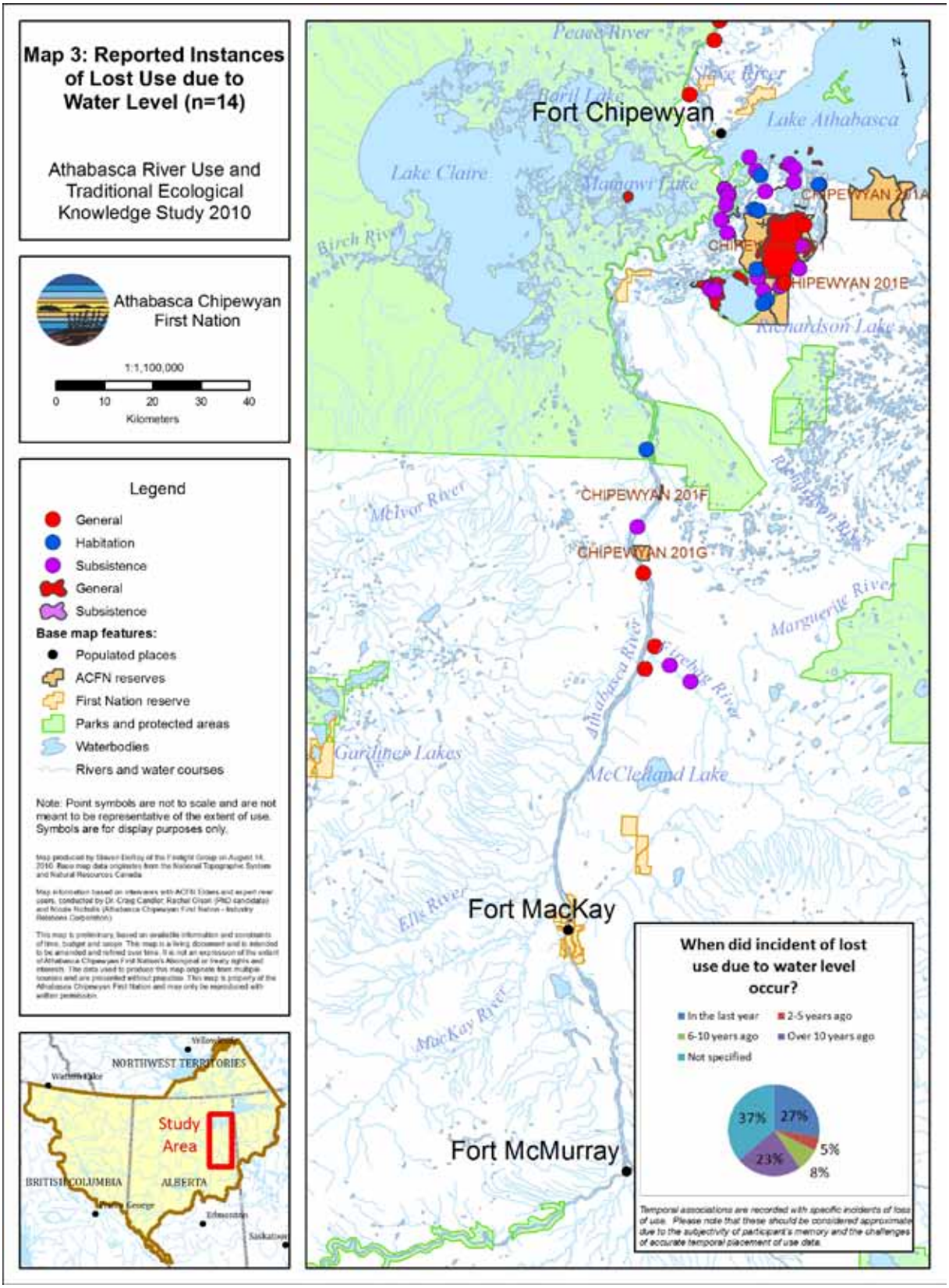
ACFN Map 1: Study Area



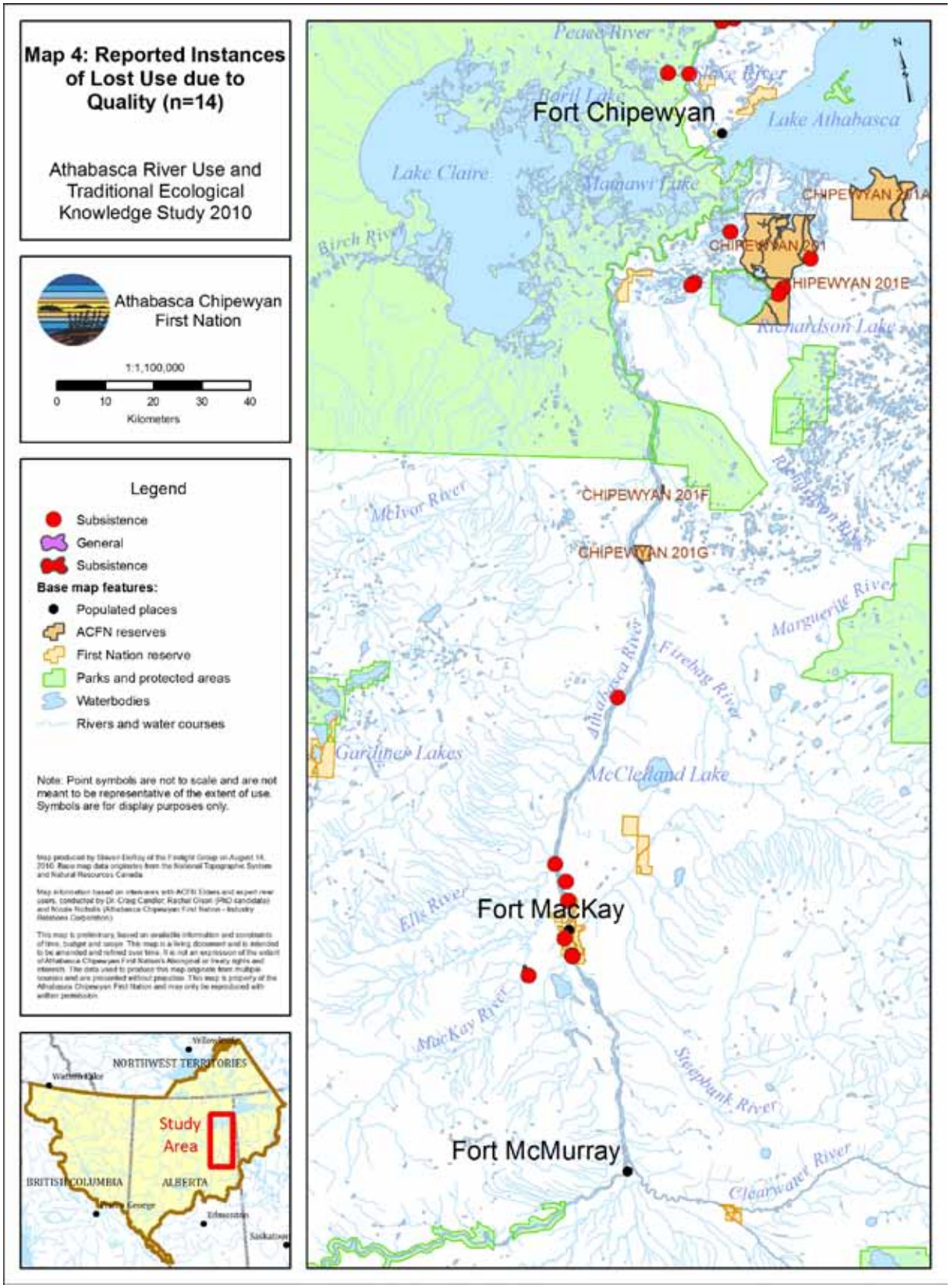
ACFN Map 2: Reported Navigational Incidents and Hazards



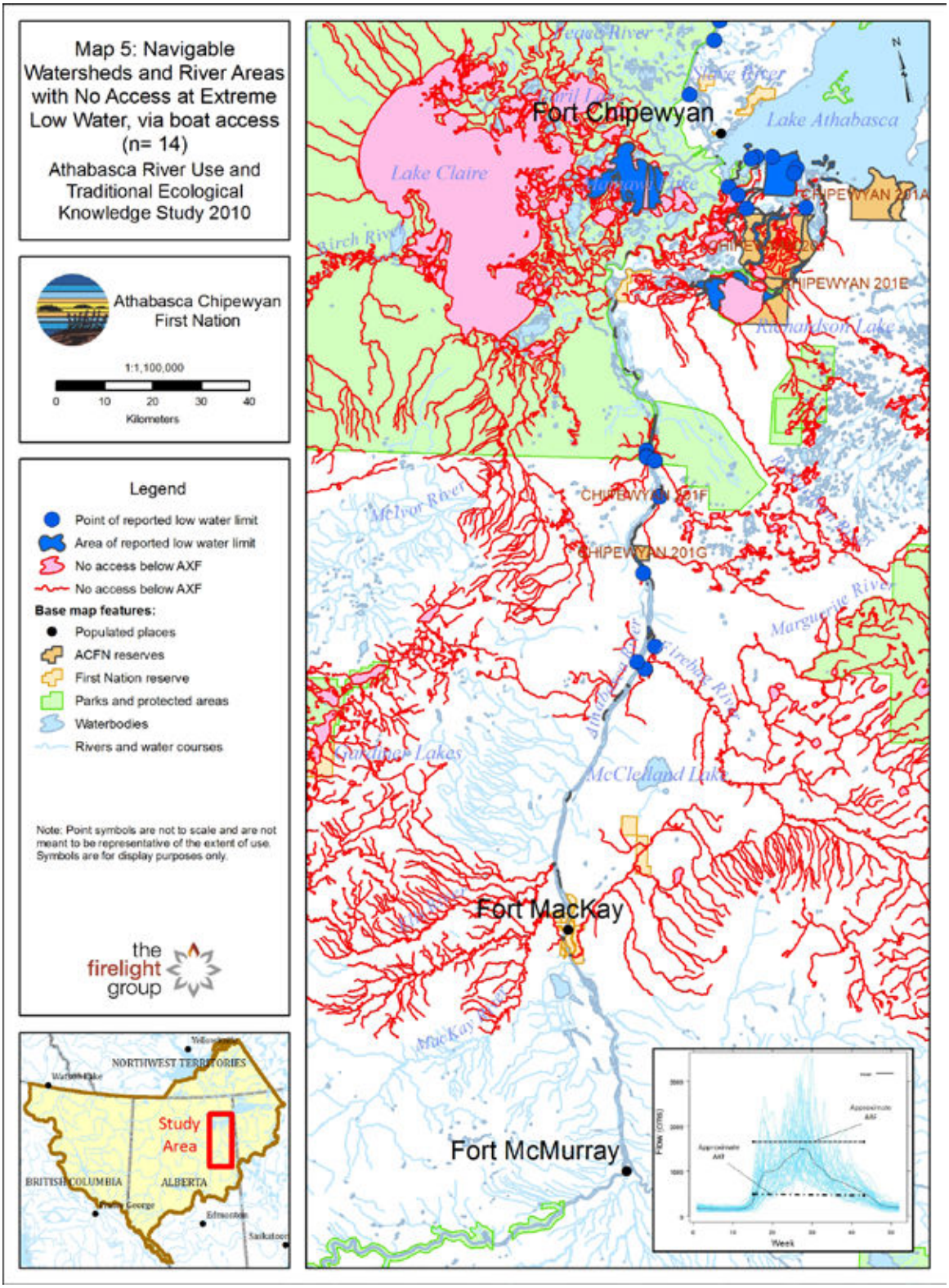
ACFN Map 3: Reported Instances of Lost Use due to Water Level



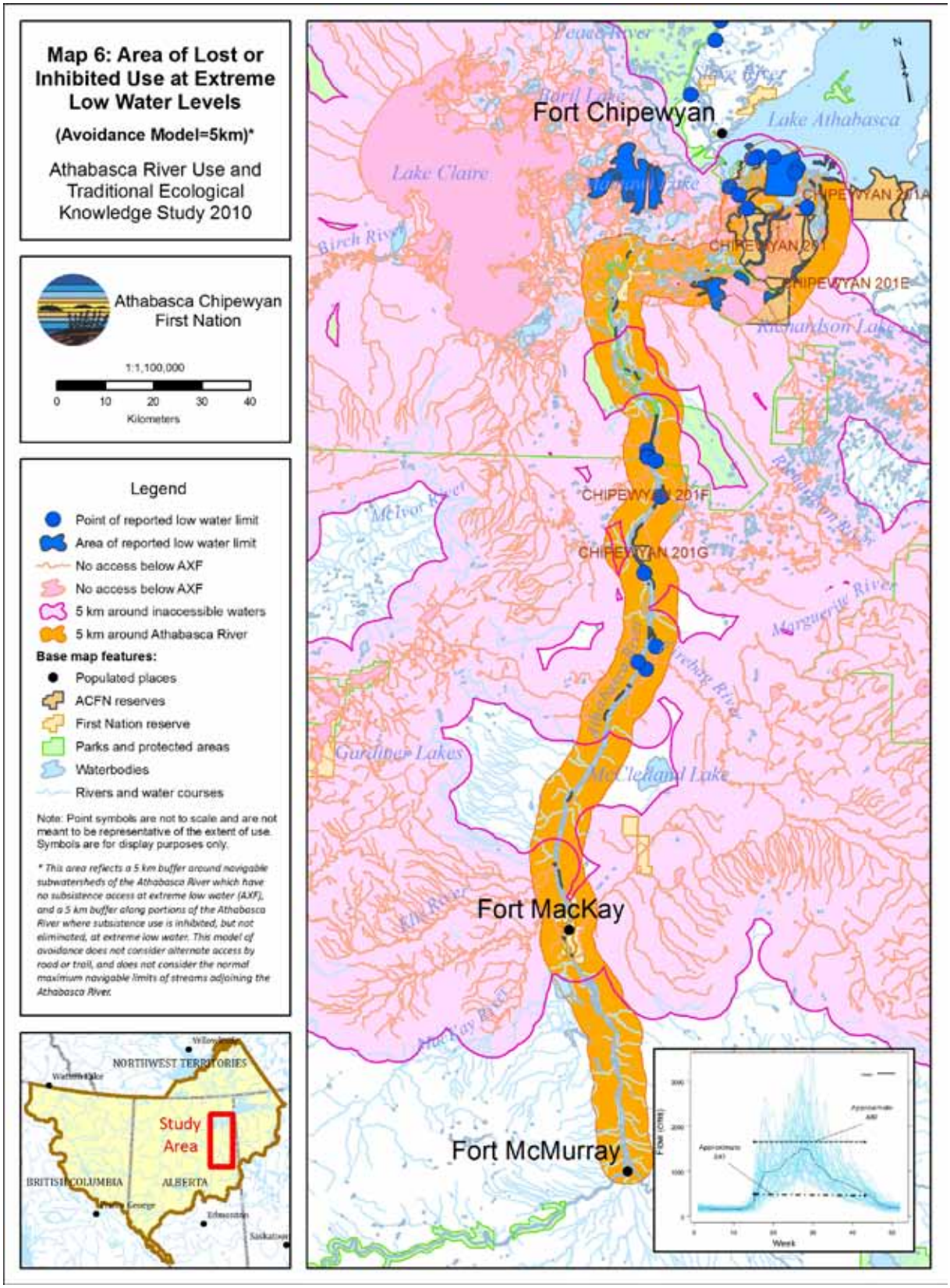
ACFN Map 4: Reported Instances of Lost Use due to Water Quality



ACFN Map 5: Navigable Watersheds and River Areas with No Access at Extreme Low Water Levels, via Boat Access



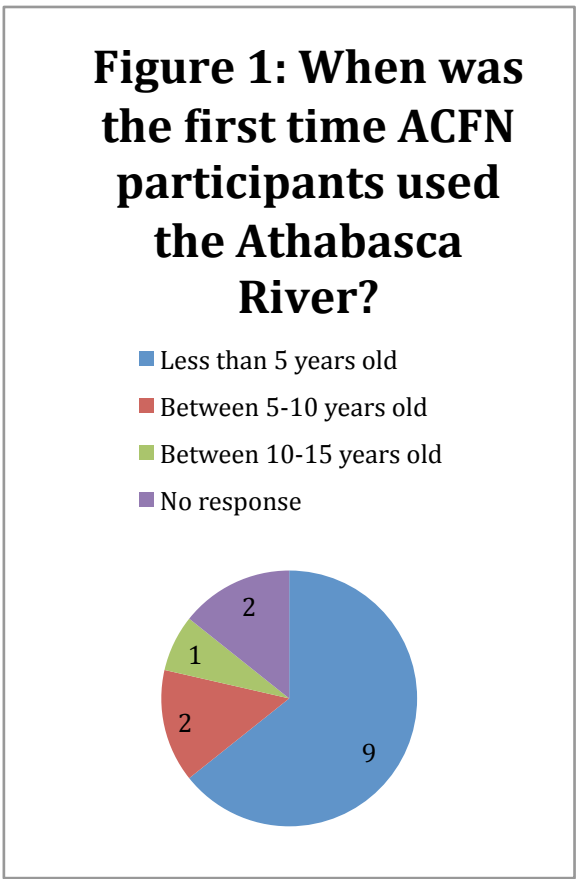
ACFN Map 6: Area of Lost or Inhibited Use at Extreme Low Water Levels

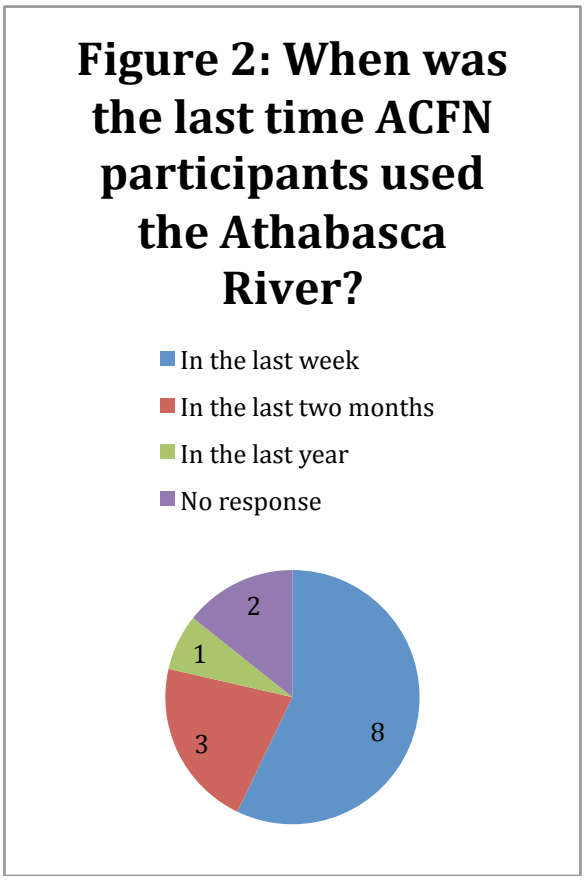


ACFN Participant Profiles

Fourteen ACFN elders and frequent river users were interviewed for the Study in May 2010. The age of the participants ranged from 26 to 76 years old, with the average age being fifty. All interviews were conducted in English. River navigation in Fort Chipewyan is generally seen as a male role. As a result, all fourteen of the ACFN expert river users identified were male[3]. All are also long term and active river users. Nine of fourteen reported first using the Athabasca River when they were less than five years old (see **Figure 1**), and twelve reported using the river within the past year, with eight having used it in the past week (see **Figure 2**).

