Churchill Residents' Use of the Lower Churchill River in Manitoba

by

Joel Edye-Rowntree

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Abstract

The lower Churchill River has been an important travel route for people living in its vicinity for a long period of time. Churchillians' have used it for subsistence harvesting, as their potable water source and as a place of recreation and relaxation. Previous research has documented the importance of the Churchill River to the residents and has explored how the Churchill River Diversion affected the community of Churchill (Boothroyd, 1992; 2000; Four Directions Consulting Group, 1994; 1995).

The purpose of this project was to identify how Churchill residents used the lower Churchill River (from 1970 to 2006), recognizing three distinct periods of time. Twenty interviews were conducted with former or current long-term residents of Churchill, as well as two interviews with experts on issues concerning the lower Churchill River.

Many interviewees stated that additional negotiations and measures are required before they deem the mitigation compensation package from Manitoba Hydro to be adequate considering the impact of the diversion on the residents of Churchill.

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Chapter 1. Introduction

The Churchill River Basin drains an area of approximately 281,300 square kilometres (McRae & Remnant, 1995), its headwaters are near Lac La Biche, northeast of Edmonton, Alberta and it flows into Hudson Bay, Northern Manitoba. It passes through Saskatchewan in an easterly direction, on average 240 kilometres north from the Saskatchewan River (Figure 1).

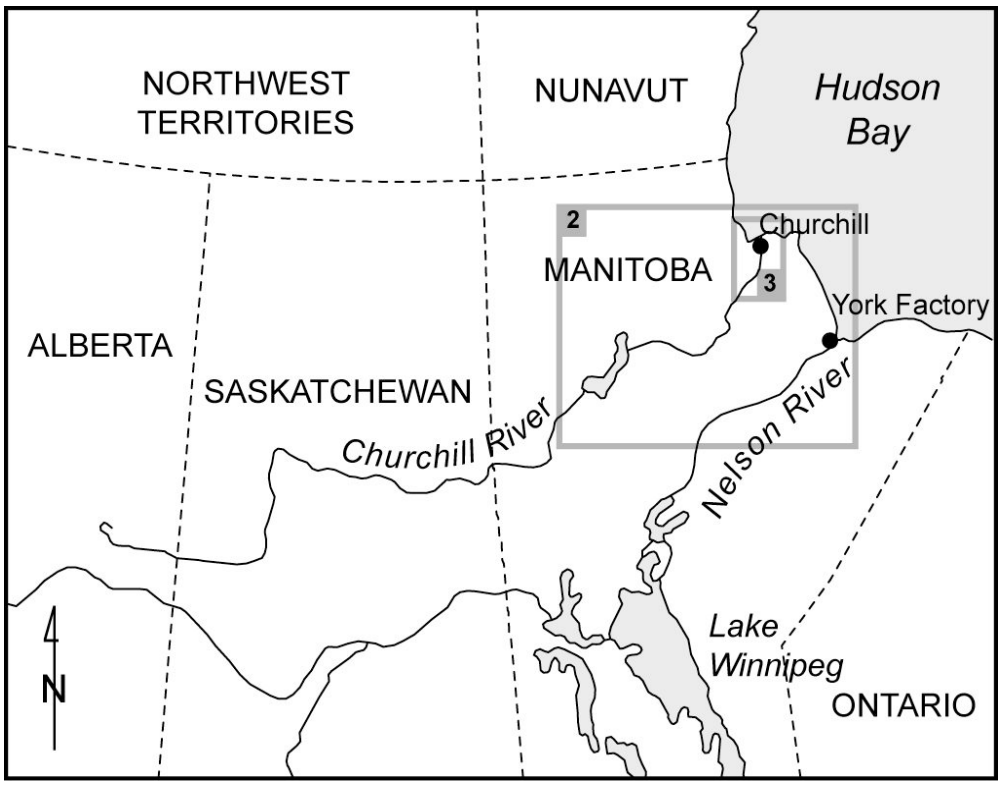

Figure 1. The Churchill River (Cartography by Fast, 2006, University of Manitoba)

In Manitoba the river is a series of lakes flowing in a north-easterly fashion, approximately 160 kilometres from the Nelson River. It is called the lower Churchill River after Southern Indian Lake and is very wide and shallow as it enters the estuary (Boothroyd, 2000; Canada & Manitoba, 1975; Manitoba Hydro, 1994; Newbury, 1970).

The residents of Churchill have used the lower Churchill River for many years. It was and still is a very important part of the psyche of **Churchill residents** (Appendix A-Glossary of terms), being used for recreational purposes, such as fishing and boating, and transportation routes for hunting and trapping (Boothroyd, 2000). Residents' spatial orientation is based on the river, "upriver" and "downriver" are terms used in everyday language (Brandson, 2005).

This project encompasses the period before the **Churchill River Diversion** (CRD) (pre-1976), the post-CRD period (1976 to 1997), and the Post-Compensation period (1998-2006). When **Manitoba Hydro** completed the CRD, water from the Churchill River was redirected to the Nelson River through the Rat-Burntwood Rivers, significantly reducing water flow and lowering water levels in the lower Churchill River. The Missi Falls control structure regulates the flow of water travelling downstream into the lower Churchill River. The Notigi control structure regulates how much water flows through the South Bay channel at the southernmost point of Southern Indian Lake to Issett Lake on the Rat River, which flows into the Burntwood-Nelson River system (Figure 2).

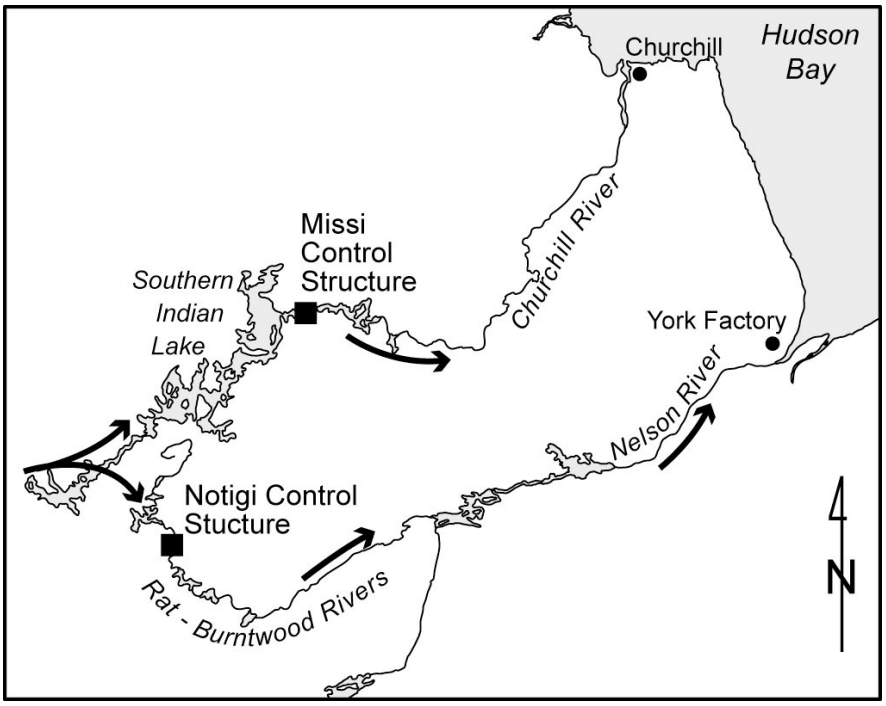

Figure 2. Churchill River Diversion (Cartography by Fast, 2006, University of Manitoba) (Used with permission from © Aboriginal Issues Press, August 29, 2007)

Many communities were affected by the hydroelectric development (including the CRD and Lake Winnipeg Regulation) in Northern Manitoba. Furthermore, the diversion of the Churchill and subsequent increase in water flow on the Burntwood-Nelson River system caused deleterious environmental effects (Boothroyd, 1992; 2000; Hertlein, 1999; Rosenberg, Bodaley & Usher, 1995; Rosenberg et al., 1997).

The lower water flow from Missi Falls and reduced water levels downstream caused a significant loss in Churchillians' access to the Churchill River, thus restricting recreational and cultural activities such as fishing, hunting, trapping, boating and camping (Boothroyd, 1992; 2000; Four Directions Consulting Group, 1994; 1995). By the early 1990s many residents thought that the recovery of these lost opportunities was not possible. However, the Town of Churchill began investigating the possibility of negotiating with Manitoba Hydro in the early 1990s when they hired Boothroyd and

Associates to review their case for compensation. After negotiations were completed a **mitigation compensation package** was signed in 1997 between Manitoba Hydro and the Town of Churchill. The compensation package included: compensation to the Town of Churchill for the harmful effects of the diversion (provided in 1993), a rock-fill **weir** across the lower Churchill River about 10 kilometres south of Churchill near Goose Creek (including a fish enhancement strategy), a marina wayside park at Goose Creek (Figure 3), a community administered mitigation trust fund to compensate for the detrimental consequences not mitigated by the weir and marina complex, as well as a capital payment to terminate Manitoba Hydro's yearly commitments for the town's water supply system (Boothroyd, 2000).

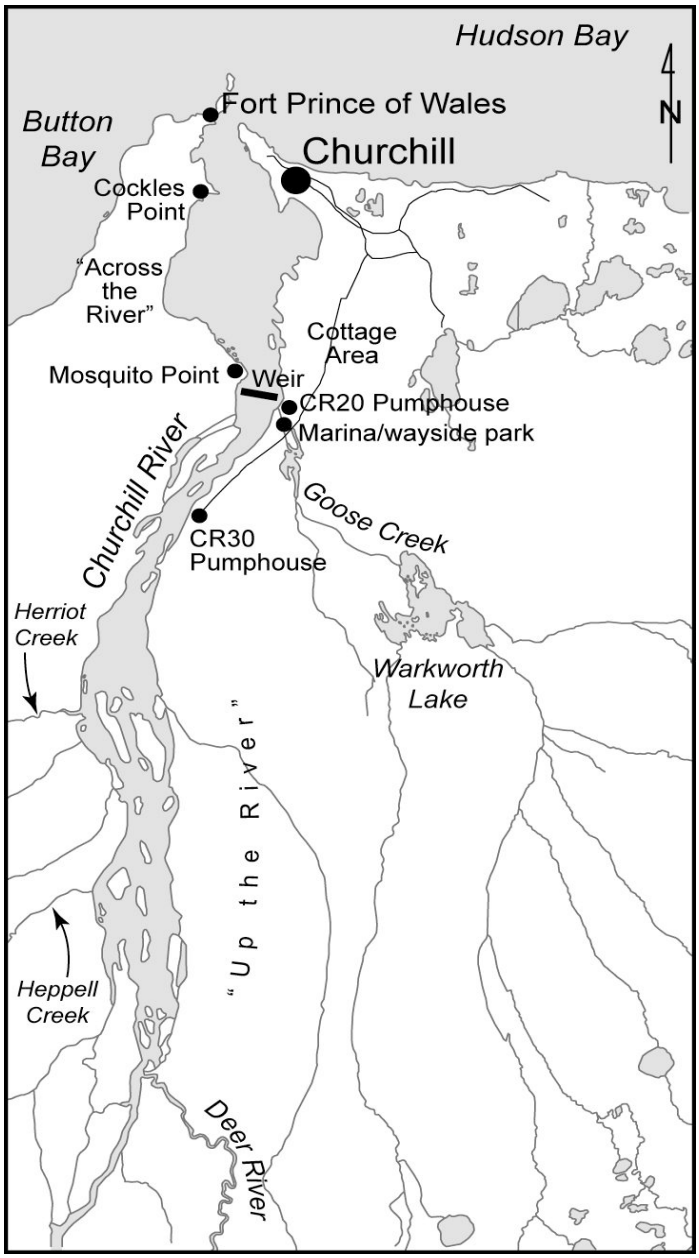

Figure 3. Lower Churchill River Weir (Cartography by Fast, 2006, University of Manitoba) (Used with permission from © Aboriginal Issues Press, August 29, 2007)

The compensation package cost approximately 26 million dollars, however Manitoba Hydro is obligated to maintain the mitigation infrastructure, such as the weir and culverts at Goose Creek (Boothroyd, 2000), so expenses could rise in the future.

1.1 Purpose and Objectives

The purpose of this project was to identify how Churchill residents used the lower Churchill River from the time period prior to the Churchill River Diversion to the present time. Also, to compare and contrast the participants' perspectives with other literature concerning the impacts and opportunities created by the Churchill River Diversion and mitigation compensation package. There are three periods of time in the research: The Pre-Churchill River Diversion (CRD) (pre-1976), Post-CRD (1977-1997) and Post-Compensation (1998-2006). There is some overlap between the time periods, therefore the dates are not exact. The researcher decided to use the following reasons to structure the three time periods: the diversion infrastructure was complete in 1976 (Boothroyd, 1992), the mitigation compensation package was signed in 1997 and the majority of construction on the Lower Churchill River Weir Project was completed by 1998 (Boothroyd, 2000; Bernhardt, 2002).

Objectives:

- Enhance knowledge of how the lower Churchill River was and currently is used by local residents,
- Identify the impacts of the Churchill River Diversion (CRD) and the compensation package on the residents of Churchill,
- Obtain insights into issues concerning the social impacts on residents as a result of changes to the lower Churchill River,
- Discover ways of addressing concerns related to the lower Churchill River, and
- Produce a community book, which will provide a forum for sharing local knowledge on the Churchill River with future generations of Churchill residents.

1.2 Rationale

This project is valuable to the residents of Churchill, the Town of Churchill and Manitoba Hydro, as well as to the provincial government of Manitoba. The collection of interviews conducted build on previous studies, such as the quantitative surveys conducted by North/South Consultants, as well as qualitative studies by Boothroyd and Associates and Four Directions Consulting Group. Moreover, this study introduces new themes and questions on Churchill residents' perspectives on the mitigation compensation package that were not addressed in the previous qualitative studies. The project results are informative for Manitoba Hydro because this research explores the knowledge and perceptions of Churchill residents, which can be employed in future development discussions and enhancing relations with the community. Users of the lower Churchill River provided their experiences and insights on the compensation package, therefore Manitoba Hydro will be able to better understand the community's position on the issues surrounding the lower Churchill River.

1.3 Parameters and Limitations

This study includes people with experience and knowledge pertaining to the lower Churchill River from the early 1970s to the present time. However, others with experience and knowledge of a shorter time period were part of the study as well. The interviews were conducted with either current or former Churchill Residents. Anybody under the age of 18 and individuals without experience and knowledge about the lower Churchill River in the Town of Churchill were not included as possible participants in the study.

The project was limited by the amount of time spent in the field and by the timing of the field seasons (August 2005 & October 2006). The lower Churchill River and issues surrounding its development are sensitive topics for Churchill residents. Consequently, caution was required when conducting the interviews.

1.4 Thesis Organization

The thesis is organized into six chapters. The second chapter introduces background information on the Town of Churchill, particularly in relation to the lower Churchill River and how aquatic environments were altered by the CRD. The next chapter presents information on the methodology and how the study was conducted. The fourth chapter consists of the results section, which is a compilation of 20 transcribed interviews. The following chapter connects knowledge from the scientific literature and results from the interviews conducted in the study. The conclusions and recommendations section provides outcomes and an overview of the study.

Chapter 2. Literature Review

2.1 Churchill Profile

The Churchill region has been inhabited for a long period of time. Artefacts and tent rings date back to 1500 **BCE**, which was part of the Pre-Dorset era. The Dorset culture replaced the Pre-Dorset era for reasons unknown in 500 BCE, then the Thule people inhabited the land around 1000 **CE**. The Thule came from Alaska; they are the ancestors of the present day Inuit of the area. The present day Inuit reside in the northern, tundra landscape (Boothroyd, 2000; MacIver & MacIver, 2006).

The Cree and Dene have also occupied this region for a long period of time. The Cree occupy the boreal forest region and the Dene followed caribou on the barren grounds of Northern Manitoba (Boothroyd, 2000). Not all relations between the three indigenous groups were peaceful. "The Dene and Inuit were known to war with one another over hunting area boundaries" (Tannis, 1999: 47).

European settlers arrived in the Churchill region in the early 17th century. Sir Thomas Button was the first European explorer to the region, in 1612, but he passed by the Churchill River (Manitoba Culture, Heritage & Recreation, 1984). Jens Munck, from Denmark, was the first European to enter the Churchill River, in 1619. The majority of his crew died of scurvy wintering over on the Churchill River, only he and two other survivors made it back to Denmark (Boothroyd, 2000). There were a few other explorers during this time period. Their mission was to search for the Northwest Passage that would lead to the Orient (Manitoba Culture, Heritage & Recreation, 1984; Tannis, 1999). Later in the 17th century the Hudson Bay Company set up trading posts, the first one being York Factory in 1670 (Tannis, 1999). The fur trade replaced the search for the

Northwest Passage as the main reason for being in the region (Boothroyd, 2000; MacIver & MacIver, 2006).

The fur trade was important to the English and the French and both sides fought for control over the outposts and the industry as a whole. The war lasted for 30 years, from 1683 to 1713 when the treaty of Utrecht was signed. The British regained control over the Hudson Bay area. Nevertheless, the peace did not guarantee success in the fur trade, nor did the English trust the French to keep the peace. They built a stone Prince of Wales' Fort, which took 40 years to finish, starting in 1731. It was built at the mouth of the Churchill River and was built to "withstand any military siege" (Tannis, 1999). However, the British surrendered the Fort to the French in 1782 without a single shot fired due to being severely outnumbered (Boothroyd, 2000).

Samuel Hearne (the British Governor) returned to the area to continue the fur trade after the siege, at a new post called Fort Churchill, however the fur trade never regained the same productivity as it had before. Eventually, in 1932 Fort Churchill was closed and a Hudson Bay Company store was built on the east side of the river, on the present Churchill town site (Boothroyd, 2000).

Diseases decimated the Indigenous populations and the Aboriginal way of life was changed towards a more European way of settlement (Boothroyd, 2000). The European settlers also influenced the Indigenous culture and eventually more forcefully pressured them into conforming to European culture and ways of life. Animal migratory patterns were interrupted by trading posts, which affected how the Indigenous people hunted and gathered food (Tannis, 1999). Many Indigenous groups were compelled by

the Canadian Federal government to settle in fixed locations instead of leading a nomadic lifestyle.

Ila Bussidor and Ustun Bilgen-Reinart tell the turbulent history of the Sayisi Dene in the book *Night Spirits*. The Sayisi Dene were traditional hunters, trappers and fishermen who were relocated by the federal government to Camp 10 and Dene Village near Churchill from Little Duck Lake in 1956. For over a thousand years they followed the caribou herds and had minimal contact with white society. However, they were relocated as a result of concerns from the federal government concerning the general collapse of the caribou population in the area. The Sayisi Dene were regarded by the federal government as one of the main causes of the perceived devastation of the caribou population. The Sayisi Dene's relocation transformed their way of life from a nomadic to settled existence. In their new settlement they were without jobs, had insufficient shelter and were unfamiliar with the culture or language of the region, thus their self-determination deteriorated into a cycle of poverty, alcoholism, prejudice and death. More than 100 Sayisi Dene, one-third of the population, died as a result of their relocation (Bussidor & Bilgen-Reinart, 1997; Boothroyd, 2000; MacIver & MacIver, 2006; Newton, 2000).

In the early 1970s, the Dene began moving to Tadoule Lake, approximately 400 kilometres from Churchill. However, the wounds of relocation will take many years to heal and the Sayisi Dene are struggling with the loss of their ties to the land, as well as to each other (Bussidor & Bilgen-Reinart, 1997).

The Royal Commission on Aboriginal Peoples formally recognized the injustices committed on the Sayisi Dene in 1996. The Sayisi Dene received 580,000 dollars for

economic development and 23,000 acres of land as part of a compensation package from the federal government (Wilde, 2006).

In 1929 the rail line was completed between Winnipeg and Churchill, to the mouth of the Churchill River, where a deep-water port could be established (Boothroyd, 2000; The Town of Churchill, n.d.). The first grain shipment was sent out in 1931 (The Town of Churchill, n.d.; Newton, 2000) and the first passenger train arrived in 1933 (MacIver & MacIver, 2006; Brandson & Chartier, 1983).