Many of the older ACFN participants spent much of their lives living on or near the Athabasca River, particularly at ancestral village settlements in the Athabasca River delta, such as Jackfish, or along the banks of the river itself (see Tanner and Rigney 2003). Many of these areas are still returned to, and seasonally occupied, especially in summer months. In the case of Jackfish, access to adjacent areas, including subsistence areas, and sacred areas including an important graveyard, is frequently limited at low water levels.

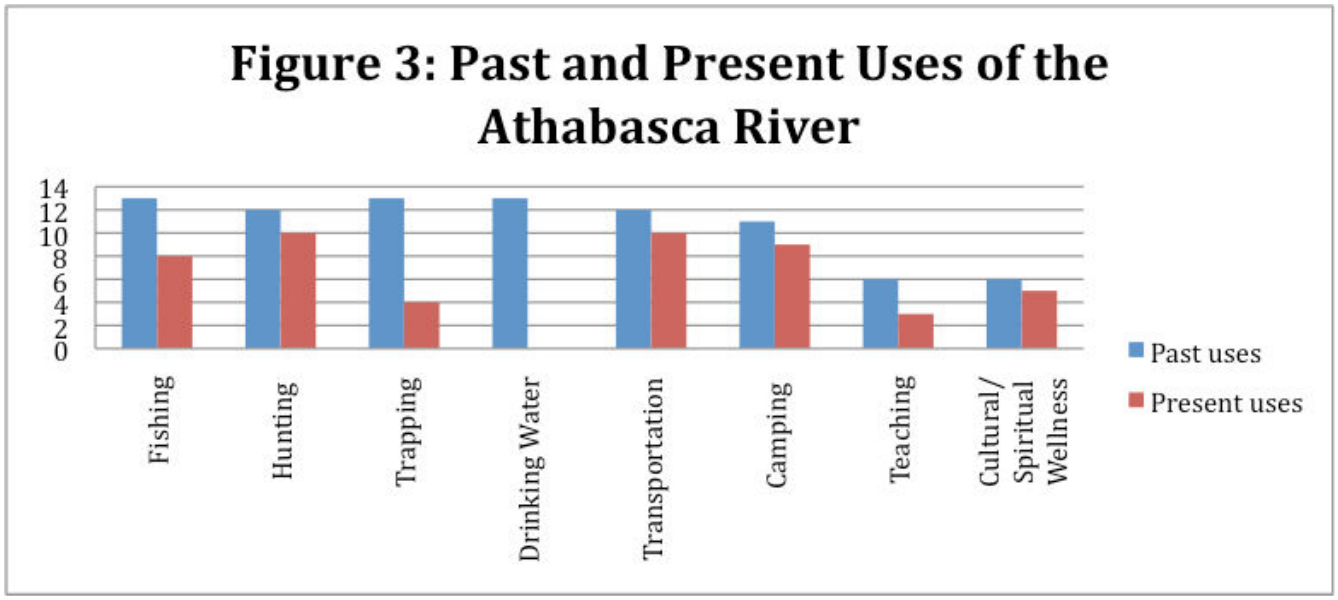




3 Future documentation and analysis of women's knowledge and use of the Athabasca River would provide a valuable comparison to the information collected in this study.

ACFN Results

The past and continued importance of the Athabasca River for the practice of ACFN aboriginal and Treaty rights is clear from the responses of participants. **Figure 3** shows the kinds of reported uses by participants and their families when they were young (generally defined as younger than twenty), compared with what they and their families use the river for now. It illustrates that use of the river, at least by the sample of those interviewed, is still strong and diverse, and while use has generally declined, it has declined in some use areas more than others. In particular, use for drinking water, trapping and teaching seem to have declined more than use for hunting, transportation, and cultural/spiritual and wellness practices. It is important to note that this diagram does not distinguish between practices within the general use categories (such as shifting from subsistence fishing to catch and release), or avoidance of using particular parts of the river in favor of others because of access or quality concerns. It is also important to note that the participant sample selected for male elders and active river users. Use in other segments of the ACFN community may not follow similar patterns.



Flooding and Seasonal Cycles

Based on the ACFN interviews, it is clear that the ability of ACFN member to practice rights, including hunting, trapping, and fishing, has always depended on the seasonal flooding of the Athabasca River. It is also recognized that the Athabasca River is a highly variable natural system with some years of high water, and others of low. The ability of ACFN members to access territories, or practice other rights, may be naturally constrained by the absence of adequate water levels, particularly during ice free seasons when rivers and streams become important transportation corridors. The frequency of annual floods on the Athabasca, particularly in early to mid Spring, is considered critical in maintaining the grass and water ecology of the delta area, and the main and side channels of the Athabasca River itself, as well as contributing to healthy wildlife and fur populations (particularly muskrat).

> "In the olden days, when I was really young, we had no problems with the water … when the rivers jammed, the water rose, overflowed the

> banks, which enriched all the marshlands that were in the back and that caused a lot of fur, like the muskrats and the beavers to really flourish. There was a lot of water. In the early, mid-eighties, like the water started to go down quite a bit. You noticed the difference when the ice breaks up. The water didn't rise and go over the banks, therefore it would not fill up the back sloughs and stuff like that and the muskrats and the beavers depend on that, the water supply to come in." (A01)

Without exception, respondents reported that the seasonal flow of the Athabasca has changed over their lifetimes, that the trend is for the river to be lower than in the past, and that the reduction in flow is making it more difficult for boat travel or subsistence practice. Many of the participants identified oil sands withdrawals as the most likely cause of reduced water levels on the Athabasca. Many participants also mentioned or described the cumulative effects occurring in delta areas as a result of the combined influence of reduced water flowing from the Peace river watershed, including the W.A.C. Bennett Dam, and reduced water flowing from the Athabasca River.

Navigational Hazards and Incidents

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:

> "…there's sandbars … 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)

Map 2 shows reported navigational hazards and incidents including sand bars, dangerous rocks, and log jams, and illustrates the predominance of sand bars in many parts of the Athabasca River itself. 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. Use of the Athabasca River by participants was reported most frequently in the Athabasca delta area, with use further up stream (south) along the river towards Fort McMurray being less frequent.

> "For a while it was getting so low… it's on this side of the river from Fort McKay to Fort McMurray, there's more gravel bars so you get to do more damage to your motor on this side of the river… so not too many people use the river on this side." (A03)

While the precise location of sandbars is constantly shifting, particular stretches of the river are known to be particularly bad. Sand bars become more frequent and exposed at low water levels, and seasonal flooding may not reach levels required to clear log jam areas. As

such, the obstacles and hazards indicated on **Map 2** are mostly associated with low water levels and are considered to be more frequent now than in the past. A total of 92 separate accounts of hazards or incidents (41 points and 42 polygons) were reported and are shown on **Map 2**. The majority of them (60) were associated with sand bars, 11 with shallows, 8 with mud flats, and 8 with dangerous rocks, and 5 with other hazards or incidents.

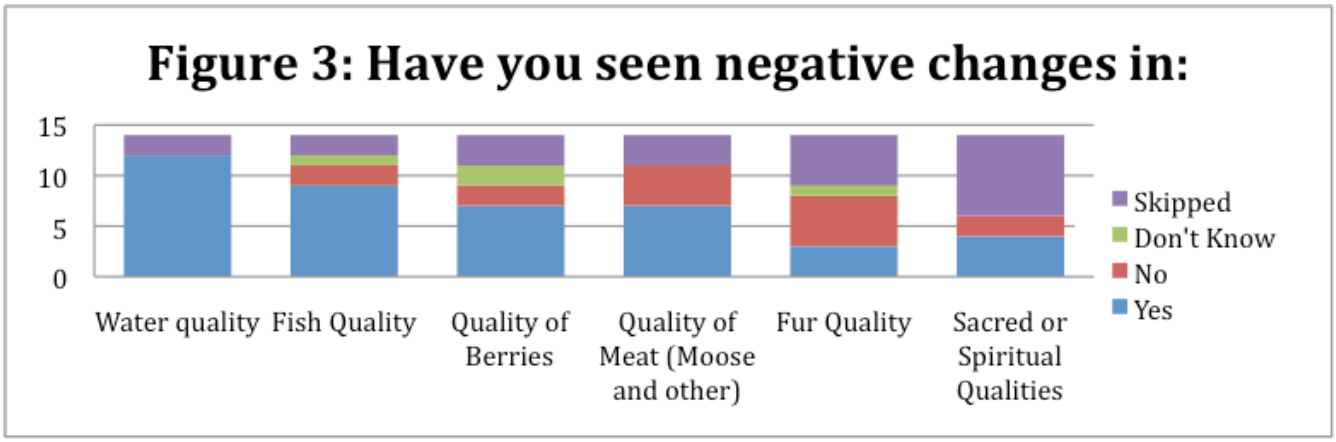
Reported effects of sand bars and hazards include:

- lost access to side channels and streams adjoining the River (see maps 5 and 6);
- 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);
- damage to boats, engines, and equipment; and,
- safety concerns related to collisions with sand bars or other hazards.

Map 3 shows reported specific instances of lost use because of water level. Examples include trying to access cabins and not being able to because of low water, trying to hunt in a particular area, but finding that the water was too low to get in, or wanting to shoot a moose and not doing so because the water level was too low to get the meat out. A large portion of the Athabasca River delta area, including ACFN reserve lands, becomes inaccessible at low water levels, and this map of specific instances of lost use due to water levels reflects the vulnerability of the area to low water levels. A total of 101 separate accounts of lost use due to water level are represented on **Map 3** (43 points and 58 polygons), including 9 instances of lost use of permanent or temporary habitation areas, 29 instances of lost subsistence use, and 63 instances of lost general use.

Water Quality and Industrial Pollution

Beyond water level (and water quantity), confidence in Athabasca River water quality, and ecosystem health more generally, are also essential for the continued meaningful practice of aboriginal and treaty rights by ACFN members, including hunting, trapping, fishing, and other rights, along the Athabasca, in the delta, and along adjoining tributaries. Confidence in the quality of resources harvested from the Athabasca River is a very important factor in changing land use patterns. As shown in **Figure 3**, the majority of participants indicated that, over their lifetimes, they have seen negative changes in the Athabasca River, or in the resources gathered or hunted from its banks.

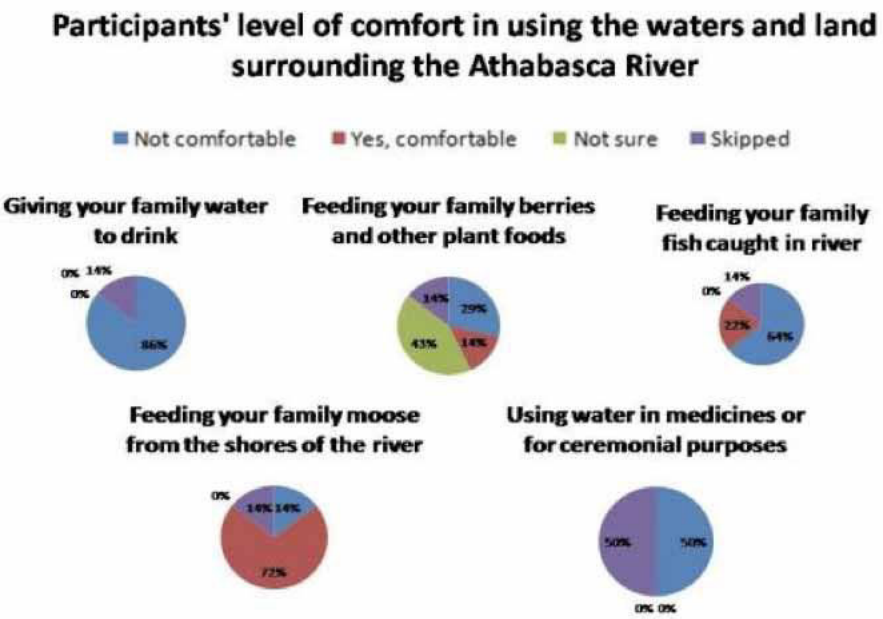


Within the interviews, perceptions of declining environmental quality were often explicitly connected to concern regarding oil sands related emissions, and linked to both received risk knowledge from government authorities and other 'experts', as well as local or traditional ecological knowledge related 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.

Map 4 shows reported instances of lost use due to concerns regarding quality. Examples include places where a moose was shot, but the meat was left on the land because of some abnormality in the meat, fish caught, but thrown back or fed to dogs because of some perceived quality issue (e.g. deformities, loss of colour, excessive slime). In the vast majority of reported instances, concerns regarding quality were associated with oil sands developments. **Map 4** shows a cluster of lost use, or avoidance due to quality, near Fort McKay, as well as instances in the delta area, and north into the Peace River drainage. A total of 21 separate accounts of lost use due to quality are represented on **Map 3** (18 points and 3 polygons), including 19 instances of lost subsistence use, and 2 instances of lost general use.

In conjunction with other interview findings, instances of avoidance due to concerns regarding quality suggest that, at least amongst some ACFN land users, a lack of confidence regarding the quality of resources, largely related to perceived oil sands emissions, is having adverse effects on subsistence use and the practice of aboriginal and Treaty rights in and around the Athabasca River. **Figure 4** illustrates the level of comfort participants reported with feeding their families from the Athabasca River and its shores. 64% indicated they would not be comfortable feeding their families fish from the Athabasca, and 14% indicated that they would not be comfortable feeding their families moose, 29% were uncomfortable, and 43% unsure regarding berries and all who responded were uncomfortable giving Athabasca water to drink.

Figure 4:



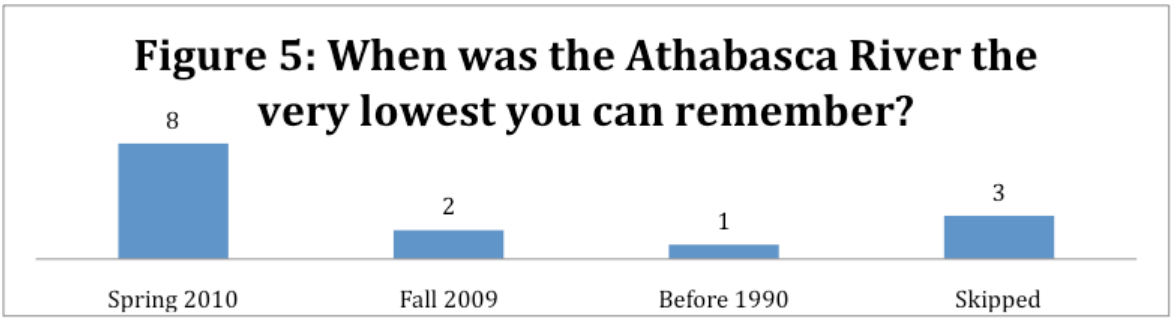
Taken together, **figures 3 and 4**, and **map 4** support an understanding that psychosocial factors, consistent with Health Canada guidance (Health Canada 2005) and related to fear of contaminants from oil sands produce on the Athabasca River and surrounding areas, are resulting in avoidance of traditional foods and resources by ACFN members, especially fish and drinking water, and may be resulting in adverse effects on the meaningful practice of aboriginal and treaty rights along the Athabasca, in the delta, and adjoining tributaries.