From the early 1940s to the 1960s Churchill was a strategic military point for the American and the Canadian military, first due to World War II and then because of the perceived threat of the Soviet Union during the 'Cold War'. The Canadian military conducted arctic exercises and equipment trials. Also, a defence laboratory was constructed and the American Army Engineers created the Churchill Research Rocket Range, which was built in 1957. Later on in the 1960s the National Research Council of Canada utilized the Rocket Range for research purposes. The Canadian Army abandoned the **Fort Churchill** military site in 1964 and the Department of Public Works assumed responsibility for the maintenance of the base. A small group of Canadian military personnel returned to the base in 1970, however the base was abandoned by 1980 (Boothroyd, 2000; MacIver & MacIver, 2006; The Town of Churchill, n.d.).

The population of the region increased because of the military base at Fort Churchill, which was located to the east of the town. The population of the town and Fort was once approximately 7000 people (Newton, 2000). Churchill's population decreased considerably after the military base was dismantled. The population has continued to decline in recent years (Table 1). Churchill has always been a relatively isolated

community because there are no year-round roads that connect it to larger communities to the south. Churchill can be accessed by air, rail or by sea.

Table 1. Population change in Churchill, Manitoba

Year	Total Population
1986	1, 215
1991	1, 143
1996	1, 089
2001	963
2006	923

(Statistics Canada, 1986; Statistics Canada, 1991; Statistics Canada, 2002; Statistics Canada, 2007).

There is an abundance of tourism opportunities in Churchill, such as wildlife watching (polar bear tours, beluga whale tours, bird watching) and Northern Lights tours (Chotka, 2004; Lemelin, 2006; Newton, 2000; Stewart & Draper, 2006; Tannis, 1999). For a Northern community Churchill has a well-developed infrastructure, as evidenced by the Churchill Regional Health Authority (Newton, 2000; The Town of Churchill, n.d.) and the Town Complex, which has a number of facilities, such as a swimming pool and hockey rink. The Complex was built in the mid-1970s and is able to accommodate thousands of people (Newton, 2000; Tannis, 1999).

2.2 Physical environment

Churchill and its surrounding area are unique because of the interconnection of different geographic zones, the tundra, boreal forest and the taiga (transition zone between the tundra and boreal forest) (Dredge, 1992). The Town of Churchill is part of the Hudson Bay coastal lowlands, which are underlain by Palaeozoic and Precambrian rocks (Brandson & Chartier, 1983). Precambrian rocks shape the western periphery of the Churchill River close to the mouth of the river (Brandson & Chartier, 1983). There are approximately 400 native species of vascular plants characteristic of the Arctic and sub-Arctic that cover the region (Brandson & Chartier, 1983). The majority of the families and every order of insects existing in Canada are represented in the area (Brandson & Chartier, 1983). Less than 1,000 species of insects live north of the treeline while some 10,000 species occur within a short distance south of the treeline (Brandson & Chartier, 1983). There is quite a diversity of wildlife in the Churchill region considering its climatic conditions. There are over 150 species of birds that frequent the Churchill Hudson Bay area. It is a birder's paradise due to its distinctive location in the taiga, boreal forest, coastal and tundra environments (Brandson & Chartier, 1983).

Churchill is not typical of the North in regards to the number of mammals existing in the area (Brandson & Chartier, 1983). Furthermore, the type of ecosystem changes as one travels from the mouth of the river upstream, thus the species of mammals changes as well. Furbearers in the region, such as beaver, mink, otter and muskrat rely on the Churchill River system for their habitat (Four Directions Consulting Group, 1994). There are also seals and beluga whales in the estuary of the river. Large land mammals, for

instance moose, caribou, wolves, black bears and polar bears can also inhabit the lower Churchill River area (Boothroyd, 2000; MacIver & MacIver, 2006).

Churchill's climate is located in the Marine Sub-Arctic region and is in the zone of continuous permafrost (Bone, 2003; Dredge, 1992). Its average temperatures are not cold enough to be considered part of the Arctic region. There are four months with an average mean temperature over 10 degrees therefore it is not considered part of the Arctic region (Bone, 2003; Brandson & Chartier, 1983). Wind velocity is extremely volatile, especially in the long winters, where the north-westerly wind prevails (Dredge, 1992).

2.3 Churchill River Literature

2.3.1 Pre-Churchill River Diversion (CRD)

The Churchill River was left in its natural condition aside from a minor in-channel reservoir and power dam at Island Falls, Saskatchewan (Newbury & Malaher, 1973) until the CRD was implemented. Prior to the diversion Churchillians used the river as they had done for many years travelling up the river to access fishing and hunting locations. Cabins and campsites were located upstream on the river to provide locations for residents to stay and enjoy the outdoors, sometimes for daytrips, as well as for weekends and holidays. There were some trappers that relied exclusively on the river to access their traplines (Boothroyd, 2000).

Over time the number of residents relying on country food and subsistence harvesting has decreased and an increase in the number of residents who use the river for recreational purposes has increased (Boothroyd, 2000; Hickes, 2006; Four Directions Consulting Group, 1995).

Summer activities on the lower Churchill River included boating, fishing, camping, relaxing and enjoying nature. In the fall, big game hunting and waterfowl hunting were popular outdoor activities. The spring was and continues to be one of the most productive times for fishing. In winter people would snowmobile, go ice fishing and trapping (Boothroyd, 1992; Boothroyd, 2000; Four Directions Consulting Group, 1994).

A variety of fish species were caught in the lower Churchill River, jackfish and Arctic grayling were plentiful in many areas. Other species caught included; brook trout, pickerel, whitefish, suckers and sturgeon, in a couple locations, such as the mouth of Munck River (located on the westside of the river, upstream from Heppell Creek and downstream from Deer River). Favourite places to catch fish were at the confluences of the creeks and smaller rivers entering the lower Churchill River, for instance Herriot Creek, Heppell Creek (also identified as Fishing Creek), Munck River and Deer River were all popular locations (Figure 3) (Boothroyd, 1992; 2000; Four Directions Consulting Group, 1994; 1995).

Waterfowl and big game hunting were popular in a number of places in the lower Churchill River region, including the Morrier Islands (also known as the Willow Islands) and Fishing Creek (Boothroyd, 2000). Big game, such as moose and caribou were hunted along the shoreline of the river (Four Directions Consulting Group, 1994).

2.3.2 The Churchill River Diversion (CRD)

The Churchill River Diversion was a part of a grand hydroelectric scheme that transformed the Northern Manitoba water regime (Bone, 2003; Canada & Manitoba, 1975). The CRD project was ambitious as it was the largest river diversion in North America at that time (Das, 2006; Newbury & Malaher, 1973).

Since that time there have been two larger river diversions in Quebec, in 1980 and in 1983, both to increase the hydroelectric power potential of the La Grande River basin. In 1980 the Eastmain-Opinaca River system was diverted and in 1983 the Caniapiscau River was diverted for a total average annual diversion of 1,635 (m^3/s) (Das, 2006).

The Manitoba section of the Churchill River has a hydroelectric potential in excess of 3,000,000 kilowatts. According to Manitoba Hydro the most economically beneficial approach to harnessing this energy was to divert water from the Churchill into the Burntwood-Nelson River system to assist in powering the generating stations built on the Nelson River Basin. Diverting water from the Churchill instead of constructing generating stations on the Churchill revealed a cost benefit of more than 600 million dollars (Manitoba Hydro, 1994).

Plans for the Churchill River Diversion began in the late 1960s as part of a broader plan to take advantage of the water resources in Northern Manitoba to produce hydroelectricity (Boothroyd, 2000; Canada & Manitoba, 1975; Waldram, 1988). However, the first plan, the high-level diversion initiated by the Provincial Progressive Conservative government was scrapped amid criticism from the public, scientists, environmentalists and residents who would be affected by the flooding. The Progressive

Conservatives lost the following election and the New Democratic Party (NDP) came into power in 1969. The Churchill River Diversion was a major issue in deciding the outcome of the election (Boothroyd, 1992; Boothroyd, 2000; Waldram, 1988). The NDP accepted a plan for a low-level diversion, which raised the level of South Indian Lake (SIL) by three metres, instead of 10 metres as planned in the high-level diversion. This alternative low-level diversion plan was designed to be more suitable and cause fewer impacts on the natural and social environment (Boothroyd, 1992; Boothroyd, 2000).

The diverted Churchill water is utilized at generating sites along the Nelson River (Manitoba Hydro, 1994; Manitoba Wildlands, 2005). The capacity of hydroelectricity generation is greatly enhanced by the CRD, which has been a factor in permitting Manitoba Hydro to meet both the power requirements of the domestic market and its export obligations (Boothroyd, 1992; Hertlein, 1999; Manitoba Wildlands, 2005). Manitoba Hydro (2006a) reveals immediate future initiatives that would have a total potential of 3150 megawatts (MW) that combines wind power and consumer energy improvements, as well as hydro efficiency improvements and new hydro development. Over the long-term it is estimated that a further 5,000 MW remain available in northern Manitoba for hydroelectric development (Manitoba Wildlands, 2005). Below is a map detailing the generating stations and transmission lines, as well as potential future generating stations (Figure 4).

Figure 4. Manitoba Hydro Current and Potential Generating Stations (Manitoba Hydro, n.d.b) (Used with permission from Manitoba Hydro, August 31, 2007)

The regulation of Lake Winnipeg was also a major component of the hydroelectric development of the Nelson River. This portion of the Northern hydroelectric development plan was initiated to control the amount of water flowing from Lake Winnipeg into the Nelson River. Three diversion channels, a control dam and generating station, as well as anther dam to prevent water from backing up were constructed to increase the winter outflow on Lake Winnipeg and to control the water outflow from Lake Winnipeg in the Nelson River. The regulation of Lake Winnipeg allows Manitoba Hydro, under normal conditions, to decrease outflows during the summer and raise them during the winter. The Lake Winnipeg Regulation provides a more dependable supply of water at the Nelson River plants during winter when electrical demand is highest (Epp, 2007; Hertlein, 1999; Krotz, 1991).

The LWR also supplies a level of security to its users in drought and flood conditions. Manitoba Hydro is allowed to regulate Lake Winnipeg for power production purposes between the levels of 711 and 715 feet. If the water level surpasses 715 feet, Manitoba Hydro is required to affect maximum discharges. As the outflow capabilities have been augmented, the magnitude of flooding has been reduced. The high water levels are no longer as high, the lows not as low and the average is approximately the equivalent to the time prior to the LWR (Epp, 2007).

An interim license was granted by the Manitoba government to proceed with the CRD project in December 1972. Under the conditions of the licence, Manitoba Hydro is allowed to divert up to 850 (m^3/s) from the Churchill River into the Nelson River. Furthermore, the licence requires a minimum outflow from the control structure at Missi Falls, 14 (m^3/s) in the open water period and 43 (m^3/s) in the ice cover season

(Boothroyd, 2000; Manitoba Hydro, 1994). However, since around 1986 Manitoba Hydro has requested and received identical annual approvals that modify several of the conditions of the interim licence. The Notigi permissible average weekly outflow is one of these modified conditions. The permissible outflows have been increased from 30,000 cfs (850 cms) to 34,000 cfs (960 cms) between November 1 and May 15 (winter) and 35,000 cfs (990 cms) from May 16 to October 31 (open water) (Epp, 2007). Therefore, approximately 85 percent of the Churchill River is diverted into the Nelson River system (Epp, 2007).

Outflows from SIL (downstream of Missi Falls under pre-CRD conditions) have varied from approximately 566 (m^3/s) to 1,982 (m^3/s) with a long-term average of 991 (m^3/s). Downstream of Missi Falls, tributaries augment Churchill's natural flow to an average of 1,274 (m^3/s) (pre-CRD) draining into Hudson Bay, due to the diversion the flow from the Churchill into Hudson Bay is diminished to an average of 510 (m^3/s) (with CRD) (Manitoba Hydro, 1994). Table 2 reveals details on the Missi Falls flow regime over time.

Table 2. Water Regime: Missi Outflow, ft^3/s (m^3/s)

Years	1928-1966	1977-2005
Maximum	83,100 (2,353)	81,200 (2,299)
Average	35,700 (1,011)	5,800 (164)
Minimum	22,500 (637)	500 (14)

(1928-1966 data: Hausser & Alam, 1974; 1977-2005 data: Epp, 2007)

The data from Table 2 reveals that the maximum flow rates were similar, however the average and minimum outflows at Missi Falls were considerably lower as a result of the diversion.

The Churchill River Diversion was created through the construction of the Missi Falls and Notigi control structures, as well as through the excavation of a channel from South Bay on the southern point of South Indian Lake (SIL) to Issett Lake in the Rat-Burntwood River system, which connects the Churchill-Nelson River Basins. The Missi Falls control structure allows the natural outflows into the lower Churchill River to be contained in SIL, which causes the water level of SIL to be augmented by approximately three metres. The increase in water level permits water to be rerouted from SIL at South Bay into the Rat River and consequently into the Nelson River. The water flows from South Bay to Issett Lake through the excavated channel. The control of water flows into Rat-Burntwood Rivers and consequently into the Nelson River is managed through the Notigi control structure situated at the outlet of Notigi Lake. Construction of the control structures was finished by August 1976. The excavation channel that connects the Churchill-Nelson River systems was completed in early June 1976 and the diversion became operable over 1976-1977 (Boothroyd, 1992; Boothroyd, 2000; Manitoba Hydro, 1994).

A study board made up of Canadian Federal government and Manitoba Provincial government representatives and technical personnel (which was convened from 1971 to 1975) assessed the impacts of the CRD. Their mandate was to provide an understanding of the environmental effects caused by the CRD and to provide recommendations for mitigation and compensation (Canada & Manitoba, 1975).

However, according to some researchers the environmental assessments that were conducted on the effects of the Churchill River Diversion were performed in a reactive manner, studying outcomes of the project rather than assessing the foundation of the project itself (Boothroyd, 1992; Hultin, 2004; Krotz, 1991; Waldram, 1988).

Further it was indicated their agenda did not include the economic or technical assessment of the project (Canada and Manitoba, 1975) or the overall validity of the Churchill River Diversion. Therefore, arguably the project started without an environmental impact assessment that could have lead to a less disruptive course of action (Boothroyd, 1992; Boothroyd, 2000; Waldram, 1988).

In addition, study of alternative diversions conducted by Underwood McLellan & Associates Limited (see Manitoba Hydro 1970a; Manitoba Hydro, 1970b; Manitoba Hydro 1970c) did not change the manner in which the Churchill River was diverted. Nevertheless, it should be noted the Canada & Manitoba (1975) report, comprised of 18 volumes, provided key baseline scientific data on the physical environment prior to the hydroelectric development, which set a worldwide precedent for environmental impact assessments and in this case comparing post-diversion studies to the pre-diversion conditions. The report also anticipated many of the effects of the development and provided key mitigation measures, such as the need to move Churchill's water intake due to the risk of low water levels and possible salt-water intrusion (Canada and Manitoba, 1975; Manitoba Hydro, 1974).

2.3.3 Negative Environmental and Social Impacts of Hydro Development

The social and environmental impacts caused by hydroelectric development have been documented in a multitude of publications. Some researchers conclude that the detrimental aspects of hydroelectric development outweigh the benefits that are gleaned from hydroelectric generation (Hertlein, 1999; Krotz, 1991; Rosenberg et al., 1995; Rosenberg et al., 1997). Other researchers agree that harm has been caused by hydro development, but argue that mitigation and compensation measures are alleviating these impacts to a certain degree (Bernhardt, 2007; Boothroyd, 2000). Furthermore, new projects in Canada require comprehensive environmental assessments and involve local communities in the process of project development (Krotz, 1991; Manitoba Hydro & The Town of Churchill, 1997).

Many researchers have studied and presented a broad array of possible environmental impacts and socio-economic effects that are produced by the construction of dams, such as flooding, unnatural flow fluctuations, changes in the river regime's temperature and chemistry and a reduction or change in vegetation. These physical alterations ultimately impact the fish, birds and mammals in the aquatic and riparian ecosystems (McCartney & Hilmy, n.d.; Nilsson & Berggren, 2000; Rosenberg et al., 1995; Rosenberg et al., 1997; Rosenberg, McCully & Pringle, 2000). Furthermore, the environmental effects of hydroelectric development are invariably interconnected with the social impacts. As Postel states, "Large dams and river diversions have proven to be primary destroyers of aquatic habitat, contributing substantially to the destruction of fisheries, the extinction of species, and the overall loss of the ecosystem services on which the human economy depends" (1998: 636). Therefore, people who live within

these altered regimes cannot use the natural resources in the same manner that they did prior to the development. Researchers such as Loney (n.d.) and Waldram (1988) argue that these environmental modifications have had an enormous influence on the locals' lifestyle. For example, in some cases Aboriginal communities could no longer rely on their traditional fishing and hunting areas because the land had been flooded (Krotz, 1991).

Das (2006) explored the history of inter-basin water transfers in Canada and their social and environmental effects. He warned that there is a significant cost in the construction of these projects, even if the benefits are calculated to outweigh the costs. Impacts include: alteration of downstream temperatures, augmented erosion/deposition of downstream sediments and displacement of local residents. Das (2006) concludes that proactive methods should be used to minimize the deleterious socio-economic and environmental consequences of proposed projects.

2.3.4 CRD Impacts on Residents and the Environment

One of the benefits of hydroelectric development in Northern Manitoba has been that, "Manitobans have enjoyed some of the lowest electricity rates in North America" (Hultin, 2004). However, many Northerners, notably Aboriginal communities have had to live with the environmental and social implications of the development. Compton and Williams (1991) commented that these Aboriginal peoples have experienced widespread impacts, such as shoreline impact due to soil erosion, abnormal water fluctuations, ancient burial sites being washed away and the reversing of river flows. Many researchers and community members contend that these impacts are still on-going problems, albeit

most communities affected have completed settlement packages with Manitoba Hydro, to compensate for the adverse effects caused by the Nelson River hydroelectric development. These compensation packages were implemented to resolve the legal and moral obligations of the government of Canada, the government of Manitoba and Manitoba Hydro to the communities. Manitoba Hydro states that 14 communities have agreements or agreements in principle regarding the effects of hydroelectric development. Furthermore, they have provided over 599 million dollars to those communities, as of March 31, 2006, for compensation and mitigation measures (Manitoba Hydro, 2006b).

The Northern Flood Agreement (NFA) was an agreement between the Province of Manitoba, Manitoba Hydro, Canada and the Northern Flood committee. This committee represented the interests of the five Cree First Nations affected by the hydroelectric development, to deal with current impacts and future unanticipated consequences of the development. The Cree communities represented were York Landing (York Factory First Nation), Split Lake (now Tataskweyak Cree Nation), Norway House (Norway House Cree Nation), Nelson House (now Nisichawayasihk Cree Nation) and Cross Lake (Cross Lake First Nation) (Indian & Northern Affairs Canada, n.d.a). Other communities, such as South Indian Lake and Fox Lake were affected as well, however they did not qualify because they were not on Indian Act Reserve lands (Hertlein, 1999). Communities who did not qualify under the Indian Act Reserve land negotiated separate compensation packages with the Crown parties (includes the government of Canada, government of Manitoba and Manitoba Hydro).

The NFA meant on-going negotiation between the Crown parties and these communities. However, the NFA process proved problematic and four of the five communities signed separate Comprehensive Implementation Agreements (CIA) that clarified the obligations of Canada, Manitoba and Manitoba Hydro to each community (Indian & Northern Affairs, n.d.a; Indian & Northern Affairs, n.d.b; Indian & Northern Affairs, n.d.c). Each community signed at different times, Tataskweyak in 1992, York Factory in 1995, Nisichawayasihk in 1996 and Norway House in 1997 (Manitoba Hydro, 2000) Manitoba Hydro's website has links to these detailed CIAs, as well as other settlement agreements related to the impacts of hydroelectric development (Manitoba Hydro, n.d.a). The NFA process continues for the Cross Lake First Nation, as a comprehensive implementation agreement has yet to be achieved between the respective parties (Indian & Northern Affairs Canada, n.d.b).