Subsistence Navigation and Access

Particular attention was paid to mapping areas where access becomes limited at low and extreme low water levels. The standard of transportation specified in interviews, and on which responses were based, was a fully loaded boat, as after a successful hunt, or outfitting a trapping cabin, with an outboard motor. This is the standard and preferred mode of transportation used by ACFN subsistence river users. Explanations for why outboard motors were the preferred mode of subsistence transport included the cost of gas, the cost of motor repairs and availability of parts, and reliability in the variety of conditions encountered in ACFN territory (including open lake, river, stream, and weedy lakes). Based on interview responses, and later verification with the ACFN elder's council, the safe navigational depth (including start-up) for this kind of boat was confirmed to be approximately four feet (1.2m).

Map 5 shows, in blue, areas of the Athabasca River, including side channels and confluences with smaller streams, where ACFN members are able to travel at normal high water levels, but that become impassible at extreme low water levels. Extreme low water levels were defined in the interview setting as the lowest that the participant could remember the Athabasca River being. As shown in **Figure 5**, for many participants (10 of 14), either the time of interview (mid-May 2010), or the previous fall (2009) was reported to be the lowest they

could remember the Athabasca River being. Many commented that the Spring 2010 levels were of particular concern as it was a time of year when the waters should be quite high.



Map 5 also shows, in red, tributaries to the Athabasca River that are reported to be navigable at normal summer high water for at least a portion of their length, but that become too shallow to navigate at extreme low water. Blue areas indicate reported low water limits (LLW and XLW). Red tributaries were extrapolated using watershed data (see appendix 2). It is particularly important to note that access to large portions of key ACFN territories, including Indian Reserves, and areas around Richardson Lake and into the Richardson back country, is lost at extreme low water levels.

Major streams and waterways accessed by ACFN for the practice of Treaty and aboriginal rights, but reported to become inaccessible at extreme low water include, but are not limited to:

- Richardson River, which becomes inaccessible at low water near where it joins the Athabasca River, resulting in lost or limited access to territories, including cabins and trap lines, within a large area frequently referred to as the Richardson Backcountry.
- Jackfish Creek, which becomes inaccessible at low water near where it joins Richardson Lake, resulting in lost access to hunting, fishing, and cultural sites, including burials, located within IR Chipewyan 201E.
- Richardson (Jackfish) Lake itself, located adjacent to IR Chipewyan 201E, and constituting the majority of its area, which 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 which becomes inaccessible at very low flow levels and in several places 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 Chipewyan 201F, and IR Chipewyan 201G.

- Firebag River, which 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.
- Other tributaries to the Athabasca, including Muskeg River, Ells River, and Dover/McKay Rivers.

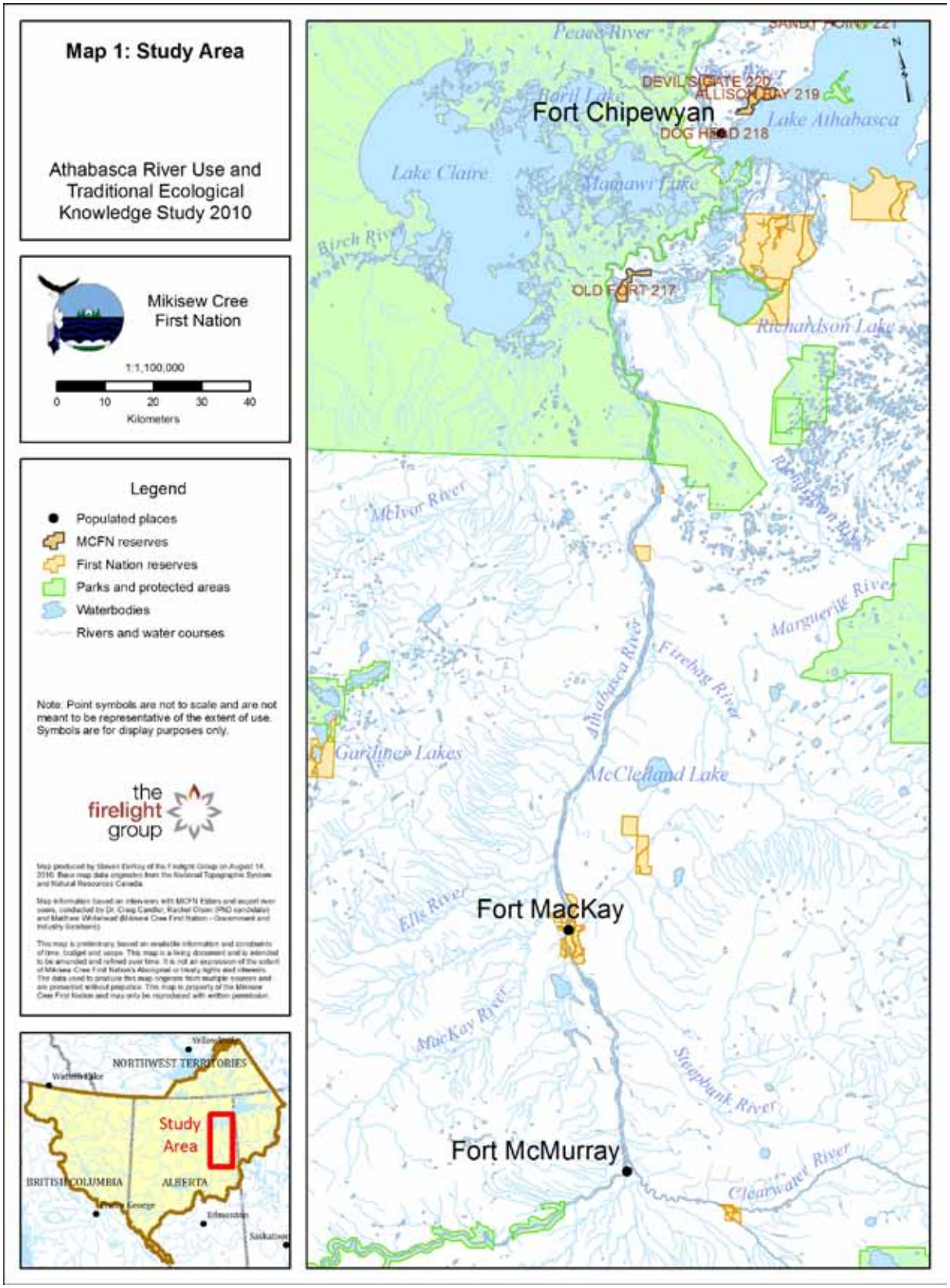
Map 6 takes the same watersheds lost at extreme low water and identified in red in Map 5, and applies a 5km buffer (roughly 3.1 miles) in pink. This pink buffered area approximates the distance easily traveled in a day trip from the river or stream, as when hunting or trapping using the river as a base. A 5km buffer (in orange) is also applied along the Athabasca River itself to reflect that boat travel along the Athabasca, and day trips for hunting or other purposes from it, are still possible at extreme low water, but may be more difficult (see **Map 2**), with access to side channels impossible by boat, and access to river banks and shore frequently impaired because of expanses of mud flats or other barriers to land transport due to low water. This map is designed to illustrate, or model, in a general way, the relationship between lost water access and the wider lands and watersheds within which aboriginal and Treaty rights are practiced. It reflects only restrictions to access for subsistence purposes by boat (frequently the preferred or only means) and does not consider the navigable limit of streams at normal summer high water levels, or territories that may be accessed by road or trail.

> "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)

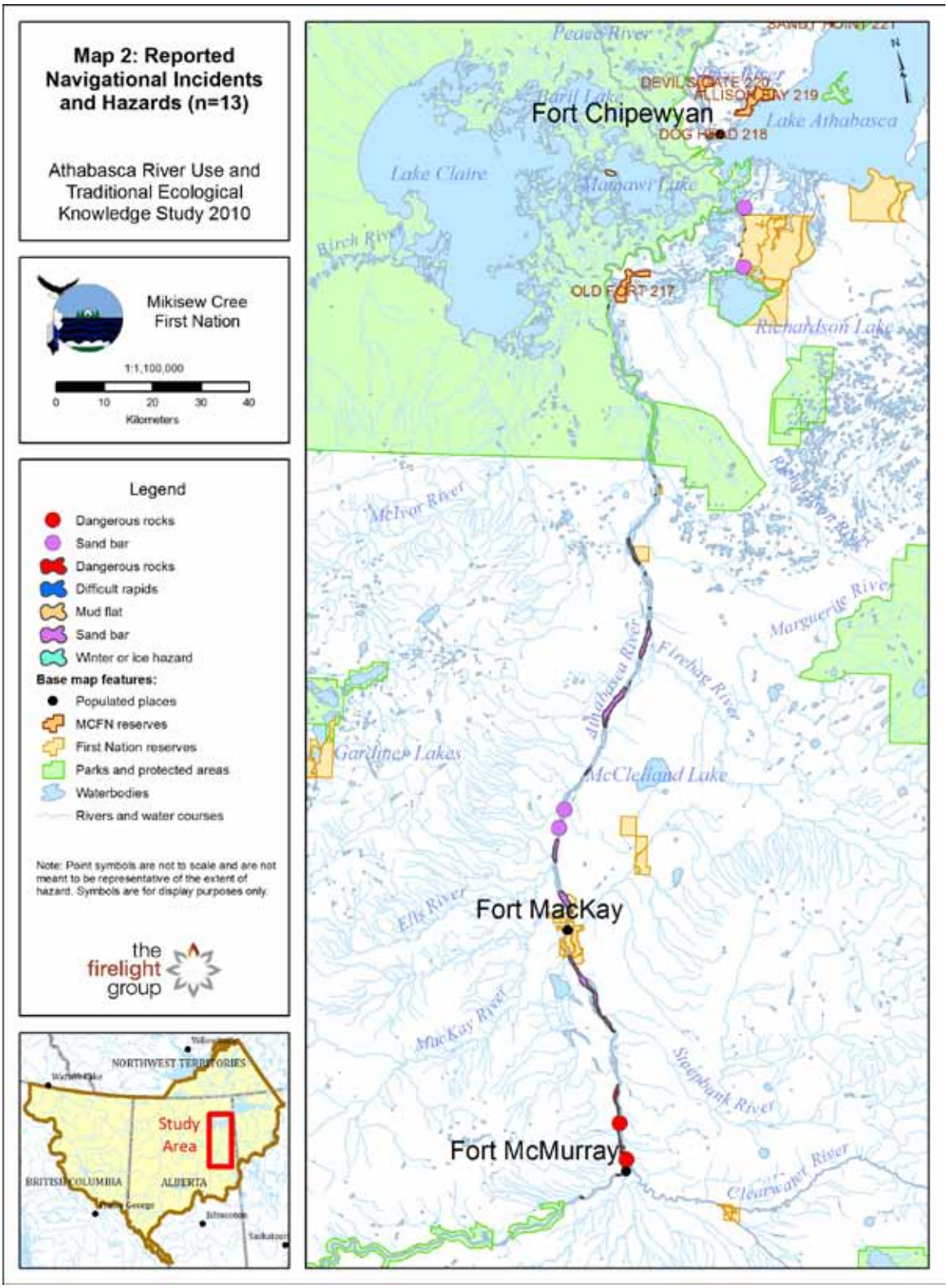
Part C

Mikisew Cree First Nation Data

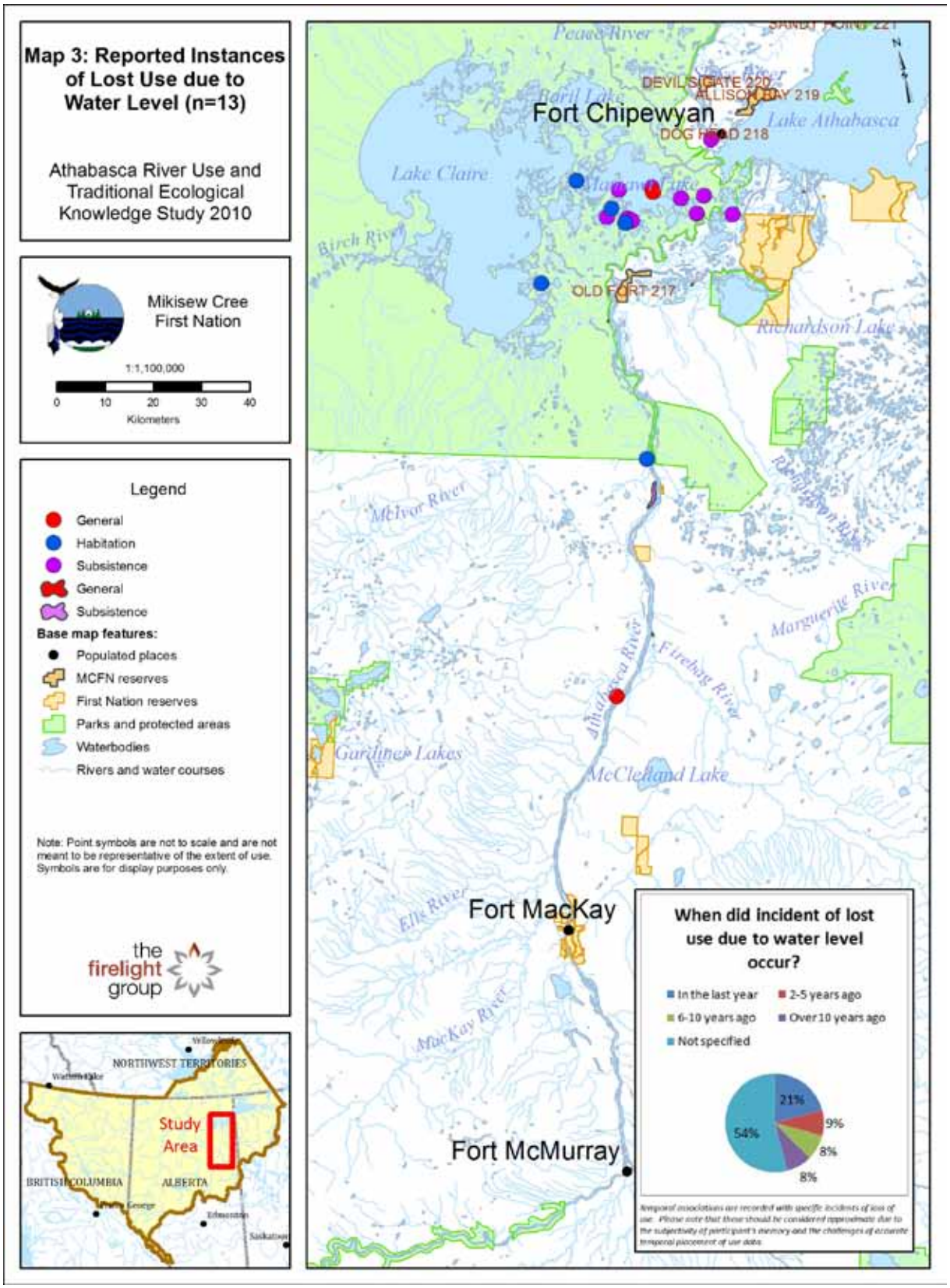
MCFN Map 1: Study Area



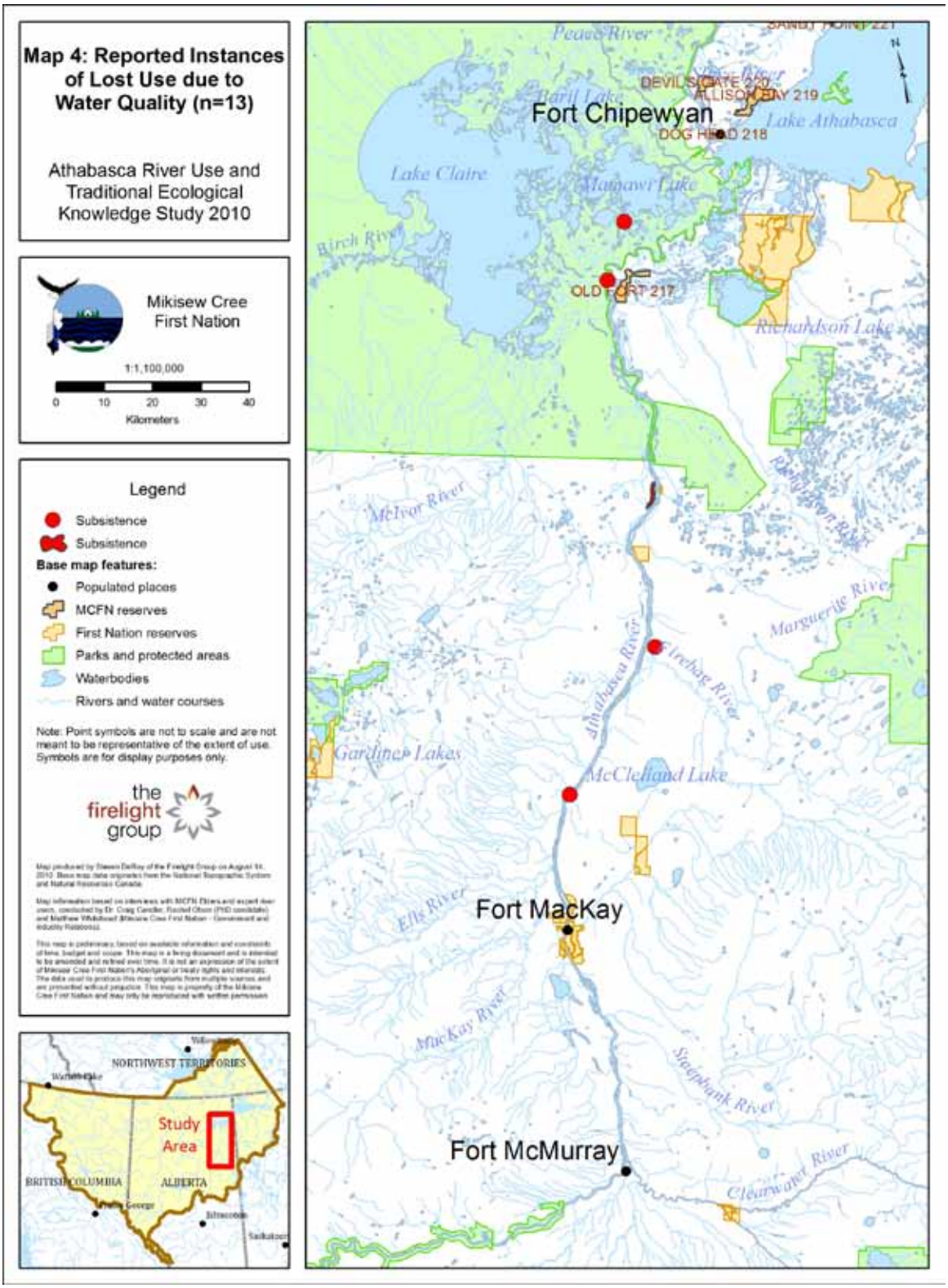
MCFN Map 2: Reported Navigational Incidents and Hazards