2.3.5 CRD-Churchill Related Impacts

Since flows from the Churchill River have been diverted much of the discharge downstream on the lower Churchill River has come from tributaries entering downstream of Southern Indian Lake, especially in the summer (Manitoba Hydro, 1994), including the Little Churchill River, Little Beaver River, Deer River, Herriot Creek and Goose Creek (MacDonald, Remnant & Bernhardt, 2004).

The average and minimum flow rates on the lower Churchill River has been significantly lower than experienced in the pre-diversion years. A major impact of the CRD was the reduction in water flow and resultant lower water levels downstream from the Missi Falls control structure (Table 2). Often the reduced flow did not allow for

normal boating practices from year to year. The graph below (Figure 5) reveals the flows of Red Head Rapids (which is approximately 35 kilometres upstream of Deer River) from the early 1970s to 2005. Not many river users travelled as far upriver as Red Head Rapids, however Environment Canada's hydrometric station has recorded the changes in flow rate from the early 1970s to the present time. There is a noticeable decline in water flow from the years prior to the diversion (1971-1977) in comparison to the post-diversion years (1978-2005). However, the data may not be entirely representative because there are relatively few years plotted in the pre-diversion era.

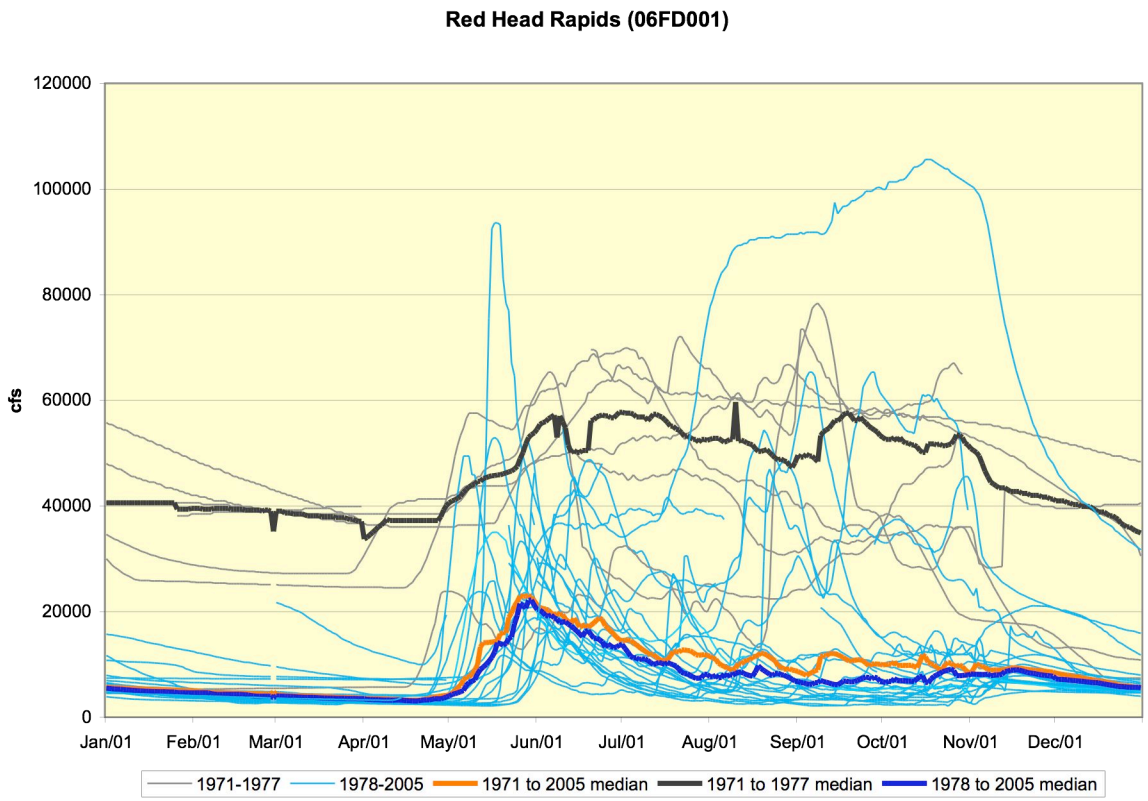

Figure 5. Red Head Rapids Flows from 1971-2005 (Used with Permission from Harold Epp August 3, 2007)

Recreational activities that centred on the river, such as boating, fishing, hunting, trapping and camping were diminished by the reduction in accessibility (Boothroyd,

1992; 2000). As a result of low water levels residents could not use a conventional boat and motor to travel upriver in the summer. Furthermore, favourite fishing locations disappeared as a result of the alteration in the aquatic environment.

Some of the dedicated users of the river imported parts and built their own **airboats** or **jetboats** to navigate through the depleted water levels along the river channel. However, the majority of the people could not afford these types of boats and did not have the technical skills to build or repair them (Boothroyd, 2000). In the winter the ice froze at a lower level than before, thus snowmobiles would be more susceptible to hitting the protruding rocks. Sometimes the level of water was so low that there was not enough ice to travel on (Four Directions Consulting Group, 1994).

2.3.6 Mitigation Compensation Package

Manitoba Hydro and the Town of Churchill developed the Lower Churchill River Water Level Enhancement Weir project in 1994 due to the concerns brought forth by the Town of Churchill. The issue of primary concern was the altered water regime in the lower Churchill River due to the CRD. The major objectives of the Weir Project were to increase boat accessibility by re-watering the original Churchill River channel and to augment the quantity and productivity of fish habitat in the lower Churchill River (Bernhardt, 2005; MacDonald et al., 2004; Markowsky & Bukowsky, 2004). These environmental changes were to ultimately improve recreational opportunities for locals and visitors (Manitoba Hydro, 1999) by creating stable water levels on the lower Churchill River nearby the Town of Churchill (Manitoba Hydro, 1999).

The post-weir time period starts approximately from December 1998, as a North/South Consultant report states, Project construction began in June 1998 and was in essence finished by December 1998 (n.d.). The lower Churchill River Weir (Figure 6, also see Figure 3 for weir location) is a low-head rock weir (MacDonald et al, 2004); which is also made of sand and clay (Boothroyd, 2000; Markowsky & Bukowsky, 2004; Manitoba Hydro, 1999). The weir is located slightly upstream from Mosquito Point on the west shore of the Churchill River, and connects on the east shore just downstream of Goose Creek, making the Lower Churchill River Weir 2,400 metres wide (Manitoba Hydro, 1999) and around 10 kilometres south of the Town of Churchill (Markowsky & Bukowsky, 2004; Manitoba Hydro, 1999).

Figure 6. The lower Churchill River Weir (photo credit: used with permission from Warren Bernhardt, March 20, 2007)

The weir raised water levels approximately two metres in the surrounding area of the weir, as well as submerging approximately 650 hectares of land along a 10 kilometre stretch upstream from the weir, creating a reservoir that would have a consistent and sufficient level of water for Churchill residents to access (Markowsky & Bukowsky, 2004). Assessment of the weir project was based on a sequential examination of prospective consequences of the project, established on the linkages between the biotic and abiotic elements of the environment and physical alterations by the Project that might eventually influence the valued ecosystem components (VECs) (Bernhardt, 2005). These VECs were selected based on their significance to the residents and/or regulatory authorities and were the focus of the impact assessments (Bernhardt, 2005; Manitoba Hydro & The Town of Churchill, 1997). However, other components were considered, especially ones that influenced the VECs, such as water quality and the population of invertebrates (Bernhardt, 2005).

Pre-project fisheries studies were conducted before the weir was built. The research revealed the existing environmental conditions and created the foundation from which possible impacts to the environment stemming from the construction of the weir were measured (Bernhardt, 2005: 2). It was expected that the increase in wetted habitat upriver of the weir would have a positive effect on the majority of the fish species populating the lower Churchill River. It was predicted that the overall numbers of fish would be enhanced. Species that are normally associated with low water velocity habitats, like pearl dace (*Margeriscus margarita*) and white sucker (*Catostomus catostomus*) were anticipated to increase because of the larger wetted area, a greater invertebrate feeding base and an improvement in the overwintering habitat produced by

the project. Conversely, species that thrive in higher water velocity were expected to decrease in the reservoir vicinity, like longnose dace (*Rhinichthys cataractae*) and round whitefish (*Prosopium cylindraceum*) (Bernhardt, 2005). Valued ecosystem species that were thought to benefit the most from the increased overwintering habitat were northern pike (*Esox lucius*) and lake whitefish (*Coregonus clupeaformis*).

The weir compensation package given to the community of Churchill also included other benefits, including a marina/wayside park and a mitigation trust fund (Boothroyd, 2000; Manitoba Hydro, 1999). Other components of the weir include the fish passage facilities in the Churchill River mainstem and in Goose Creek, as well as enhancement of fish habitat in a one and a half kilometre long reach of Goose Creek located downstream of the weir. Three pools, a winter water supply system, two riffles, and containment dikes were constructed within the Enhancement Reach (MacDonald et al., 2004).

2.3.7 Post-Mitigation Compensation Package

The first phase of post-project monitoring of the aquatic environment performed by North/South Consultants began in 1999 and was completed in 2006. This seven year monitoring program was designed to determine whether any unexpected impacts were occurring when compared with the predictions in the Environmental Impact Statement concerning the weir project (Bernhardt, 2005). Some of the predictions of the EIA have not matched the outcomes of the findings, thus continued monitoring is necessary to ensure expectations are met (Bernhardt, 2007).

The water levels in the Churchill River system vary according to the amount of precipitation in any given year. Some years, such as 2005, when there was a significant amount of precipitation in Southern and Northern Manitoba the water levels in the Churchill and Nelson River watersheds were very high. Figure 7 illustrates how high the river flow was in the summer of 2005. This figure also shows the large difference between the maximum and minimum flows after the diversion in 1976, as well as years where the maximum flow rate is very low compared to the years prior to and post-diversion. For example some years in the eighties have very low flows, however others, such as 1986 is exceptionally high. Nevertheless, the inconsistency of adequate water levels (when considering the use of a conventional boat and motor) makes river access difficult.

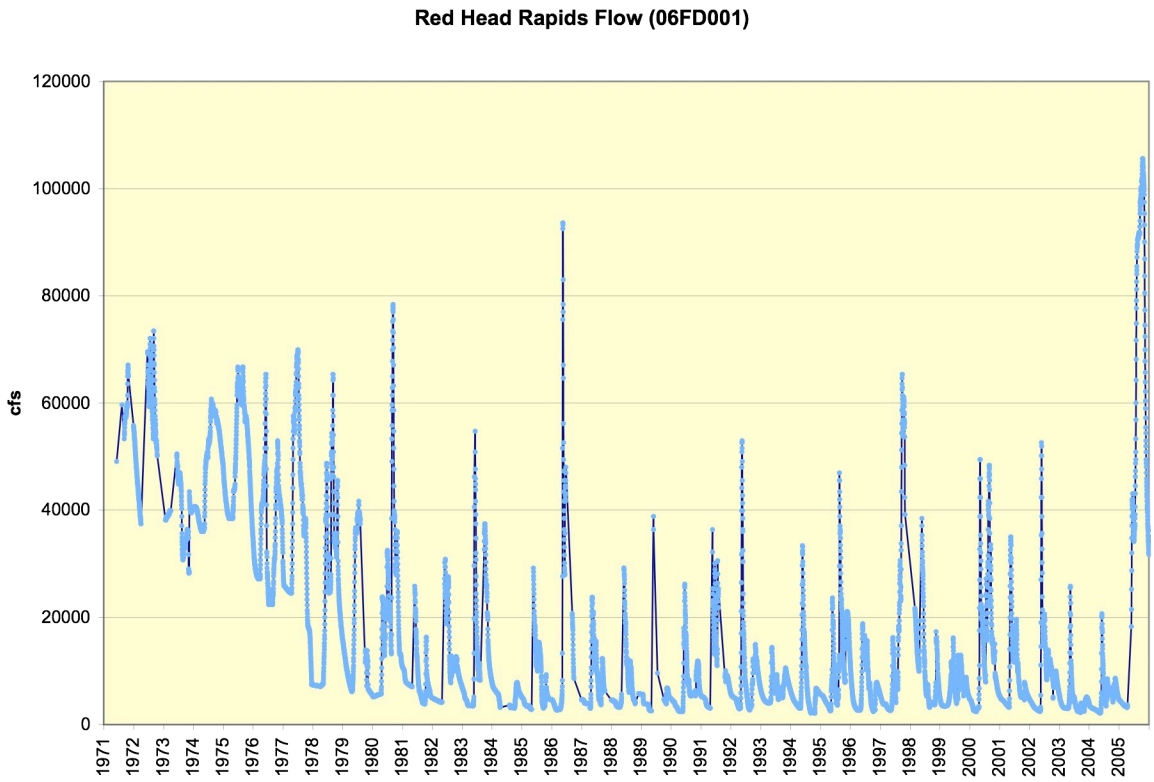

Figure 7. Red Head Rapids Yearly flow from 1971-2005 (Used with Permission from Harold Epp August 3, 2007)

The water levels for 2005 and 2006 were very high, the water levels and flow resembled the pre-diversion era. In 2005 the Marina/wayside Park was flooded due to record flow rates and water levels on the river (Environment Canada, 2007). Manitoba Hydro issued warnings to residents downstream from the Missi Falls Control Structure because they increased the amount of water released through the structure due to the heavy rainfall over the entire Southern Indian Lake Basin (Manitoba Hydro, 2005).

Chapter 3. Methodology and Methods

3.1 Qualitative Methodology

Qualitative research (Babbie, 2001; Corbetta, 2003) was chosen for this study because the goals of the project were to explore the participants' perspectives in-depth, thus an open-ended qualitative approach was used to facilitate that purpose. There were also many variables involved in the study, which is another reason that a qualitative research approach was applied (Creswell, 2003).

3.2 Interview Methods

This section describes the process for conducting community research. Approval was requested from the university, community and individuals, ethical considerations are discussed as well as identifying community advisors, the outline of the interview process, snowball sampling and the positionality of the researcher.

3.2.1 Forming community research relationships, approval and ethics

The Mayor of Churchill, Mike Spence, agreed to meet for an interview when the researcher arrived in Churchill. He was comfortable with the research topic and gave community consent. There was an attempt to contact as many possible participants as possible in Churchill, first by calling the residents by phone to familiarize them with the topic and the researcher, then by meeting with the residents and talking to them informally about the lower Churchill River. Most of the respondents consented to an interview after the informal meeting with them explaining the study. Furthermore, a research based relationship was quickly formed with the mayor and other experienced

travellers on the Churchill River as a result of previous relationships with members of the community. The field seasons were dependent on participant availability. Some participants and other informed contacts were not available for an interview when the researcher was in Churchill.

3.2.2 Ethical considerations

The Human Subject Research Ethics Protocol Submission Form was completed in June 2005. The Joint-Faculty Research Ethics Board (JFREB) at the University of Manitoba approved all the research protocols in this project concerning the semi-structured interviews in Churchill, Manitoba (Appendix B- Ethics Approval Certificate). All of the participants were informed of the study's specifics before their consent (Appendix C- Informed Consent). The research was originally approved on June 15, 2005 and amended on June 7, 2006. The amendment was to indicate that the subject matter had changed from the original ethics protocol, however the methods of the project did not change (Appendix D- Ethics Amendment Approval and Renewal Approval).

3.2.3 Identifying community advisors, interview outline

Two guides were located during the interview process through contacts of the project advisor. Guides or informants are often part of the specific group targeted for inquiry or they have had experience and contacts with the group being studied (Babbie, 2001; Berg, 2004). They helped construct a list of possible participants and gave background support to the researcher concerning the community and topic.

Furthermore, the book *Let the River Flow: The Story of the Churchill River* (Boothroyd, 2000) was a valuable source of background information. An important aspect of the book was that it included the perspectives of Churchill residents concerning the lower Churchill River, thus it was an excellent resource in the creation of a list of possible participants in the study. The names of the locals who were quoted in the book were noted to create a list of possible participants in the project. Then the list was compared with the information of the two guides, who knew many of the people on the list. After consulting with the guides a final list of available respondents was created.

Possible participants were called about the project and interviews were setup in a comfortable place for the respondents. They chose where the interview was conducted. The interviews began with small talk, with general questions to build rapport with the interviewees. Before starting the more formal part of the interview the consent form and the transcribed and edited interview review form were discussed (Appendix E- Transcribed and Edited Interview Review). After signing the consent form the interview was conducted, which included using maps to identify the resident's personal uses of the river (Appendix F- Interview Schedule). The interviews were transcribed after the researcher returned to Winnipeg. When the interview transcriptions were completed they were returned to each of the interviewees for final approval. The interviewees either approved their written interviews with no editions or made additions/deletions to the material. After the final interviewee approval the transcriptions were compiled into the results section and the community book.

3.2.4 Snowball Sampling

Snowball sampling was used as a technique to find other users of the river (Babbie, 2001; Berg, 2004). "Snowball refers to the process of accumulation as each located subject suggests other subjects" (Babbie, 2001: 180). Thus, respondents identify other possible respondents and this process is concluded when recommendations of individuals become repetitive, meaning the individuals were already identified or the interviewer knew about them (Babbie, 2001; Kent, 2005)

3.2.5 Positionality

Many social scientist researchers realize that researchers have a significant impact on their study participants. Also, that the researcher inevitably brings inherent biases to the study they are conducting. Researchers now often practice a type of self-reflection on their role in the research, for example how they affect what information is received from the interviewees. Many researchers assess their role in the process of their study. Berg (2004) discusses this, as have many other researchers, such as Denzin & Lincoln (2003), Gallagher (2003), Procter (1999) and Warren (2002).

During the project it was recognized that interviews had to be approached differently according to each participant. Researchers are assessed and identified in multiple ways by each participant (Fadzillah, 2004). These roles and statuses are not static and will change according to the social and physical environment. The researcher empathized with the different views of the participants, however also remained cognizant that researchers need to consider the perspectives of all the stakeholders in the project.

3.3 Conducting Interviews

There are a variety of different ways of describing the type of interviews one could do, whether it is standardized, structured or directed. The interviews conducted in this study can be identified as semi-standardized (Berg, 2004), semi-structured (Corbetta, 2003) or semi-directive (Huntington, 2000) interviews. The structure in these interviews exposes every informant to the same stimuli, which creates consistency and comparability between the interviewees (Gallagher, 2002). Semi-structured interviews are a vehicle to learn how things work in communities (Kent, 2005). The structured aspect of the interview also gives researchers a sense of what answers are specific enough to proceed to the next question and a sense of relevancy to each question (Gallagher, 2002), but the process is also open-ended and the informal method allows for questions to become apparent according to the answers received (Kent, 2005).

The semi-directive interview is an established and suitable method to better understand the relationships between land and its users (Gallagher, 2002; Huntington, 2000). Furthermore, it provides the possibility for open-ended questions, which will have greater flexibility in responses. Interviews were not formally structured allowing for better communication and information flow, which informs and educates the interviewer.

Interviews were conducted in participants' homes or in Gypsy's café, a local restaurant and bakery. The main themes and ideas were consistent for every interview, however the wording of the questions was varied for each interview. Within each interview different prompts were utilized to generate more effective interviews. According to Hart (1995), prompts encourage participants to talk about a topic. The beginning of an interview can be awkward as the researcher and the participant attempt to

start discussing your subject. Presenting pictures or other objects that are connected to the subject matter is a technique to start off the interview. Themes, maps, follow-up questions, queries, the community book (*Residents' Perspectives on the Churchill River*, see Edye-Rowntree et al., 2006) and the book *Let the River Flow* (Boothroyd, 2000) were employed as prompts in the interviews. The maps used were from Manitoba Conservation; they assisted in clarifying place names, in addition to peaking the interviewee's interest. As Hart (1995) explains, maps are valuable when conducting interviews if the researcher discusses the locations that participants have travelled and lived, as well as aiding interviewees in recalling more about the subject (Gallagher, 2002).