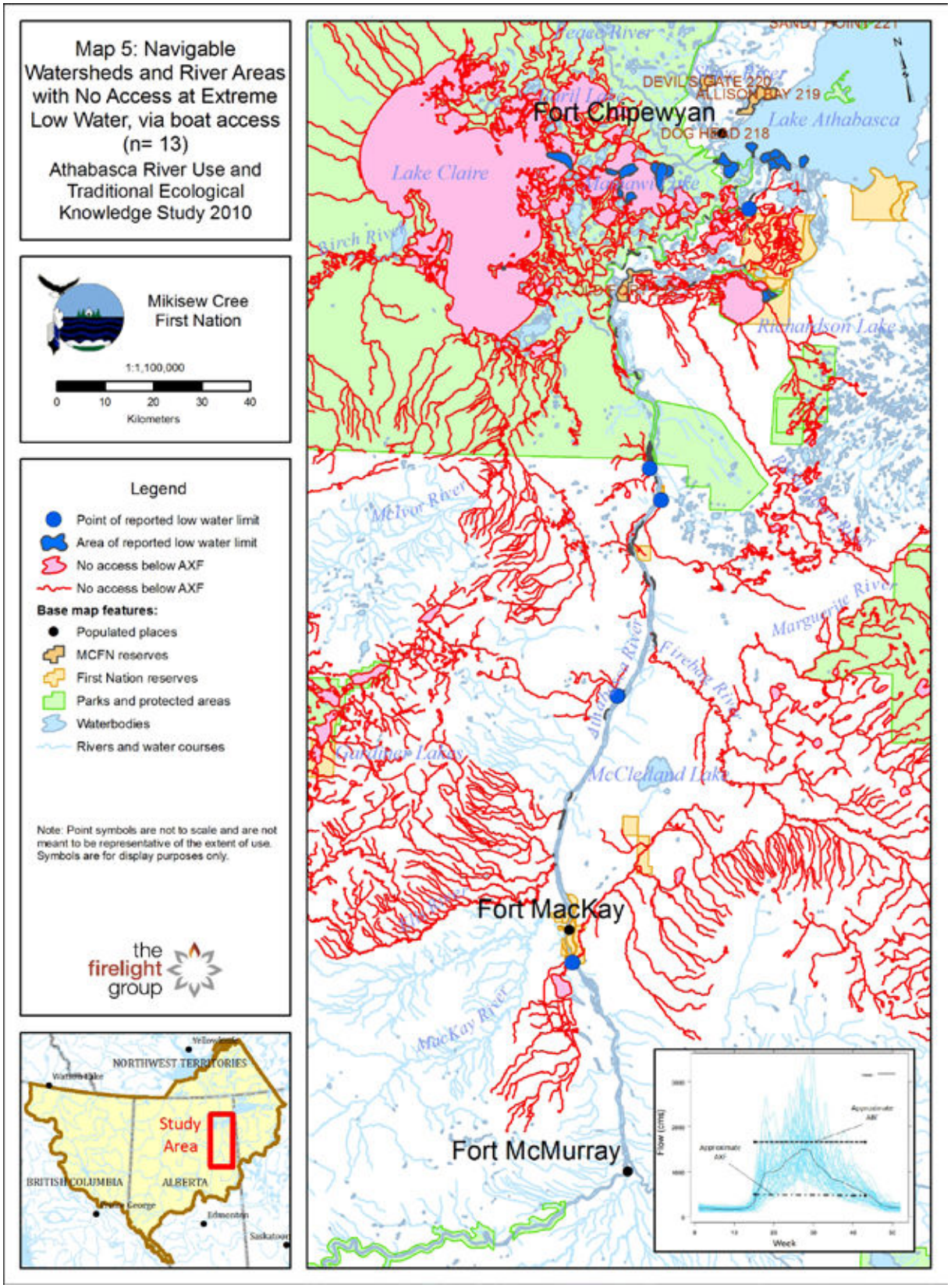
MCFN Map 3: Reported Instances of Lost Use due to Water Level



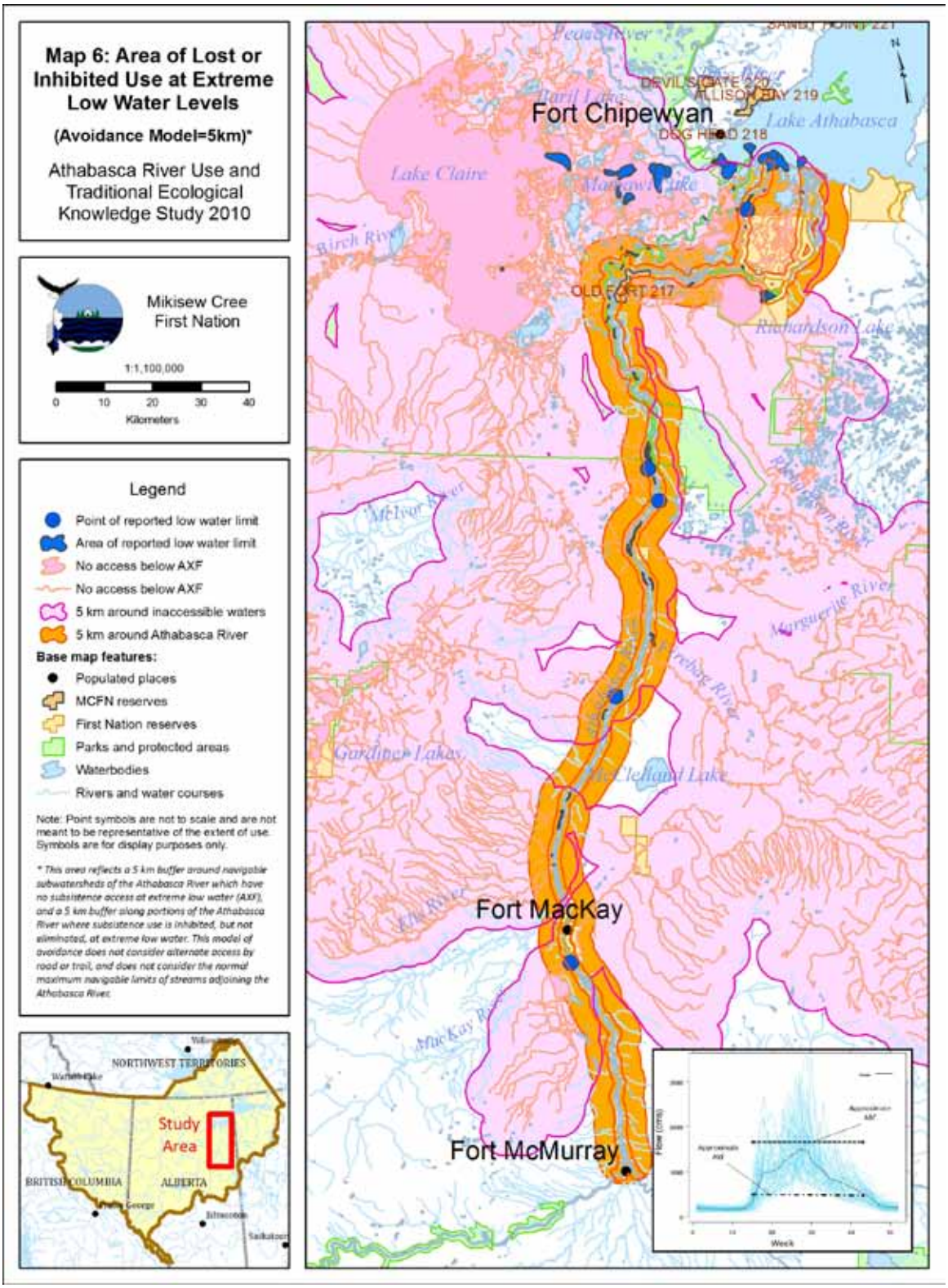
MCFN Map 4: Reported Instances of Lost Use due to Water Quality



MCFN Map 5: Navigable Watersheds and River Areas with No Access at Extreme Low Water Levels, via Boat Access

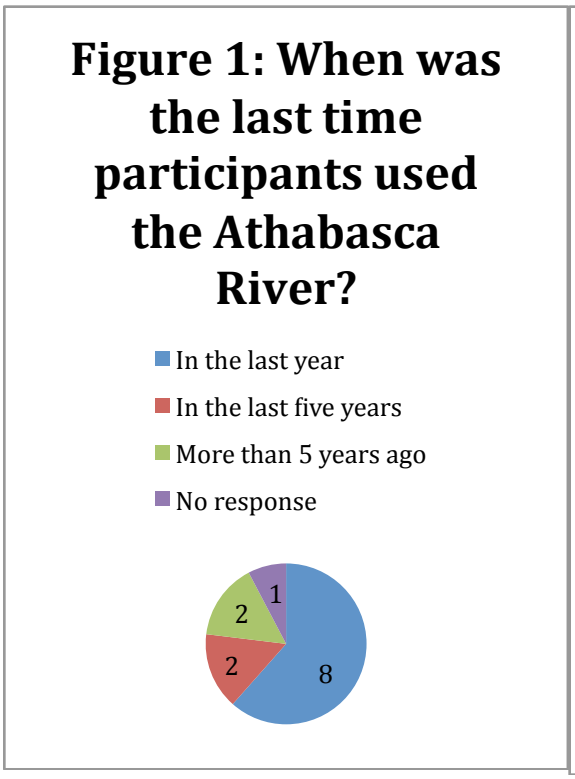


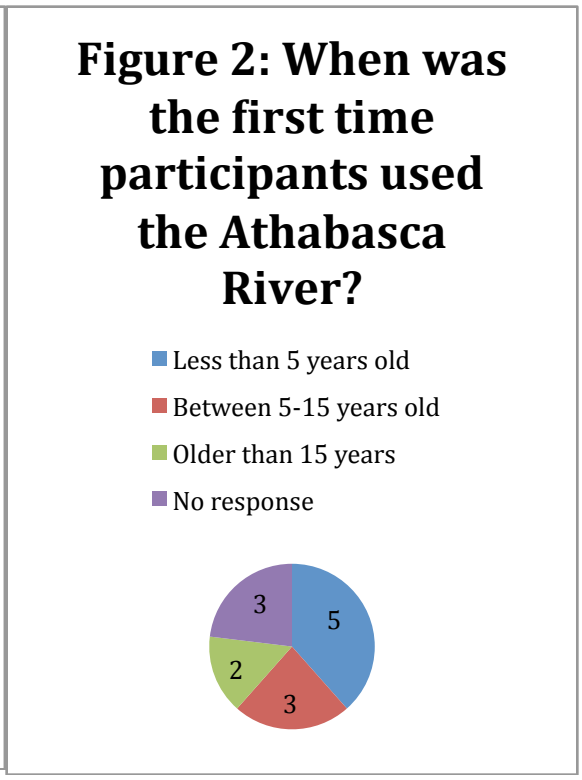
MCFN Map 6: Area of Lost or Inhibited Use at Extreme Low Water Levels



MCFN Participant Profiles

Thirteen MCFN elders and frequent river users were interviewed for the Study in May 2010. This included one individual who is considered a member of the MCFN by marriage and affiliation, but is not currently registered on the MCFN band list. The age of the participants ranged from 32 to 75 years old, with the average age being 58. All interviews were conducted in English. As mentioned in relation to the ACFN, river navigation in Fort Chipewyan is generally seen as a male role. As a result, all thirteen MCFN participants, except for one, were male[4]. The one female participant lives on the Athabasca River with her family. All MCFN participants are long term and active river users, with the majority having been active on the river within the past 5 years. Eight reported first using the Athabasca River when they were less than fifteen years old (see **Figure 1**), and eight reported using the river within the past year (see **Figure 2**).





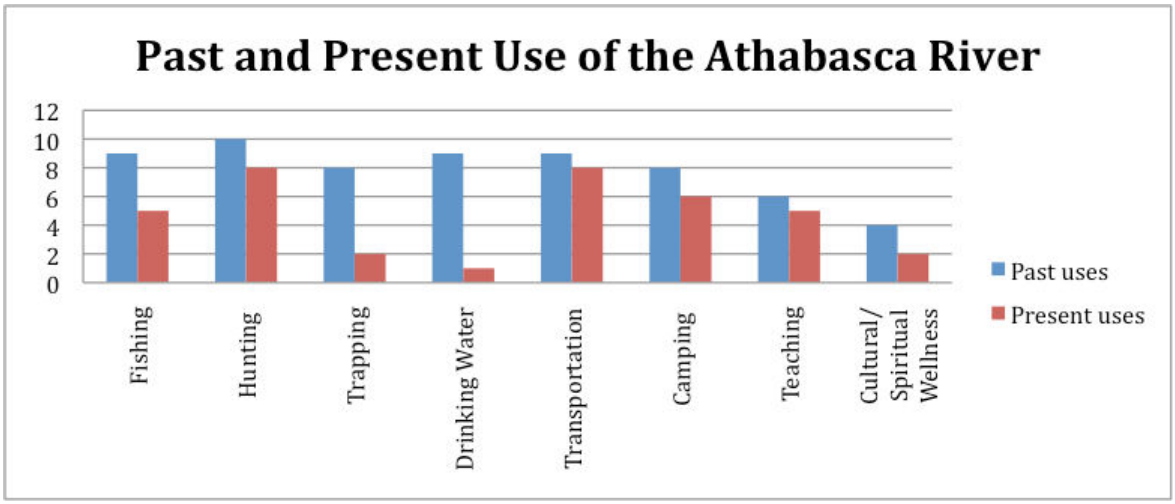
Many of the MCFN participants had spent much of their lives living on or near the Athabasca River, particularly at ancestral village settlements in the Athabasca River delta or along the banks of the river itself. Many of these areas are still returned to, and seasonally occupied, especially in summer months, though issues of water quality and inhibited access due to low water have resulted in some participants feeling like they can no longer use some areas:

> "I would go back and live there if it was okay. I want to, but everything is changing. Water is low. I left mid-80s and I didn't bother going back." (M10).

4 As mentioned in the ACFN data section, future documentation and analysis of women's knowledge and use of the Athabasca River would provide a valuable comparison to the information collected in this study.

MCFN Results

The past and continued importance of the Athabasca River for the practice of MCFN aboriginal and Treaty rights is clear from the responses of participants. **Figure 3** shows the kinds of reported uses by participants and their families when they were young (defined as younger than twenty), compared with what they and their families use the river for now. It illustrates that use of the river, at least by the sample of those interviewed, is still strong and diverse, and while use has generally declined, it has declined in some use areas more than others. In particular, use for drinking water and trapping seem to have declined more than use for hunting, transportation, and camping. It is important to note that this diagram does not distinguish between practices within the general use categories (such as shifting from subsistence fishing to catch and release), or avoidance of using particular parts of the river in favor of others because of access or quality concerns. It is also important to note that the participant sample selected for elders and active river users. Use trends in other segments of the MCFN community may not follow similar patterns.



One participant described his use of the river, and its relationship to water levels, as follows:

> "Well the water was high in them days, you could go anywhere like, a lot of cutouts, you would go in there, side creek and stuff like that, you could go in there, now you can't do it. Mostly sandbars. And travelers would come by boat … and we used to come every spring, hunting, spring hunt, hunting beaver and stuff like that. But now you can't use these cuts out, you have to stay in the main channel, the main river…
>
> Yeah, you could drink water anywhere them days when I was younger, drinking off the river, and now you can't do that, you have to carry special water when you go anywhere, any place you go, any place like even the Park area like when you go out in the woods you have to carry your own water. You can't drink water from anywhere." (M03)

Flooding and Seasonal Cycles

Based on the MCFN interviews, it is clear that the ability of MCFN member to practice rights, including hunting, trapping, and fishing, has always depended on the seasonal flooding of the Athabasca River. It is also recognized that the Athabasca River is a highly variable natural system with some years of high water, and others of low. The ability of MCFN members to access territories, or practice other rights, may be naturally constrained by the absence of adequate water levels, particularly during ice free seasons when rivers and streams become important transportation corridors. The frequency of annual floods on the Athabasca, particularly in early to mid spring, is considered critical in maintaining the grass and water ecology of the delta area, and the main and side channels of the Athabasca River itself, as well as contributing to good water quality and healthy wildlife and fur populations.