All participants received copies of the published community book, which was a gift for their time and effort involved in the study. Moreover, the book will be available for future generations to learn about the history of the lower Churchill River.

3.4 Network approach to research

ArcticNet is a Network of Centres of Excellence of Canada that is comprised of scientists in social, natural and human health sciences with collaborators in northern communities, Inuit organizations, plus federal and provincial departments, as well as stakeholders in the private sector to study the impacts of climate change in the coastal Canadian Arctic (ArcticNet website, 2007). Researchers within ArcticNet were readily available to discuss ideas, assist the researcher in locating references, data and contacts to support the researcher in completing the project. Furthermore, this study is part of project 3.6 of ArcticNet, titled "People and Environmental Change: Linking Traditional/Local

and Scientific Knowledge". It connects to other projects within ArcticNet, especially to research in the Churchill region (Arnold et al., 2006; Churchill, Tenuta, Bello & Papakyriakou, 2005; Galley et al., 2005; Gilligan & Oakes, 2006; Kuzyk et al., 2006, Scott & Papakyriakou, 2006).

3.5 Fieldwork

The first field season was conducted in Churchill from August 4th to August 20th, 2005. Eleven participants were interviewed about their uses of the Churchill River from 1970-2005. The second field season was conducted from October 12th to October 27th, 2006. One of the purposes was to reconnect with the participants from the first field season. The researcher followed-up with information the participants provided in the first field season by using a draft community book as an opportunity to expand upon themes that were discussed in August 2005. In addition six key participants were interviewed who were unavailable in August 2005. The participants' information was transcribed by the researcher and reviewed and edited by the interviewees during the second field season.

3.5.1 Community Presentation

The purpose of the community presentation is to disseminate the findings. The final copy of the community book, thesis and interview material will be brought to Churchill to ensure the community receives all aspects of the research project. The goal of the community presentation is to communicate the research, thus the researcher will present the information in different forms. These mediums will be through the

community book and could also be through radio or a newspaper/newsletter article. The research data will be stored in the library or Town of Churchill office. Each participant and all the major contributors to the project, including Manitoba Hydro, have received a complimentary copy of the community book.

3.6 Analysis of Results

This research compliments previous quantitative surveys performed by North/South Consultants, as well as research conducted by Boothroyd and Associates and Four Directions Consulting Group. The results from this project will be compared with the findings of past studies conducted on residents' perspectives. However, there are new factors considered in this project, such as the impact of the weir on the residents. The analysis will focus on the impacts and opportunities on the residents caused by the environmental changes on the Churchill River.

Chapter 4. Results

This chapter was published in the format of a community book (see Edye-Rowntree et al., 2006). The transcribed interviews of all the participants in the community book are included in this chapter. Two interviews from researchers, Warren Bernhardt, from North/South Consultants and Peter Boothroyd, from Boothroyd and Associates are located in Appendix G. They both conducted research on issues concerning the Churchill River and the Town of Churchill, Bernhardt as a consultant for Manitoba Hydro and Boothroyd as a consultant for the Town of Churchill.

Each individual's perspective is presented in alphabetical order: Bill Ayotte, Ed Bazlik, Marlene Bilenduke, Lorraine Brandson, Roy Bukowsky, Manford Bussell, Chris Campbell, Bonnie Chartier, Dave Daley, Parker Fitzpatrick, George Hickes, Dick Hunter, Mark Ingebrigtson, Gavin Lawrie, Mike Macri, Glen McEwan, Maurice Morand, Clifford Paddock, Mike Spence and Ernie Welburn.

Usage of the lower Churchill River was divided into three time periods as identified when analyzing previous studies on the Churchill River, as well as through the analysis of the interviews. The pre-Churchill River Diversion (CRD), post-CRD and post-compensation are the three different time periods. Within this framework residents focused on:

- Cabins,
- Drinking Water,
- Recreation,
- Military,
- Commercial Usage,

- Wildlife, and
- Frequency of Usage.

In addition, Churchill residents provide valuable insights and recommendations for improving their usage of the lower Churchill River.

Some of the people interviewed were former residents and had experience and knowledge about the river before the Churchill River Diversion. All of the interviewees were or are long-term residents of Churchill. Their knowledge and experience varies depending on where their **river usage** fits within the timeline (pre-1976, 1976-1997, 1998-2006). Some of the themes are universal, whereas others vary according to the individual. The texts are transcribed oral interviews, which were reviewed by the interviewees after minimal editing.

Bill Ayotte

Figure 8. Bill Ayotte (photo credit Edye-Rowntree, 2005)

Bill Ayotte was born in 1944. He has one sister and was raised in Churchill since he was three years old. He worked in the Town of Churchill pumping station and then the water treatment plant for 34 years.

Pre-CRD
I started using the river in the summer of 1964. In 1965 my Pop came out with me at the start of the spring break-up. My Dad and I travelled together on the river from 1965 until his death in 1980.

I bought a 20-foot chestnut canoe and my father bought an 18 HP Johnson motor.

I asked Pop why he hadn't come the previous summer and he told me that he wanted me to get to know the river first. Pop said you must have learned something, my motor is still in one piece.

I would spend my annual vacation upriver during the fall, goose, duck and moose hunting and fishing.

My primary interest was fishing for pike and grayling. Pop's interests were to build things needed around the camp or going on a boat ride anywhere on the river.

I'd finish off my vacation on thanksgiving weekend and head back to work.
Pop would freeze in upriver at the cabin and start to do his trapping by skidoo and sleigh, taken up prior to freeze up by boat.

Cabins
Pop had been given a cabin two miles south of Herriot Creek, near the tip of the Morrier Islands. Most weekends we'd have our gear ready and hit the water shortly after 5:00pm spending the weekend upriver hunting or fishing.

In 1969 Pop and I decided to build a new cabin further upriver. He built on an island close to Deer River, but on the west side of the river. Pop had just retired that spring and he had gotten title to the trapline in that area. Pop would be spending much more time upriver, boating in the summer, skidooing in the winter.

Prior to the river diversion Manitoba Hydro bought out all the cabin owners and then burnt them down. Our cabin across from Deer River was spared, I believe because it was used as a trappers cabin.

Drinking Water
Prior to 1978 the intake for the town's drinking water was at the mouth of Goose Creek and there was a pumping station in town. I started working for the pumping station in town during the winter of 1972. Then Manitoba Hydro moved the intake pumphouse from Goose Creek approximately four miles upriver to a site called CR30. Here there was enough water to draw from the new intake. Also, it was far enough upriver to stop salt-water intrusion thought to be possible if the intake had been left at Goose Creek. The new water treatment plant came on-line in the fall of 1978.

Post-Churchill River Diversion
After 1978 access on the river became more restrictive due to the loss of water. Use of a conventional boat and outboard motor was curtailed. Use of the river was now restricted to those that had an airboat or jet drive motor.

Recreation
As a youngster my friends and I would create our own entertainment like outside games, such as baseball and swimming in Paradox Creek.

Ed Bazlik

Figure 9. Ed Bazlik (Photo provided by Ed Bazlik, 2005)

Ed Bazlik was born on July 21, 1929. He has lived in Churchill since 1954 and now owns and manages a Jewellery store. Prior to this venture, he was an electrician for the Department of National Defence for 20 years.

Frequency of Usage
I would go fishing in the springtime at Goose Creek and in Warkworth Lake. In the winter I would go ski-dooing. Also, my children would use their snowmobiles in the winter.

Pre-CRD
In the past, before the CRD I would go fishing in different creeks, like around where the CR30 intake is now and at Warkworth Lake. In the summer I would go fishing every weekend with friends. I never went very far south to fish because there were lots of good fishing spots close to Churchill.

Cabins
At one point I had two cabins, one on Mile 498 where the CNR Bridge goes over Goose Creek. I had that cabin for 10 to 15 years, but now I just have one. There were fish traps used in the past at mile 498. You can still see the logs embedded in the creek made by trappers, like Joe Chambers from long ago. The other one is at Goose Creek, near the old pumphouse (CR20).

There are a number of cabins around me, like the Chartier's and McEwan's. I like to see wildlife around my cabin, such as rabbits and foxes.

Drinking Water
Manitoba Hydro found that salt-water intrusion was likely at CR20, the old pumphouse. In fact scientists found salt-water vegetation by the water intake because the water level was lower. Due to the diversion the salt-water was moving further upstream. So the water would not be safe for drinking, therefore the water intake was moved upriver to CR30.

Military
The military was present around the area of Goose Creek. They also spent recreation time on the river. They would go out to Goose Creek to fish and hunt down the track. The military made trails from Joe Buck's ridge to Goose Creek along the tracks. You can use them by ski-doo in the winter, but they are difficult to travel on by three or four wheeler because of all the mud and water on the trails.

Post-CRD
The CRD was really felt by 1978. After the CRD the flow was never the same. I would always hit rocks with my boat, a 16-foot Lund that I have since sold. Since the CRD I have not done much fishing. After the diversion you could only use the river for a short time in the spring after the ice melt.

Higher water levels and more water flow can depend on the Lake Winnipeg Regulation. Hydro will only let more water downstream when the water is too high on Lake Winnipeg.

Post-Compensation
I have not heard of any people catching grayling or trout for three or four years. In fact grayling haven't really been caught since Hydro lowered the water level. Before, the catch prize was a trout because its meat is very tasty.

I think the weir has helped people get back on the river, but fishing has not really improved upstream on the mainstem of the river. Now with the marina and the weir the river is higher and people do have boats out on the river again. Also, the fish in Warkworth Lake are returning.

In the spring and fall people will go fish there. When the river is low the rapids are higher, so fish can't go upstream. This situation would be improved if they got rid of the bridge near the weir because they can't maintain the increased water flow.

Wildlife
I did a little trapping in the past. I used to see lots of caribou, but I don't like their meat much.

I think the caribou numbers are down on the Eastern shore. There has been less hunting there, maybe because of different migration patterns. The Westside of the river has lots of caribou though.

Recreation
In the past the river was a good part of everybody's recreation...it was everybody's river. The population was higher back then, so more people used the river. Even the transient population, like the teachers and nurses would use the river.