> "Prior to 1997 we still had a break-up. What I mean by break-up is the ice would make noise when it went down the river, it would smash stuff, it would be loud. Now it just melts away. We don't have a break-up. Because we don't have the water to push it, there's no force behind it. And that's what would cause the floods is the massive push and then it would all jam up somewhere and it would flood everything ... because we have no water to flood so it can't go into the little ponds and all that, all these things are flood zones and that cleans a lot of those basins, all the things settle and then it all drains back in slowly. But nowadays without the flooding well we don't have that affect any more. Because without the flooding it's not going over the shore so these little side channels and all these little creek and all that that are on the edges are not getting any water besides rain water or snow so they're drying up… Natural filter. But with the industry trying to dig up every muskeg we have, scrape it clean, they're taking away our natural filtering system and they cannot replace it." (M01)

Without exception, respondents reported that the seasonal flow of the Athabasca has changed over their lifetimes, that the trend is for the river to be lower than in the past, and that the reduction in flow is making it more difficult for boat travel or subsistence practice. Many of the participants identified oil sands withdrawals as the most likely cause of reduced water levels on the Athabasca. Many participants also mentioned or described the cumulative effects occurring in delta areas as a result of the combined influence of reduced water flowing from the Peace river watershed, including the W.A.C. Bennett Dam, and reduced water flowing from the Athabasca River.

Navigational Hazards and Incidents

One of the key issues raised by MCFN 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:

> Sometimes, I mean, we hit more sandbars, more work to get down there. You're beached for about six hours in the middle of the river not going anywhere. (M02)

Map 2 shows reported navigational hazards and incidents including sand bars, dangerous rocks, and log jams, and illustrates the predominance of sand bars in many parts of the Athabasca River itself. Use of the Athabasca River by participants was reported frequently in the Athabasca delta area, with use further upstream (south) along the river towards Fort McMurray, including tributaries running into the Athabasca.

> A lot of places you've got to follow the Athabasca River before you can get into where you want to go. That's important too. If the water is low and stuff and it's all straight sandbars, well you can't get to where you want to where you want to go. (M08)

While the precise location of sandbars is constantly shifting, particular stretches of the river are known to be particularly bad. Sand bars become more frequent and exposed at low water levels, and seasonal flooding may not reach levels required to clear log jam areas. As such, the obstacles and hazards indicated on **Map 2** are mostly associated with low water levels and are considered to be more frequent now than in the past. A total of 37 separate accounts of hazards or incidents (5 points and 32 polygons) were reported and are shown on **Map 2**. The majority of them (19) were associated with dangerous rocks, however 10 large areas were identified where sand bars are particularly prevalent, and constantly shifting. Most participants considered particular incidents involving hitting sand bars to be 'too many' to map, and so mapping of incidents was opportunistic as more focus was given to other portions of the interview.

Reported effects of sand bars and hazards include:

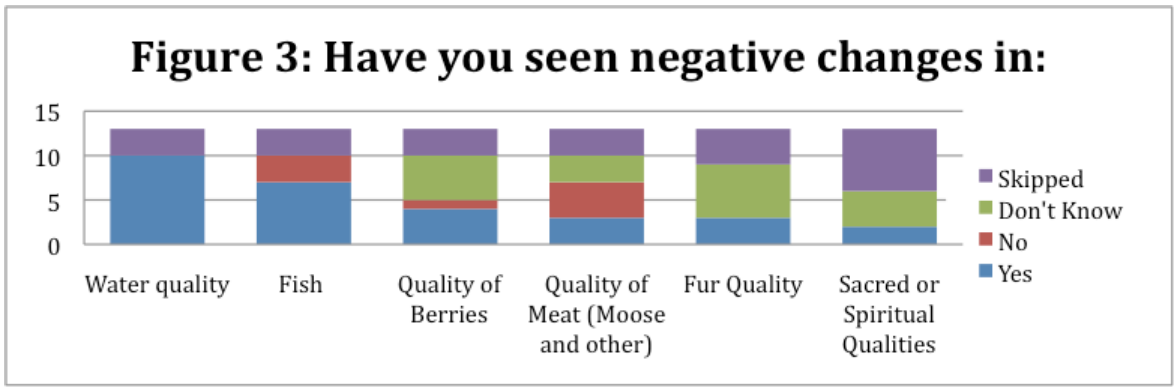
- lost access to side channels and streams adjoining the River (see **maps 5 and 6**);
- increased travel time and expense due to reduced speed and need for increased care;
- increased travel time and expense due to getting stuck on sand bars (including occasional inability to find a channel through);
- increased travel time and expense due to avoidance of sand bar areas (including large areas where the Athabasca delta joins Lake Athabasca);
- damage to boats, engines, and equipment; and,
- safety concerns related to collisions with sand bars or other hazards.

Map 3 shows reported specific instances of lost use because of water level. Examples include trying to access cabins and not being able to because of low water, trying to hunt in a particular area, but finding that the water was too low to get in, or wanting to shoot a moose and not doing so because the water level was too low to get the meat out. A large portion of MCFN territories within Wood Buffalo National Park are only accessible through Lake Mamawi, which becomes inaccessible at extreme low water levels, and this map of

specific instances of lost use due to water levels reflects the vulnerability of the area to low water levels. It is important to note that locations or lost use on Lake Claire was not mapped in detail due to time constraints. A total of 24 separate accounts of lost use due to water level are represented on **Map 3** (18 points and 6 polygons), including 5 instances of lost use of permanent or temporary habitation areas, 12 instances of lost subsistence use, and 7 instances of lost general use.

Water Quality and Industrial Pollution

Beyond water level (and water quantity), confidence in Athabasca River water quality, and ecosystem health more generally, is also essential for the continued meaningful practice of aboriginal and treaty rights by MCFN members, including hunting, trapping, fishing, and other rights, along the Athabasca, in the delta, and along adjoining tributaries. Confidence in the quality of resources harvested from the Athabasca River is a very important factor in changing land use patterns. As shown in **Figure 3**, the majority of participants indicated that, over their lifetimes, they have seen negative changes in the Athabasca River, or in the resources gathered or hunted from its banks.



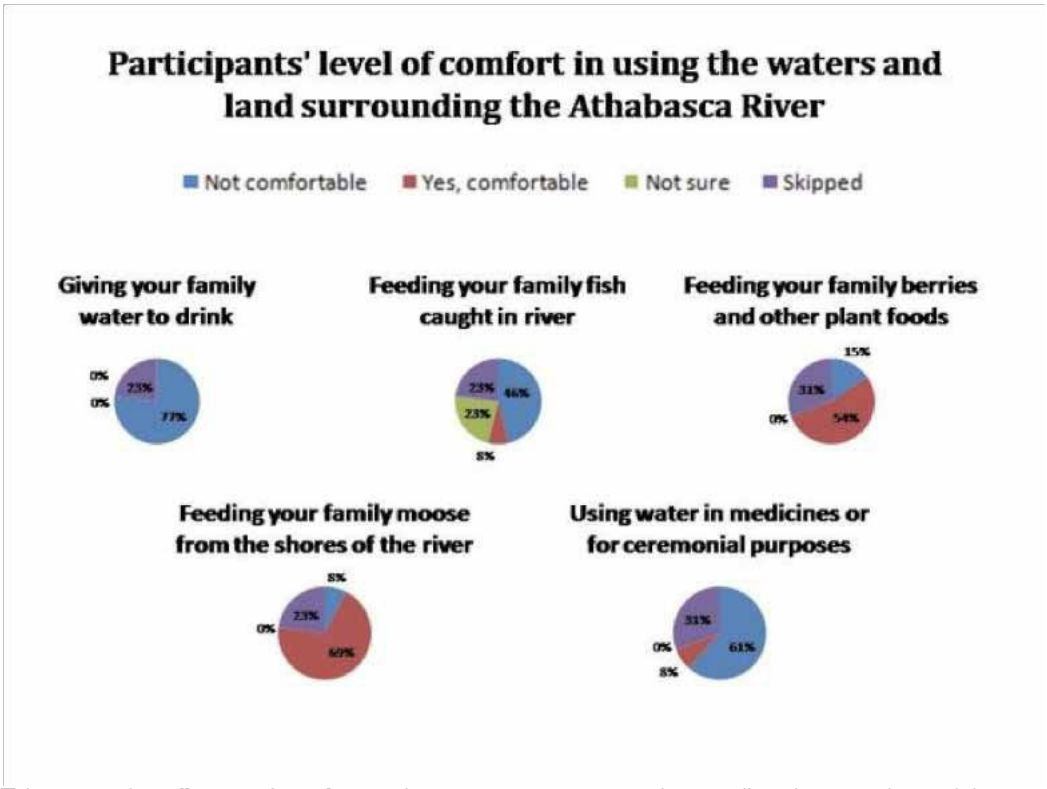
Within the interviews, perceptions of declining environmental quality were often explicitly connected to concern regarding oil sands related emissions, and linked to both received risk knowledge from government authorities and other 'experts', as well as local or traditional ecological knowledge related 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.

Map 4 shows reported instances of lost use due to concerns regarding quality. Examples include places where a moose was shot, but the meat was left on the land because of some abnormality in the meat, fish caught, but thrown back or fed to dogs because of some perceived quality issue (e.g. deformities, loss of colour, excessive slime). In the vast majority of reported instances, concerns regarding quality were associated with oil sands developments. **Map 4** shows a lost use, or avoidance due to quality, along the length of the Athabasca River. A total of 5 separate accounts of lost use due to quality are represented on **Map 3** (4 points and 1 polygon), all associated with lost subsistence use.

In conjunction with other interview findings, instances of avoidance due to concerns regarding quality suggest that, at least amongst some MCFN land users, a lack of confidence regarding the quality of resources, largely related to perceived oil sands emissions, is having adverse effects on subsistence use and the practice of aboriginal and Treaty rights in and around the

Athabasca River. Figure 4 illustrates the level of comfort participants reported with feeding their families from the Athabasca River and its shores. 46% indicated they would not be comfortable feeding their families fish from the Athabasca, with 23% unsure, and 8% indicated that they would not be comfortable feeding their families moose, 15% were uncomfortable regarding berries. All who were asked were uncomfortable giving Athabasca water to drink.

Figure 4:

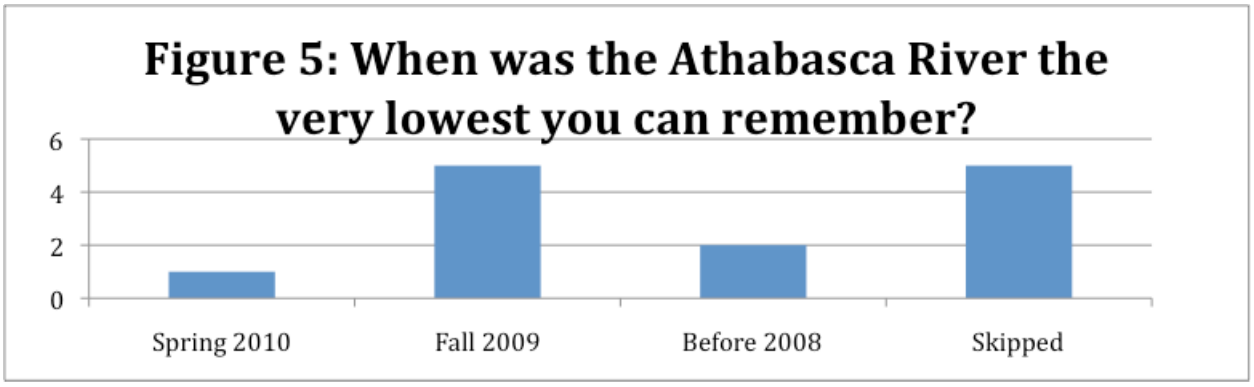


Taken together, **figures 3 and 4**, and **map 4** support an understanding that psychosocial factors, consistent with Health Canada guidance (Health Canada 2005) and related to fear of contaminants from the oil sands production on the Athabasca River and surrounding areas, are resulting in avoidance of traditional foods and resources by MCFN members, especially fish and drinking water, and may be resulting in adverse effects on the meaningful practice of aboriginal and treaty rights along the Athabasca, in the delta, and adjoining tributaries.

Subsistence Navigation and Access

Particular attention was paid to mapping areas where access becomes limited at low and extreme low water levels. The standard of transportation specified in interviews, and on which responses were based, was a fully loaded boat, as after a successful hunt, or outfitting a trapping cabin, with an outboard motor. This is the standard and preferred mode of transportation used by MCFN subsistence river users. Explanations for why outboard motors were the preferred mode of subsistence transport included the cost of gas, the cost of motor repairs and availability of parts, and reliability in the variety of conditions encountered in MCFN territory (including open lake, river, stream, and weedy lakes). Based on interview responses, and later verification through a follow-up meeting with MCFN participants and members, the safe navigational depth (including start-up) for this kind of boat was confirmed to be approximately four feet (1.2m).

Map 5 shows, in blue, areas of the Athabasca River, including side channels and confluences with smaller streams, where MCFN members are able to travel at normal high water levels, but that become impassible at extreme low water levels. Extreme low water levels were defined in the interview setting as the lowest that the participant could remember the Athabasca River being. As shown in **Figure 5**, for many participants (6 of 13), either the time of interview (mid-May 2010), or the previous fall (2009) was reported to be the lowest they could remember the Athabasca River being. Many commented that the Spring 2010 levels were of particular concern as it was a time of year when the waters should be quite high.



Map 5 also shows, in red, tributaries to the Athabasca River that are reported to be navigable at normal summer high water for at least a portion of their length, but that become too shallow to navigate at extreme low water. Blue areas indicate reported low water limits (LLW and XLW). Red tributaries were extrapolated using watershed data (see appendix 2). It is particularly important to note that access to large portions of key MCFN territories, including Indian Reserves, and areas around Lake Mamawi, Embarass River, and Lake Claire, is lost at extreme low water levels.

One participant noted regarding the Embarass River, and Cree Creek (also known as Mamawi Creek)

> "…So now they have to go up the Athabasca, which is a long route. Before we used to go through the Embarass here, it was a shortcut, you save almost an hour. Now you've got to go the long way around. But there's cabins and all this stuff too way up in the Embarass, it's on the Athabasca really, there's lots of people have some cabins up there that they want to go for summers and stuff. But the water level ,that's a big important thing for them. If the water drops, they'll never get to see their cabin.
>
> I had a cabin up there, it used to be in a place called Cree Creek. I had a cabin but I used to go from this side. I used to go from Mamawi Lake rightacross and then we used to go into Cree Creek and go to the cabin. The problem was the water started dropping, started dropping and finally I couldn't make it any more so I had to go around this way, I had to go up the Athabasca and come down the Embarass and so finally the water kept dropping about two, three years more, and then I couldn't even make it from this side, on the Athabasca and down the Embarass. So what I did was, okay, I can't get to my cabin no more so I sold it. Because I couldn't make it. What's the use having something that I can't maintain and get to,

can't use any more so somebody else. So I don't go up there no more. It's too shallow. So I can see what these people might go through if the Athabasca keeps dropping. They're going to be giving up their houses and all that stuff too. And next thing you know we will be building up the lake over here. It will take quite a few years before this lake cools down. Stay away up in the rivers. Like I said, it's true, Embarass is dropping, Athabasca is dropping lots too." (M07)

Other major streams and waterways accessed by MCFN for the practice of Treaty and aboriginal rights, but reported to become inaccessible at extreme low water include, but are not limited to:

- Richardson River, which becomes inaccessible at low water near where it joins the Athabasca River, resulting in lost or limited access to territories, including cabins and trap lines, within a large area frequently referred to as the Richardson Backcountry.
- Jackfish Creek, and Richardson (Jackfish) Lake which becomes inaccessible at low water near where it joins Richardson Lake, resulting in lost access to hunting, fishing, and cultural sites.
- Various waterways in the delta, including within Indian Reserves 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 which becomes inaccessible at very low flow levels and in several places resulting in loss of access to a very large territory within Wood Buffalo National Park, including Lake Claire, Birch River and McIvor River. Because of its function as a 'gateway' to Lake Claire, Lake Mamawi is of critical concern to MCFN land use patterns.
- 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.
- Firebag River, which 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.
- Other tributaries to the Athabasca, including Muskeg River and Ells River.

Map 6 takes the same watersheds lost at extreme low water and identified in red in map 5, and applies a 5km buffer (roughly 3.1 miles) in pink. This pink buffered area approximates the distance easily traveled in a day trip from the river or stream, as when hunting or trapping using the river as a base. A 5km buffer (in orange) is also applied along the Athabasca River itself to reflect that boat travel along the Athabasca, and day trips for hunting or other purposes from it, are still possible at extreme low water, but may be more difficult (see **map 2**), with access to side channels impossible by boat, and access to river banks and shore frequently impaired because of expanses of mud flats or other barriers to land transport due to low water. This map is designed to illustrate, or model, in a general way, the relationship between

lost water access and the wider lands and watersheds within which aboriginal and Treaty rights are practiced. It reflects only restrictions to access for subsistence purposes by boat (frequently the preferred or only means) and does not consider the navigable limit of streams at normal summer high water levels, or territories that may be accessed by road or trail.

PHOTO COURTESY MARK ELLIOT

Part D

Analysis and Recommendations

Analysis: Defining Aboriginal Base Flow (ABF) and Aboriginal Extreme Flow (AXF)

This Study confirms that, for members of both ACFN and MCFN, the Athabasca River continues to be central to their lives, their ability to access their territories, and their conception of themselves as aboriginal peoples, despite historical change. The Athabasca River occupies a central role in the culture and economy of the aboriginal peoples of Fort Chipewyan, and is critical to the ability of the ACFN and MCFN to hunt, trap, fish, and otherwise practice their aboriginal and treaty rights in a preferred manner. One participant, in predicting what the future holds if management of the Athabasca River continues as it has, stated:

> I don't know … for me, it would be devastating. I won't be able to travel on the river for one thing … But it's hard to imagine, you know, just imagine where you used to travel. All of a sudden it's land, you can't travel on it anymore… Even now, you see a big change. How much change there is since I started out living on my own? I used to take a canoe and paddle almost all around the territory, now you can walk where I used to paddle. You can walk. That's how much the water has changed, all the water's gone. As for the community, I don't know, the younger generation I don't know, unless they happen to change, I don't think there will be anybody going on the land anymore after this … it's pretty hard to speak for the next generation or this generation coming but my generation we're all getting old now so you know our time is almost up. But it is going to be sad to see things go. I know if they take too much water the river's going to be really, really shallow, especially in the fall. The only time I can see them taking it, if there is a big push, like a big rush coming from the mountains and that, during that high water, if they take it then but if they

> take it during low water, it's going to destroy our fishing and everything … I hope I don't live to see the day. I don't want to die but I don't want to see that. (M07)

This suggests that there are high flow levels on the Athabasca River at which industrial withdrawal of water may not result in adverse effects on the ability of ACFN and MCFN members to practice rights, but that at low flow levels, the adverse effects may be extreme.

For ACFN and MCFN river users, losing the ability to access creeks, side channels and tributaries by boat means losing access to the land. Losing access to the land means lost opportunities for language and knowledge transmission, and for maintaining connections between generations, as well as between people, animals, waters, and resources that are at the heart of being Dene and being Cree in Fort Chipewyan. The results of this Study, and the experience of both ACFN and MCFN participants, suggests that when the Athabasca River is exceptionally low, the increased difficulty of boat travel, combined with unanswered questions regarding the safety of wild foods downstream from oil sands operation, is leading to widespread disruption of ACFN and MCFN land use patterns, and extreme adverse effects on the ability of ACFN and MCFN members to practice aboriginal and treaty rights in a preferred manner. While many things may influence low water levels on the Athabasca River, it is clear to ACFN and MCFN river users that the river does not have the flow that it once had, and that they are regularly unable to travel by boat to places that were once preferred and frequently visited.

The results of the Athabasca River Use and Traditional Ecological Knowledge Study suggest two thresholds that define the ability of ACFN and MCFN members to access their traditional territories, and to practice aboriginal and treaty rights by water. The first threshold, an Aboriginal Base Flow (ABF), estimates a level on the Athabasca River and adjacent streams where ACFN and MCFN members are able to practice their rights, and access their territories fully. The second threshold, an Aboriginal Extreme Flow (AXF), estimates a minimum level below which widespread and extreme disruption of Treaty and aboriginal rights occurs along the Athabasca river, delta, and tributaries due to a loss of access related to low waters.

Participants from both First Nations report that until recent decades, the ABF level was reached frequently and would last for much of the summer. A rough estimate of this level, based on a hydrograph for the Lower Athabasca River provided in Ohlson ***et al.*** (2010) and assuming a flow slightly above mean peak summer flow, would be approximately 1600 m^3/s. This is proposed as an initial threshold, subject to monitoring and refinement, for identifying where Treaty and aboriginal rights with regard to navigation, access and water level may be practiced fully along the LAR and adjoining tributaries.

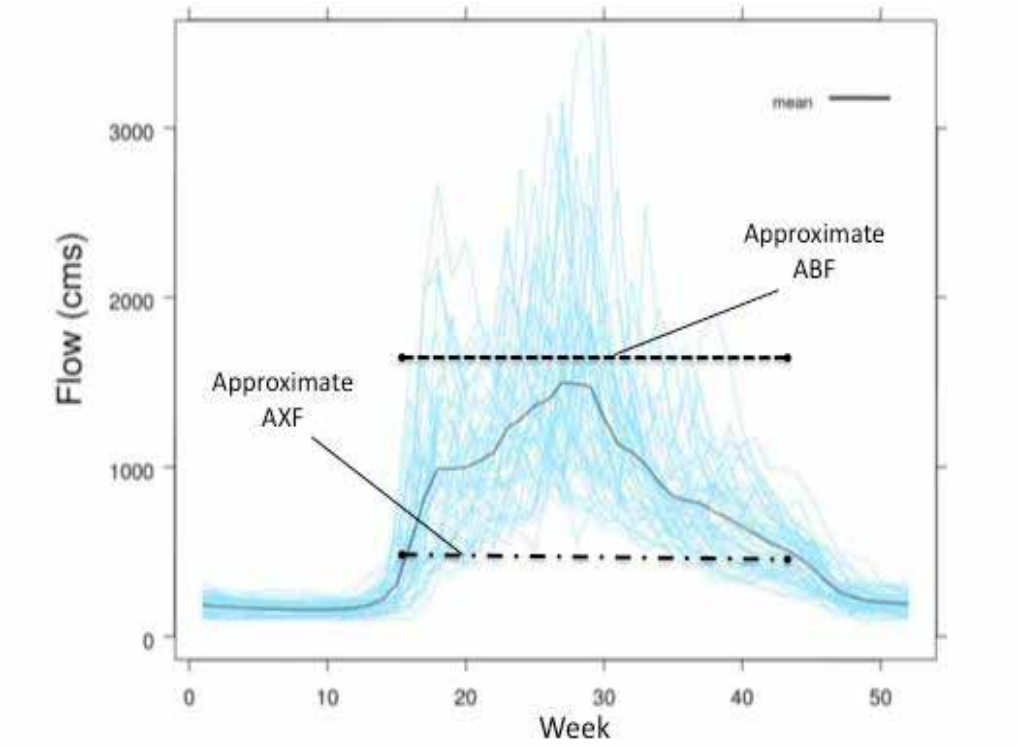
A conservative estimate for the AXF, a flow level where widespread and extreme disruption of Treaty and aboriginal rights can be expected to occur, can be arrived at by comparing the timing of the 'extreme low water' event reported at the time of interviews (mid-May 2010) with flow measurements at that time[5]. Based on this, the AXF would be approximately 400 m^3/s. This is a conservative estimate because, at this flow level, key waterways (including Lake Mamawi and Richardson Lake) were already inaccessible. While ACFN and MCFN elders indicate that the practice of rights in the delta area has already been irreversibly

5 Dr. David Schindler (personal communication 2010) notes that the extreme low levels noted by ACFN and MCFN members in 2009 and 2010 are likely also related to the historically low level of Lake Athabasca.

impacted due to the Bennett Dam on the upper Peace river, and resulting drying of the wider Peace-Athabasca Delta, an AXF of 400m^3/s is likely a reasonable initial threshold, subject to refinement and monitoring, for an Aboriginal Extreme Flow (AXF) on the Athabasca River. This level would identify where flow levels are likely to result in widespread and extreme adverse effects on access to territories relied on for the practice of treaty and Aboriginal rights.

These thresholds are particularly relevant during ice-free seasons, from early spring through late fall, that the Athabasca River and its tributaries are used most heavily by ACFN and MCFN members for transportation and subsistence. It's at these times, in particular, that varying levels of adverse effects to aboriginal use and rights due to water levels can be anticipated when flow rates on the Athabasca River fall below the ABF. Where they fall below the AXF, extreme adverse effects can be anticipated. Figure 6 provides a visual depiction of these preliminary thresholds.

Figure 6: Athabasca River hydrograph[6] showing approximate Aboriginal Base Flow (ABF) and Aboriginal Extreme Flow (AXF) thresholds.



Recommendations

Given the above findings, and in consideration of the proposed AXF and ABF, it is recommended that the ACFN and MCFN, working with the Crown, implement the following key recommendations for managing the Athabasca River and Athabasca River water withdrawals into the future:

6 Hydrograph showing 50 years of flow on the Athabasca River based on weekly average (mean), light blue lines indicating individual years, from Ohlson *et al.* (2010.)

1. Determine an Aboriginal Baseline Flow (ABF) for practice of ACFN and MCFN rights based on the recommendations of this report or otherwise as agreed by the parties jointly. The ABF would be considered to be a reasonable level at which full practice of aboriginal rights on the river, in the delta, and along adjoining tributaries, can be expected to occur.

2. Determine a lower level (the AXF) at which the Aboriginal Baseline Flow (ABF) is exceeded to such a degree that wide spread and extreme disruption of aboriginal rights along the Athabasca river, delta, and tributaries is understood to be likely. It is recommended that this level be based on the recommendations of this report (approximately 400 m^3/s), or otherwise as agreed by the parties jointly.

3. Establish an Athabasca River Consultation and Accommodation Framework to govern future water management. Such a framework might include the following components:

    - Should a Crown decision be made to permit any withdrawals of water from the Athabasca River, and that decision result in or contribute to a water level that causes the ABF to be exceeded, then adverse effects to Treaty rights would be understood to be caused or exacerbated, and a corresponding duty to meaningfully consult, and to adequately accommodate would arise. It is recommended that the Consultation and Accommodation Framework provide tools to reliably determine what adequate accommodation would be in different circumstances and at varying levels of withdrawal.

    - Should the Crown wish to permit any withdrawals of water from the Athabasca River that would cause the AXF threshold (400 m^3/s or as otherwise determined) to be exceeded, then it would be recognized that this would be permitting of an activity that is likely to cause or worsen wide spread and extreme disruption of a central aboriginal right along the Athabasca river, delta, and tributaries. It is recommended that such a permission should require the permission of the Crown agent, and permission of authorized authorities of the ACFN and MCFN.

4. Establish a goal for how frequently the river and delta should be allowed to achieve spring flood levels in order to protect long term ecological integrity and aboriginal rights, recognizing that ice dams are often critical components of this flooding. This goal could be integrated within a Traditional Resource Use Plan (TRUP) or other document to guide Athabasca River management into the future.

5. In collaboration with ACFN and MCFN, additional work and action is required to further understand and address water quality issues and concerns, including psychosocial factors, and resulting adverse effects on treaty and aboriginal rights, along the Athabasca River, delta, and adjoining tributaries. In particular, the Crown should work with the ACFN and MCFN to enable the Phase 2 Framework process to meaningfully consider, address, and monitor the relationship between Athabasca River water levels, and water quality, including potential contaminant concentrations at various flow levels and seasons.

The importance of finding Athabasca River management strategies that provide real improvements is highlighted by a final quote:

> "We'll have nothing, we'll have no animals, no birds, won't be able to travel, go anywhere. The whole country is going to dry out. The past twenty years this place really dried out, it's worse than ever, as long as the oil companies keep taking and taking water out, I don't know how they are going to bring the water level up. If every year there's more companies out there and they take so many barrels of water to make one barrel of oil and you have ten different companies out there, how is it going to bring the water level up? They say they are going to bring it up, but how are they going to bring it up if they're taking that much water out? For us, it's going to kill everything, not going to have nothing here. Like for me, I could still survive, because I don't know how many years I have left. But for the younger generation, what are they going to have up here? Nothing. I'll never believe them saying that they're going to bring the water level back up and keep it at a certain level, I'll never believe that unless I see it." (M04)

Bibliography

A01 Transcript of May 17, 2010, Interview from the Athabasca River Use and Traditional Ecological Knowledge Project. Athabasca Chipewyan First Nation Industry Relations Corporation.

A06 Transcript of May 19, 2010, Interview from the Athabasca River Use and Traditional Ecological Knowledge Project. Athabasca Chipewyan First Nation Industry Relations Corporation.

A08 Transcript of May 20, 2010, Interview from the Athabasca River Use and Traditional Ecological Knowledge Project. Athabasca Chipewyan First Nation Industry Relations Corporation.

A03 Transcript of May 18, 2010, Interview from the Athabasca River Use and Traditional Ecological Knowledge Project. Athabasca Chipewyan First Nation Industry Relations Corporation.

Fumoleau, Rene (2004). *As Long As This Land Shall Last: A History of Treaty 8 and Treaty 11, 1870-1939*. University of Calgary Press.

Health Canada (2005). *Addressing Psychosocial Factors Through Capacity Building: A Guide for Managers of Contaminated Sites*. Ministry of Health.

Hein, Francis J (2000). Historical Overview of the Fort McMurray Area and Oil Sands Industry in Northeast Alberta, in *Earth Sciences Report 2000-05*. Alberta Geological Survey. Energy and Utilities Board.

Laird, David, J.H Ross, and J.A.J. McKenna, Report of Commissioners to Clifford Sifton, Superintendent General, Department of Indian Affairs, Ottawa, September 22, 1899, in *Copy of Treaty No. 8 Made June 21, 1899, and Adhesions, Reports, etc*. Ottawa: Queen's Printer, 1966.

M01 Transcript of May 17, 2010, Interview from the Athabasca River Use and Traditional Ecological Knowledge Project. Mikisew Cree First Nation Government and Industry Relations Corporation.

M02 Transcript of May 17, 2010, Interview from the Athabasca River Use and Traditional Ecological Knowledge Project. Mikisew Cree First Nation Government and Industry Relations Corporation.

M03 Transcript of May 17, 2010, Interview from the Athabasca River Use and Traditional Ecological Knowledge Project. Mikisew Cree First Nation Government and Industry Relations Corporation.

M04 Transcript of May 18, 2010, Interview from the Athabasca River Use and Traditional Ecological Knowledge Project. Mikisew Cree First Nation Government and Industry Relations Corporation.

M07 Transcript of May 19, 2010, Interview from the Athabasca River Use and Traditional Ecological Knowledge Project. Mikisew Cree First Nation Government and Industry Relations Corporation.

M08 Transcript of May 19, 2010, Interview from the Athabasca River Use and Traditional Ecological Knowledge Project. Mikisew Cree First Nation Government and Industry Relations Corporation.

M09 Transcript of May 20, 2010, Interview from the Athabasca River Use and Traditional Ecological Knowledge Project. Mikisew Cree First Nation Government and Industry Relations Corporation.

M10 Transcript of May 20, 2010, Interview from the Athabasca River Use and Traditional Ecological Knowledge Project. Mikisew Cree First Nation Government and Industry Relations Corporation.

McCormack, P. (2010*). Fort Chipewyan and the Shaping of Canadian History, 1788-1920s.* University of British Columbia Press.

Ohlson D, G Long, T Hatfield (2010). Phase 2 Framework Committee Report: Final report of the Phase 2 Framework Committee.

Schindler, D. W. & Donahue, W. F. (2006). An Impending Water Crisis in Canada's Western Prairie Provinces in *Proceedings of the National Academy of Science*, vol. 103 no. 19.

Schindler, D.W. (2010). Personal electronic communication. Unpublished document.

Tanner, J. and A. Rigney (2003). *Athabasca Chipewyan First Nation Traditional Land Use Study*. Athabasca Chipewyan First Nation.

Tobias, Terry (2010). *Living Proof: the Essential Data-Collection Guide for Indigenous Use-and-Occupancy Map Surveys*. Ecotrust Canada and the Union of British Columbia Indian Chiefs: Vancouver, Canada.

Appendix 1: ACFN and MCFN Athabasca River Use and Traditional Ecological Knowledge (TEK) Project Interview Guide

Prepared for the ACFN and MCFN Athabasca River Use and TEK Project		Version 2.1
Participant:	ID#:	
Interviewer:	Co-interviewer	May 14, 2010
Interview Date:	Other Recordings:	

ACFN and MCFN Athabasca River Use and Traditional Ecological Knowledge (TEK) Project
Interview Guide

PRE-INTERVIEW CHECK LIST

- ❑ ALWAYS Test your recorder and microphone by listening through headphones.
- ❑ Make sure you have enough note books, pens, and other supplies for the interview.
- ❑ Make sure you have all of the maps you need laid out and marked with Interview ID#, date, interviewer names and participant names.
- ❑ If you are using overlays, make sure you have marked them all with at least 3 anchor points and the map number.
- ❑ Make sure the elders or community members you are interviewing are comfortable. Get them a tea or coffee, and talk for a while about the interviews and why we are doing them. Make everyone as relaxed as possible.
- ❑ Read the consent form to the participant and ask them to sign it. Let them know that they don't have to answer any questions that they don't want to.
- ❑ Start the tape and begin the interview.
- ❑ Let them know that we will be reporting back to the community and them in the next couple of months.

Interview Introduction

(read with RECORDER ON before every session)

Today is _____, 2010. We are sitting here interviewing _____ for the [ACFN OR MCFN] **Athabasca River Use and TEK Project**. Thank you for coming.

My name is _____and my co-researcher is _____. We're here at the ___building in [Ft. McMurray or Ft. Chipewyan]. _____ has read and signed the consent forms and we have assigned Interview ID # _____. We are going to be recording this interview on a digital voice recorder, with notes on this questionnaire, and using maps. We will be mapping on [MAP SHEETS OR DIGITAL] at a scale of 1:__,000. The project area covers __[verbal description of project area]__.

In this project, MCFN and ACFN are both documenting detailed community use, knowledge, and issues related to the Athabasca River and especially changes experienced on or near the river. The information is needed so that the ACFN and MCFN can provide a strongresponse to government plans for how much water industrywill be able to take from the Athabasca in future years.

The focus of this study is on the Athabasca River, and in that we **include those parts of the Athabasca Delta, and smaller creeks and streams running into the Athabasca**, that are

affected by changes in how much Athabasca water leveland the quality.

The interview will take about 3 hours to complete and we'll take a break about an hour and 45 minutes in. There are 4 main sections or types of questions:

- The first section (about half an hour) focuses on your experiences on the river and changes you've seen in the river.

- The second section (about an hour), focuses on how water levels and water quality have affected your use. We'll take a break after this section.

- In the third section, about half an hour, we'll talk about the main routes you use to travel on the river, and we'll map some of the main places that you go.

- In the last section, again about half an hour, we'll want to hear about what you think the results will be for ACFN/MCFN member's abilities to practice important uses if the government goes forward with their plans.

The first questions are very broad, and others are very detailed. The reason for the detailed questions is so that the ACFN/MCFN can be in a strong position if they need to defend information in court or elsewhere.

Also, if there are things we don't ask about, but you think we should be raise in our reports to leadership, please let us know.

Mapping Note: Every site should be consistently labelled with a code that indicates site use, site # and source respondent (ex: TX02-M08 where the Mikisew person with ID #08 reports the second mapped place where she has camped in a temporary shelter). This should be followed by the date of the event, if possible [ex: CB02-A08(summer 1985)]. First hand knowledge should be mapped in black ink, Second hand knowledge in blue ink.

Prepared for the ACFN and MCFN Athabasca River Use and TEK Project		Version 2.1
Participant:	ID#:	
Interviewer:	Co-interviewer	May 14, 2010
Interview Date:	Other Recordings:	

1.0 BIOGRAPHICAL AND BACKGROUND QUESTIONS

1.1	What is your full name?	
1.2	Where were you born?	
1.3	How old are you?	
1.4	Where were you raised?	
1.5	Are you a member of the ACFN or MCFN?	
1.6	Have you ever travelled on the Athabasca River? How old were you the first time? In an average year, how many times a year(ice freesummer or winter)	
1.7	When was the last time you travelled it?	

2.0 IMPORTANCE OF THE RIVER

Through past meetings and other studies, ACFN / MCFN members have made it clear that the Athabasca River is important, and that changes in it, especially water levels, and water quality, are big concerns.

2.1	In your own words, is the Athabasca River important to you and your family?	
2.2	Why or why not?	

3.0 COMPARISON AND CHANGE

3.1	When you were young [age <20, anchor to year or event], what was the Athabasca River like? PROMPTS, IF NEEDED: Water levels? Water quality?		
3.2	How did you and your family use the river then [when you were young]?	Fishing __ Hunting__ Trapping__ Drinking Water__ Transportation__ Camping__ Teaching__Cultural/Spiritual/Wellness ___ Other___	
3.3	How do you and your family use the river now?	Fishing __ Hunting__ Trapping__ Drinking Water__ Transportation__ Camping__ Teaching__ Cultural/Spiritual/Wellness ___ Other_____	
3.4	How has the Athabasca River changed since you were young?	3.5 About when did the change take place?	3.6 What do you think caused the change?
1. 2. 3 4			

Participant: ID#:

Interviewer: Co-interviewer May 14, 2010

Interview Date: Other Recordings:

3.7	Over your lifetime, would you say that **use** of the Athabasca River by you and your family has:	Increased__ Decreased__ stayed the same___
3.8	Why?	
3.9	Over your lifetime, would you say that the waters of the Athabasca River have:	Improved__ gotten worse___ or stayed the same___
3.10	Why?	

3.11 Have you ever seen any problems or negative changes in:

3.11.1 water quality from the River?Yes No Don't know

3.11.2 fish caught from the river? Yes No Don't know

3.11.3 quality of berries, or plants collected in or near the river?Yes No Don't know

3.11.4 quality of meat (moose or other) hunted on the river? Yes No Don't know

3.11.5 fur quality trapped along the river? Yes No Don't know

3.11.6 the spiritual or sacred qualities of the river? Yes NoDon't know

3.12	Have you ever seen any problems or negative change in anything else related to the river?	

3.13 Would you feel comfortable:

3.13.1 Giving your family water to drink from the Athabasca River?

Not comfortable not sure yes, comfortable 3.13.2 Feeding your family fish from the Athabasca River? Not comfortable not sure yes, comfortable 3.13.3 Feeding your family berries or other plant foods from the shores of the river? Not comfortable not sure yes, comfortable 3.13.4 Feeding your family moose meat shot on the shores of the river? Not comfortablenot sure yes, comfortable 3.13.5 Using water from the Athabasca River in medicines, or ceremonial or spiritual practices (ex. making medicine tea, using in church, using in a sweat lodge)? Not comfortable not sure yes, comfortable	
3.14 [If any of the answers above (in 3.10) was 'not comfortable' or 'not sure',]Why?	
3.15 How did you learn to use the Athabasca River and the lands along it? 3.16 Have you been able to pass on your knowledge of the river to younger people in a similar way? 3.17 Why or Why not? PROMPT, IF NEEDED: for example, how to use it properly, or the cultural importance of places along it?	

Participant: ID#:

Interviewer: Co-interviewer May 14, 2010

Interview Date: Other Recordings:

3.18 3.19 3.20	Are you able to share as much moose, or fish, or other resources, harvested from the Athabasca River, as you were able to in the past? If not, why not? How does your ability to share meat and other resources from the River affect you, and the people who you share with? Who are those people?	
3.21	Have changes in the Athabasca River (flow or quality) affected how you or your family feel about living on the land or theriver?	

Participant: ID#:

Interviewer: Co-interviewer May 14, 2010

Interview Date: Other Recordings:

3.22	Have changes in the Athabasca River(either flow or quality) had an affect on what you and your family eat?If so, when did the changes in what you and your family eathappen? Why?	
3.22.1	When you were young [<20yrs], about how often (times/ week) did you and your family eat fish caught on the land? How about moose?	Approx. # of meals of wild fish/week (past): Approx. # of meals of moose/week (past):
3.22.2	When you were young [<20yrs], how much of that fish meat would have been caught in the Athabasca River (including parts of the delta or other creeks and streams, that are affected by the flow of the Athabasca)? How much of the Moose meat?	Approx. %of subsistence fish caught in Athabasca River (past): Approx. % of subsistence moose harvested in Athabasca Delta (past):
3.23	Over this last year, about how often (times/ week) have you and your family eaten wild caught fish? About how often have you eaten wild caught moose?	Approx. # of meals of wild fish/week (now): Approx. # of meals of wild moose/week (now):
3.24	Over this last year, about how much of the wild fish that you and your family ate came from the Athabasca River (again, this includes the delta or other creeks and streams, that are affected by the flow of the Athabasca)? About how much of the moose meat?	Approx. %of subsistence fish caught in Athabasca River (now): Approx. % of subsistence moose harvested in Athabasca Delta (now):
3.25	Do you think changes in the water level or quality of the Athabasca River have had any effect on your	

	ability, or the ability of your family, to practice your culture? If so, how?	
3.26	If you had no concerns about water levels in the Athabasca River, would you use it more? What would you do more of?	
3.27	If you had no concerns about water quality in the Athabasca River, would you use it more? What would you do more of?	

TIME CHECK! Interview should be at about 40-45 min.

Participant: ID#:

Interviewer: Co-interviewer May 14, 2010

Interview Date: Other Recordings:

4.0 PERSONAL RESPONSES AND EXPERIENCES

In the previous section, we focused on background information, changes you have seen in the Athabasca River, and the effects those have had on the community. In the next section, we are going to be asking more detailed questions about how those changes have affected you and your practices on the river.

4.1	In general, how have changes in the Athabasca river **water quality** (ex. smell, taste, appearance) changed **how, or how often,** you and your family use the river for hunting, trapping, fishing, or other activities that are important to you? If so, how so?	Hunting: Trapping: Fishing: Other activities:
4.2	**How about water levels:**In general, how have changes in the Athabasca river **water levels** changed **how , or how often,** you and your family use the river for hunting, trapping, fishing, or other activities that are important to you? If so, how so?	Hunting: Trapping: Fishing: Other activities:
4.3	Other than changes in the river, are there other things that have changed how or how often you and your family use the Athabasca River? If so, What are they?	

4.4 In your experience, dowater levels on the Athabasca affect water quality? For example,**when the river is low**, is**the water quality** in the Athabasca **better, worse, or about the same**? 4.5 When you are on the river, how do you know if the water is good or bad? PROMPT, IF NEEDED: ex. things you look for in the water? presence/absence of particular animals? Frogs? Insects? Plants? 4.6 If there are things you look for to know about water quality, do you see them on the Athabasca? When did you start seeing them?	BetterWorseAbout the same

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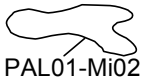
5.0 PREFERRED ACCESS LIMIT VIA RIVER AND RESTRICTIONS BY FLOW

Mapping Note: Mark extent of access via river using a large, transparent polygon labelled with letter code and a number, followed by the community code and the participant ID. ***PAZ1-M01****should be the first area mentioned by the Mikisew member with PIN #01,* ***PAZ2-M01*** *the second, etc. In most cases, there should only be one PAL per ID#.*



PAL01-Mi02

5.1 In your experience, during what months does the Athabasca River have the lowest levels? 5.2 In your experience, during what months is use of the Athabasca River most important for you and your family? Why? 5.3 How deep does river water need to be for you and your family **to navigate safely** in **a fully loaded boat with outboard motor**?	
5.4 In your experience, at **normal low water levels** (average September) are there any other parts of the river, or larger territory, where you cannot enter because of sand bars or mudflats, or because water levels are too low or unsafe (based on 5.3 above)? MAP using Controlled Polygon, and code **LLW** (Low Limit Water)	

Participant: ID#:

Interviewer: Co-interviewer May 14, 2010

Interview Date: Other Recordings:

5.5 Some of the next questions involve remembering dates. To help, we want to establish some events in your life that can help us figure out the order of things. Possible Community Benchmarks: Present =within 10yrs, c. 1985=new school built, c. 1982= oil spill on the Athabasca, c. 1975=Syncrude starts in McMurray, c. 1968=dam on the Peace in BC. Possible Personal Benchmarks: Birth of first child, moved to X, worked at X.	Benchmark 1 (most recent): Benchmark 2: Benchmark 3: Benchmark 4: Benchmark 5 (oldest):
5.6 In your experience, when was the Athabasca River the **very lowest** that you can remember? (exact year and season if possible)	Year and Season:
5.7 When the river was at its **very lowest**[reference year], were there any other parts of the river or larger territory, where you could not enter because of low water levels (based on 5.3 above)? MAP using Controlled Polygon, and code **XLW** (Extreme Low Water)	
5.8 Are there **particular places** on the river where you have experienced **obstacles or hazardscaused bylow water levels**, including near misses, that resulted in damage or delay.	

What? When? Where? (Map) MAP using Controlled Polygon or point, and code (NO lines) **ISB**= Incident - Sand Bar **IMF**= Incident - Mud Flat **ISH**= Incident – Shallows (too shallow to pass) **IDR**= Incident - Dangerous Rocks **ISL**= Incident - Snags or Dangerous logs **IWH**= Incident - Winter or Ice Hazard **IRA**= Incident - Difficult Rapids **IDC**= Incident - Dangerous Current **IOH**= Incident - Other Hazard (specify in brackets)	
5.9 At **good water levels** (normal July), are there **specific hazards**in the river that are more **difficult to navigate** than others? Where? Why are they challenging. MAP using Controlled Polygon or point, and code (NO lines) **GSB**= Good -Sand Bar **GMF**= Good - Mud Flat **GSH**= Good - Shallows **GDR**= Good - Dangerous Rocks **GSL**= Good - Snags or Dangerous logs **GWH**= Good - Winter or Ice Hazard **GRA**= Good - Difficult Rapids **GDC**= Good - Dangerous Current **GOH**= Good - Other Hazard (specify in brackets)	
5.10 At **normal low water level**s (September), are there any other	

specific hazards that become difficult to navigate? Where? Why? MAP using Controlled Polygon or point, and code (NO lines) **LSB=** Low - Sand Bar **LMF=** Low - Mud Flat **LSH=** Low - Shallows **LDR=** Low - Dangerous Rocks **LSL=** Low - Snags or Dangerous logs **LWH=** Low - Winter or Ice Hazard **LRA=** Low - Difficult Rapids **LDC=** Low - Dangerous Current **LOH=** Low - Other Hazard (specify in brackets)	
5.11 At **the very lowest water level**s you remember, are there any other specific hazards that become difficult to navigate? Where? Why? MAP using Controlled Polygon or point, and code (NO lines) **XSB=** Extreme - Sand Bar **XMF=** Extreme -Mud Flat **XSH=** Extreme -Shallows **XDR=** Extreme -Dangerous Rocks **XSL=**Extreme-Snags or Dangerous logs **XWH=** Extreme - Winter or Ice Hazard **XRA=** Extreme -Difficult Rapids **XDC=** Extreme - Dangerous Current **XOH=** Extreme - Other Hazard (specify in brackets)	
5.12 Are there **particular places** on the river where you have found **water quality** (eg.taste, smell,	

appearance) to be **especially good or bad**? What? When? Where? Why? MAP using Controlled Polygon or point, and code (NO lines) **QSM=** Quality– Smell **QOS=** Quality – Oil Sheen **QVP=** Quality – visibility problem **QOP=** Quality – other problem **QGW=** Quality – Good Water	
5.13 In your experience, are there creeks or tributaries running into the Athabasca where you have noticed exceptional changes in water quality? Where are they? When did you first notice the change? 5.14 In your experience, are there creeks or tributaries running into the Athabasca where you have noticed exceptional changes in water level? Where are they? When did you first notice the change?	
5.15 Have you ever wanted to hunt, trap, fish or use the Athabasca but chosen not to because of concerns about **low water levels?** (eg. wanted to shoot a moose, drink water, establish a camp, or planned to make a trip, or conduct a cultural practice) When? Where? What was the specific concern that led to	

avoidance? Can we map it? MAP using point and code **ASL** (Avoidance on Level) 5.16 Have you ever wanted to hunt, trap, fish or use the Athabasca but chosen not to because of concerns about **low water quality?** When? What was the specific concern that led to avoidance? Can we map it? MAP using point and code **ASQ** (Avoidance on Level) 5.17 Are there particular kinds of **animals, fish, plants, or other resources**you would like to hunt, trap, fish, or collect in or near the Athabasca River, but that you avoid because of concerns about water quality?	

TIME CHECK! Interview should be at about 1hr 45 min.

Congrats, we made it this far! Take a 10 Min Break

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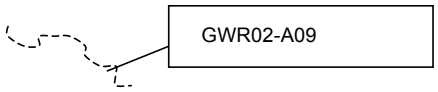
6.0 PREFERRED TRAVEL ROUTES

*Mapping Note: Mark travel routes using a SOLID line for the main good water route, DASHED line for Normal Low Water Route, and DOTTED line for the Extreme Low Water Route, or make otherwise clear. Code for main Good water route = **GWR**, Normal Low Water Route = **LWR**, Extreme Low Water Route = **XWR**, Winter Trail = **WTR** with SOLID line in a contrasting colour.*



6.1 When travelling on the river at **good water levels** (average July) can you show us what river route you follow? (Map for Fort Chip to Shell Landing, and any destinations off the main flow of river, including delta) MAP using solid line and code **GWR** (Low Water Route) 6.2 When travelling on the river at **normal low water** (average September), would this route be different?If so, how? MAP using dashed line and code **LWR** (Low Water Route) 6.3 How about that time when you remember the water **being the lowest ever**? Did you travel the river then? If so, how was your route down the river different (Map extreme low water route)	

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MAP using dotted line and code **XWR** (Extreme Water Route) 6.4 If you ever travel the river in winter, can you show us the travel route that you would travel. MAP using solid line and code **WTR** (Winter Trail)	

Can you show us on the map, some of the key places used by you or your family and accessed via the Athabasca River [For each location: time of use (use benchmarks), or frequency of visit, and who was there]. 6.5 These include: 6.5.1 Places on the river where you stop regularly as a rest stop. MAP using point and code **ST** 6.5.2 Places where you have camped overnight in a tent, lean-to, or other temporary structure. MAP using point and code **TX**	
6.5.3 Places where you have built or used cabins or other permanent structures. MAP using point and code **PX** 6.5.4 Places where you access trails or other travel routes from the river. MAP using line and point and code **TR** 6.5.5 Places where people are buried MAP using point and code **BU** = Burials 6.5.6 Places where spirit beings live. MAP using point and code**SP**	

6.5.7 Special places used for ceremonies (drum dances, sweat lodges. MAP using point and code **CP** = ceremonial place. 6.5.8 Places where you have hunted, fished, or collected hard to find animal, fish, plant foods, medicines, or other resources that are hard to find. MAP using point and code **KS=** kill site, **FS**= fishing site, **FP**= food plant (**EG**= Eggs), **MP**=medicine plant MAP using polygon and code **TP**= trapping 6.5.9 Teaching areas, or places that have special knowledge or stories associated with them. MAP using point and code **TA** 6.5.10 Salt licks, or other unique environmental features **MAP using point and code** EN 6.5.11 Areas of particular industrial developments that you feel is important to put on the map (i.e. water intake valves). MAP using point and code **IND**	

6.6	In your experience, do low water levels in the Athabasca affect animals, plants, fish or other things that you or your family depend on?	
6.7	Have you noticed any changes in where animals, for example Moose or muskrat, can be found on the river, or how they use the river? Fish? Plants? (key locations of change may be mapped, if time allows).	
6.8	Based on your experience, if more water is taken out of the Athabasca river each year in the summer and fall, and the water levels are as low or lower, every year, as the lowest they have ever been in the past fifty years,what will change for - your family? - your community? - the territory?	

Interview Conclusion

(read after every tape session)

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Today is _____, 2010.

We have just finished interviewing _____ for the [ACFN OR MCFN] **Athabasca River Use and TEK Project**. Thank you for coming here today.

My name is _____ and I'm here in the _____building with _____. We've given him/her TUS ID #___. We've used _, _____, _____, and _____ maps at 1:50,000 (or other?) scale and a total of _____ tracks on the digital recorder. Notes are recorded in _____ note book.

Appendix 2: ACFN and MCFN Athabasca River Use and Traditional Ecological Knowledge (TEK) Project Interview and Mapping Methods

ACFN and MCFN Athabasca River Use and TEK Study Interview and Mapping Methods

The methods for the study were developed by Dr. Craig Candler and Rachel Olson of the Firelight Group to document detailed community use, knowledge, and issues related to the Athabasca River and especially changes or problems experienced on or near the Athabasca that may be related to water levels, or water quality. The study focused on individual interviews with Athabasca River users and knowledge holders from both ACFN and MCFN. Each interview took approximately two-three hours to complete. Methods were based on standard field practice, combined both quantitative survey questions (closed) and qualitative questions (open-ended). The final component of the method included mapping places and/or areas of observed changes in water level and/or quality and the associated effects of these changes on the continued use of the identified areas for the practice of Aboriginal and Treaty Rights. Tobias (2010) was referred to in preparing the mapping methods.

3.1 Participants

Fourteen ACFN members were interviewed for the study. The selection of participants focused on elders with extensive knowledge of the river, or younger knowledge holders recognized as having knowledge of the river. Efforts were made to involve knowledgeable elders and river users from different families or segments of the communities. The sample was determined by beginning with a set of elders or people known by MCFN-GIRC and ACFN-IRC staff to have extensive experience on the river. From this, opportunistic sampling took place, and identified participants were recruited subject to availability, and willingness to participate in the study. Each participant received an honorarium for their time.

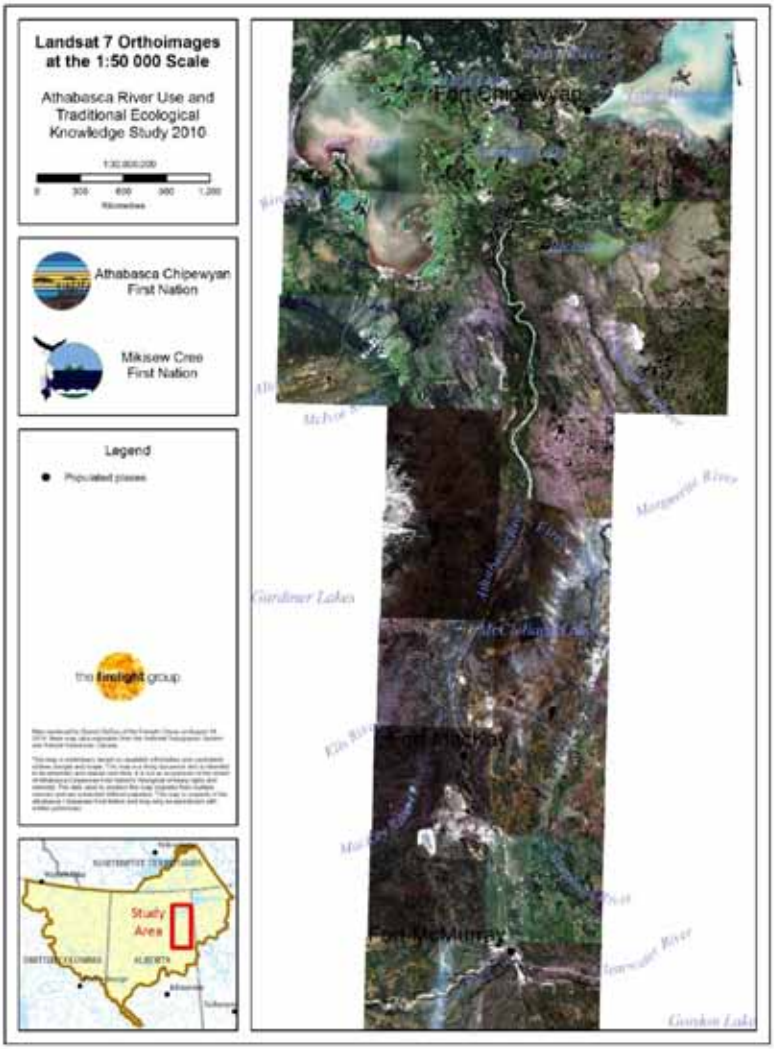
3.2 Study Area

The study area was defined as the Athabasca River, including those parts of the Athabasca Delta, and smaller creeks and streams running into the Athabasca, that are affected by changes in how much water runs in the Athabasca (water level) and the quality of that water. The geographic focus of the study was further defined by a corridor of approximately 5km either side of the Lower Athabasca River, extending downstream from Ft. McMurray and including the Athabasca Delta area, as well as areas of use in the vicinity of Fort Chipewyan that may be influenced by low water levels on the Athabasca. This 5 km buffer provided an approximation of the distance easily travelled, by foot, in a day trip from the river. Where appropriate, areas outside of the study area were documented. The study area was explained to each participant at the beginning of the interview through reference to the maps available at the interview.

3.3. Base Maps

Mapping was based on a set of four base maps that covered the study area outlined above. As shown below in Map 1, the base map area extended from Fort McMurray to north of Fort Chipewyan.

Map 1: Extent of Base Map Imagery



The maps were created at a scale 1:50,000 using LANDSAT satellite photos and overlaying relevant NTS base data. Creating the four base maps used the following steps:

3.3.1. Determine required data sets

The GIS software package chosen for all mapping and analysis was ESRI ArcGIS 9.2. This was because ESRI is an industry standard commonly relied upon for professional applications, government data sources are distributed in a common data format (shape files) and ArcGIS can load data from numerous sources.

An overview map was created in ArcGIS highlighting major rivers, waterbodies, town sites, First Nation reserves, and a 1:50,000 NTS reference grid. Using this map, each NTS sheet was labelled to determine which map datasets were required to provide a minimum of 5 kilometres on each side of the Athabasca River.

Data from this overview map came from the following Government of Canada online GIS data repositories:

- National Framework - Hydrology, Drainage Network: ftp://ftp.geogratis.gc.ca/frameworkdata/hydrology/analytical/drainage_network/canada/
- Atlas of Canada 1,000,000 National Frameworks Data, Canadian Place Names: http://www.geogratis.gc.ca/download/frameworkdata/popplace/
- National Framework Canada Lands Administrative Boundary (CLAB) Level 1 (First Nation reserves): http://www.geogratis.gc.ca/download/frameworkdata/Cda_Lands_Adm_L1/
- National Topographic System 1:50,000 reference grid: ftp://ftp2.cits.rncan.gc.ca/pub/index/

3.3.2. Gather necessary base map data:

Using the list of NTS mapsheets, data was downloaded from reliable web based sources, maintained by the Government of Canada and regularly updated. These data files were stored in a filing system that enabled quick retrieval for processing. Data was downloaded from the following websites:

- 1:50,000 National Topographic System Shape File Datasets from http://ftp2.cits.rncan.gc.ca/pub/bndt/

- 1:50,000 National Topographic System CanImage (Landsat 7 Orthoimages at the 1:50 000 Scale): http://ftp2.cits.rncan.gc.ca/pub/canimage/

3.3.3. Process data to create seamless layers

Using ArcGIS, common themes were merged together to create a seamless geodatabase layer for each feature type. Duplicate labels from the "toponym" layer were removed, mostly where mapsheets were joined together.

The following feature types were merged into a personal geodatabase:

- Contours
- Toponym
- Water bodies
- Water courses

3.3.4. Produce base maps

Using ArcGIS, each map sheet was measured to confirm coverage of the study area and to create seamless base maps. Each map sheet measured 36 inches wide by 72 inches long (3x6 feet), and the scale of each map was 1:50,000. Four maps with both imagery and pre-symbolized linework data were created, along with the Map Title on all sides of each base map, a north arrow in 4 corners of the map and a map scale at each end of the map. Maps were output into a TIFF image format at 300 dpi, and 2 copies of each map were printed at a professional print shop in Winnipeg, MB.

3.4 Interview Process

Each participant signed an informed consent form, agreeing to participation in the study. In two instances, signing of the consent form was refused (due to either personal preference or physical disability), and in these cases, the informed consent text was read to the participant on the voice recorder and consent was given orally. Each interview was recorded either continuously on one track of a Sony digital voice recorder or multiple tracks. The number of tracks used in the interview was recorded in the concluding remarks of each interview. Notes were taken during each interview, both in the printed interview guide and in an additional notebook.

3.5 Interview Guide

The interview guide was developed by Dr. Craig Candler and Rachel Olson. The guide was reviewed internally through a Firelight Group peer review process, as well as reviewed and discussed by both the ACFN-IRC and the MCFN-GIRC. The guide is divided into four sections. The first section focused on the individual participant's experiences on the river, observed changes in the river, or observed changes in the community's relationship with the river. The second section focused on how water levels and water

quality have affected the participant's use, including travelling in different parts of the river. The third section involved mapping individual's experiences on the land with regards to navigation and observed changes in the river's quality and flow. Emphasis was placed on areas in which access was obstructed due to low water levels, as well as the associated uses identified with that particular area. The final section asked participants what they thought the results will be for ACFN/MCFN member's abilities to practice treaty rights in regards to the proposed Phase II water management framework. The following details some of the key points of each section of the interview guide, and refinements made to the guide through the interview processes.

3.5.1. Section One: Biographical and Background Questions/ Importance of the River/ Comparison and Change

Main Points:

- This section consisted of a combination of quantitative and qualitative questions. Some of these questions were designed with reference to previous studies so that comparison of responses over time might be made.

- Where an interviewer deemed a question repetitive, or if the participant had already responded to that question in a previous answer, the questions were skipped in order to maintain a respectful flow within the interview. Questions regarding culture/spirituality were often skipped depending on the participant's initial response to spiritual uses or associations with the river (eg. If a participant responded that they had never used the river for "spiritual" purposes, questions 3.2/3.3, all other questions regarding spiritual uses of the river were omitted.).

3.5.2. Section Two: Personal Responses and Experiences

Main Points:

- This first part of this section (questions 4.1, 4.2, 4.3) was often skipped if the interviewer deemed the questions to be repetitive from the previous section.

3.5.3. Section Three: Preferred Access Limit via River and Restrictions by Flow

Main Points:

- Acetates were placed over the four base maps before each interview began. Each acetate was secured using tape, and four anchor points, or crosshairs, were marked on each map in order to support accurate referencing of the data collected.

- Red pens were used to mark crosshairs, cross out errors, or make notes to the GIS Analyst during data processing. Black pens were used to mark participant's individual experiences on the river and the land, and were the most common pen used. Blue pens were used if the participant had been told about certain places or experiences, but did not directly experience the event being recorded.

- Each point, line or polygon marked was associated with a season/month and year where possible.

- Labeling of features (points, lines and polygons) was done in permanent ink using Sharpie ultra-fine pens.

- Interviewers focused on mapping areas that participants tried to access, but were unable to access due to low water levels, and the uses associated with the areas that could not be accessed.

- Incidents, including accidents and equipment damage, were also recorded on, where possible.

- This section of the interview process was flexible and the level of detail collected depended on the participant's willingness and ability to identify locations on the maps.

3.5.4. Section Four: Conclusion

Main points:

- The concluding question of the survey was refined through clarification from government regarding the likely effects of the proposed water management framework on river levels.

3.6. Post-Interview Data Processing

After the interviews were completed, the data was taken to two locations, the Victoria office of the Firelight Group, as well as the Winnipeg office, for processing.

The recorded digital files were burned onto CDs and transcribed. Transcriptions were made, and additional notes from the interviews were entered into a spread sheet. QSR NVivo was used to support qualitative analysis.

Acetates were sorted and labeled by Interview ID, as well as base map number, and interview inventories were created for each community. The acetates were then double-checked for proper labeling of anchor points, or crosshairs, and each was scanned at the University of Manitoba. Each image was scanned at 300 DPI in a TIFF image format. During the scanning process, the scanned images were transferred to an

external hard drive and deleted off the scanning computer. This resulted in both a hard copy and digital record of each map.

The acetates were digitized using an on-screen method. This involved georeferencing the scanned images using their reference points, overlaid onto an image of the original base map used during data collection. This digitizing process resulted in an ArcGIS geodatabase storing all point and line work, as well as associated attribute tables.

Water limits (code XLW and LLW) where access to a stream adjoining the Athabasca River is restricted were sometimes recorded in the interviews using small polygons. In post processing, these small polygons were converted to points by placing the point in the approximate centre of the polygon drawn on the acetate.

Map 5 is based on the reported locations of barriers to subsistence navigation (codes LLW and XLW) identified and mapped in the interviews. Streams reported to be obstructed by an LLW or XLW were further identified, and their furthest extent highlighted, based on watershed data from sources noted in 3.3.1 above.

Map 6 was developed based on a model of resource use that assumes a 5km extension from streams within sub-watersheds of the Athabasca River reported to be navigable for at least a portion of their length. The 5 km extension of use was based on an estimated distance traveled in a day trip of hunting or trapping by land, beginning at a point on the stream and returning to it. This assumption was reviewed and confirmed in follow-up meetings with ACFN and MCFN elders and river users. A 5km buffer was applied to all streams identified and highlighted in on Map 5. Use of buffers is a common and accepted practice in GIS analysis.

Appendix 3: ACFN and MCFN Athabasca River Use and Traditional Ecological Knowledge (TEK) Project Informed Consent Document

ACFN Athabasca River Use and Traditional Ecological Knowledge (TEK) Study

Declaration of Informed Consent and Permission to use Information

I (name) _____, on this day (complete date) _____, give permission for _____ to interview me for the Athabasca River Use and TEK Study.

I understand that the study is being conducted by the Athabasca Chipewyan First Nation. The purpose of this study is to help plan for and document the rights and interests of Athabasca Chipewyan First Nation in and around the Athabasca River area, and to inform provincial and federal government decisions regarding the River. By signing below, I indicate my understanding that:

(a) I give my consent to have my words and responses regarding my land use knowledge and my traditional ecological knowledge recorded on maps, in notes, and using audio or video recording equipment.

(b) I am free to not respond to questions that may be asked without penalty.

(c) I am free to end the interview at any time that I wish without penalty.

(d) The Athabasca Chipewyan First Nation will maintain intellectual property rights over information and recordings collected through my participation in this interview.

(e) The Athabasca Chipewyan First Nation may use the information collected, including audio, video, or pictures, in pursuit of its claims, and for defending and communicating the rights, interests, and titles of its members. This will include, but is not limited to, sharing information for the purposes of environmental assessment and planning for the Phase II Water Management Framework.

(f) The Athabasca Chipewyan First Nation will make reasonable efforts to consult me, or my descendents after my death, before using my information for any purposes not indicated above.

For more information, please contact:

Signature of participant

_____

Witness

_____

PIN #:

About the Authors

Craig Candler has more than 15 years of experience working with indigenous communities in Canada and beyond as a Traditional Studies and First Nations Consultation Specialist. Craig has a Ph.D. in Anthropology and is the President of the Firelight Group Research Cooperative.

Rachel Olson, a Firelight Group Director, is a citizen of the the Tr'ondek Hwech'in First Nation from the Yukon territory and has been actively conducting research in First Nation communities since 1998 including, land use mapping, First Nations consultation processes, and community based health research. Rachel is a Ph.D. candidate in social anthropology from University of Sussex.

Steven Deroy, Vice President of the Firelight Group, is Anishinabe/Saulteaux from the Ebb and Flow First Nation. For the past 12 years Steven has been working as a cartographer and GIS specialist primarily with aboriginal groups in Canada and the United States.

the firelight group

The Firelight Group Research Cooperative provides clients and communities, in Canada and beyond, with high quality research, analysis, and technical tools. Our work supports respect, partnership, and reconciliation between indigenous and non-indigenous interests, and meaningful inclusion of local perspectives in policy and decision-making processes.

PARKLAND INSTITUTE

The Parkland Institute is an Alberta research network situated within the Faculty of Arts at the University of Alberta. It operates within the established and distinctive tradition of Canadian political economy and is non-partisan.

Athabasca Chipewyan First Nation

Athabasca Chipewyan First Nation is a Denésułine nation whose lands and rights depend on the Athabasca River and surrounding waters. The Athabasca Chipewyan signed Treaty 8 in 1899 at Fort Chipewyan on Lake Athabasca. Today, ACFN members reside in Fort Chipewyan as well as Fort McMurray, Edmonton, Fort Smith, NWT and elsewhere.

MIKISEW CREE FIRST NATION

Mikisew Cree First Nation is a Cree nation whose lands and rights depend on the Athabasca River and surrounding waters. The Mikisew Cree signed Treaty 8 in 1899 at Fort Chipewyan on Lake Athabasca. Today, MCFN members reside in Fort Chipewyan as well as Fort McMurray, Edmonton, Fort Smith, NWT and elsewhere.