Commercial Usage
The Tootoo family did the first whale watching tours in the 1950s. The Chartier's also were in the whale watching business, then Mike Macri started his tours.

Recommendations
The fight for the river against the diversion wasn't cohesive enough and even today the community isn't as unified on the Churchill River issue as it could be.

Marlene Bilenduke

Figure 10. Marlene Bilenduke (photo credit Edye-Rowntree, 2006)

Marlene Bilenduke was born in the Pas, MB and grew up on Jockville Hill, Churchill, MB. She collects antiques and enjoys landscape photography. Marlene also enjoys the vast freedom and outdoor activities that Churchill has to offer.

Frequency of Use
Every weekend we would go upriver if weather permitted, wind was a big factor. We would go out by boat from break-up until freeze up.

My husband, John and I would also go to North River for fishing, and I would go with him to Herriot Creek to fish and tent. We would catch trout when they were running, just after break-up in late May or it could be earlier depending on the year.

In the winter my husband did some trapping around our cabin at Mosquito Point. He would go up on Joe Buck's Ridge and the connecting cut lines to trap as well. In February we did ice fishing near Deer River.

One time, in October 1997 when we were at Deer River ice formed on the bottom of our airboat so we had to bang the ice off to lessen the weight. There was a hundred kilometre an hour wind, when the wind went down we went home and left our nets on a bank until spring.

In the summer we would go further up by airboat to have a bonfire, wiener roast and adventure. That was my favourite time of year to go upriver.

The river has enhanced my quality of life. I'm naturally inquisitive and I like to explore, so the river was great for access to recreation and transportation. With access to an airboat we were able to use the river more. We bought the airboat from a person leaving Churchill. In 1995 we bought a bigger airboat with an airplane engine and retired the old one.

Drinking Water
Because of the diversion the water intake was changed from CR20 to CR30 where the water was deeper and further away from the salt-water. CR20 is very close to our cabin at Goose Creek.

Pre-CRD
Before the diversion we would go up river on weekends, holidays and the long weekends. In spring we would go out to Deer River and see other people on the river and socialize together.

When there was ice on the river people would ski-doo to their cabin and meet other people doing the same thing...relaxing and having a good time.

1976 was a low water year. It was the lowest water level I ever saw at the boat launch near CR20. The water levels fluctuated from year to year. One time my husband and I hit a rock when on the river and broke our prop. We managed to get to an island and were able to flag down...some navy people, who towed us back into town.

There was good fishing around Deer River and good fishing holes close by where we'd catch jackfish, everyone would go there. You could catch big jacks between 12 and 14 pounds.

We once caught a lake trout, which has whiter meat and is not like a brook trout. Usually brook trout are common in North Knife River. We also caught the odd pickerel and one sturgeon. Crosswell River was a good place to go, people dried fish around there long ago.

Cabins

We had a cabin upriver and would go to Deer River to go fishing. The cabin was along the Churchill River up past CR30. I have a trailer at Goose Creek, which was put there after the cabins were burned down by Hydro. Manitoba Hydro bought our cabin in 1977 and gave us compensation. After those cabins were bought out and burned people didn't go upriver as much.

I had a problem with Manitoba Conservation because we put a trailer back up along Goose Creek a year after the other cabins were burned down However, we weren't the only ones to put trailers in the area, so we didn't have any problems after they knew about the other trailers.

We had a trailer at Goose Creek in 1974 and moved out in 1978, then moved back in 1979. We would go there often, it was secluded and we would set nets for jackfish, whitefish, sucker and mariah, which is like a fresh water cod, at Goose Creek.

We built a cabin at Deer River in 1992, but since 1987 we had a tent frame in the same location. It is on an island at Deer River, where it enters the Churchill River.

The marina and weir haven't really brought anything back. You can't build a cabin along the river. You can get a lease to build a mile back from the river but no one wants to do that. We got a lease to build our cabin at Deer River back in 1992, but now you can't do that.

Post-CRD

After the CRD there was very little water left on the sides of the channel of the river, if any. It was a lot harder to navigate upriver in the channel.

You couldn't catch big fish after the CRD. We were able to catch fish off the land before the CRD, but afterwards you couldn't catch any. Before the diversion you could catch a fish every time you went out, however now you can't catch them all the time and the fish you catch are much smaller.

You had to have a permit for subsistence fishing, which we had to catch up to 100 pounds of fish that we'd put in bags and store them for the winter.

In the spring you could go all around the islands close to Deer River because the water was high enough. We went up to Red Head Rapids in 1989 when we first got the airboat. The water was low because of the diversion. We would launch the airboat at CR30 because we'd spend less on gas going upriver.

We went up about 100 miles using the airboat to little Beaver River. On the weekend we would go to Limestone Rapids to catch Trout, the scenery around that area was beautiful.

Now if there's too much water down south they send it up here, which causes a lot of erosion on the banks of the river. In 1997 I noticed that the water was higher than usual.

Commercial Usage
My husband, John started a custom tours/guide service after he retired from his work at the port in 1995, but in 1997 he got sick. He also did work for North/South Consultants, taking people up to Deer River in our airboat to do bird counts.

Another guy, Joe Barron, I understand he got a feasibility grant to start a business on the river. He had an airboat and would take people hunting and touring up river. He had an Ad in a Manitoba Tourist magazine called Barron Land Outfitters.

Wildlife
There are moose around Goose Creek. We shot a moose upriver on three different occasions and you can see caribou across the river, on the westside in late August to late October. There are also quite a few birds around the area, like pine grosbeak whose numbers peak in the spring. Bird watching is best in May, June and July, but not as many people come as before.

Post-Compensation
The water is higher for only four or five miles upriver from the weir, but because of the 35 foot elevation drop from Deer River to the mouth (roughly one foot-one mile) the water won't back up as far as Herriot Creek.

Hydro thought about digging up the bottom of the riverbed to make the water level deeper, but they found that it'd be too expensive and that in the long run because of isostatic rebound it wouldn't be worth it.

For the amount of money spent on the weir and compensation it wasn't worth it, because no one really uses the river anymore. Those that do use the river have an airboat or jetboat that can be used in shallow water.

Recreation
There are more four-wheelers now. You can really access the land with them. Boats are not used as much as they used to be. People can go hunting down Goose Creek road all the way to CR30 with vehicles. Also, some go caribou and moose hunting around Joe Buck's Ridge.

The railway track used to be the borderline for where you could hunt, depending on the season. Now I think the river is the border, this way it's more difficult to hunt in the unlicensed areas. Before, you could have killed a caribou on the other side of the tracks and drag it over to the side where hunting was allowed.

People will fish at the culverts in the Goose Creek area, but there isn't much fishing compared to the time before the diversion. Some locals set nets off the flats to catch arctic char.

Recommendations

I'd sooner see something done to one place so people could access it, such as ensuring people could use Herriot Creek by **dredging** the area. Then the water level would be high enough to go there consistently. This could've been done instead of trying to spend so much money that won't really solve the problem.

Lorraine Brandson

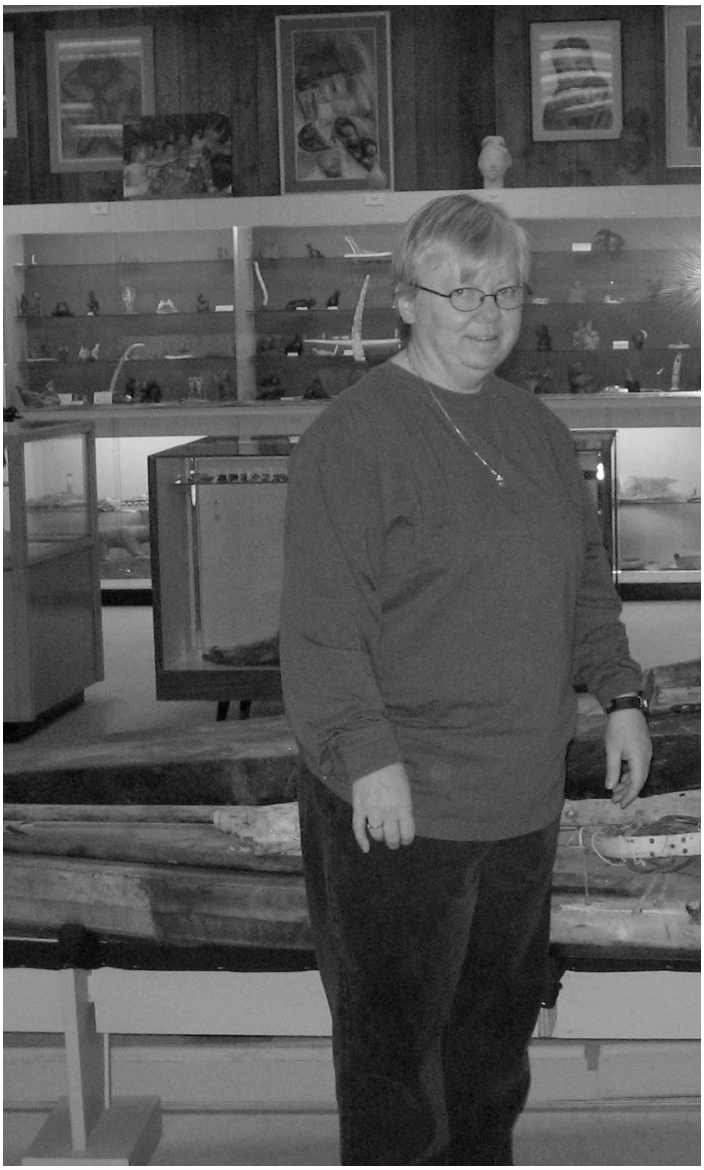

Figure 11. Lorraine Brandson (photo credit Edye-Rowntree, 2005)

Lorraine Brandson moved to Churchill in 1973 after she was offered a job at the Eskimo Museum. She stayed for the job, but grew attached to the area. Lorraine grew up in Winnipeg and Gimli, MB.

Frequency of Usage
In the 1970s I would mostly use the river in the spring and summer, but in winter I would go out about seven or eight times by snowmobile. I would travel to the MacIver cabin at Herriot Creek and go ptarmigan hunting at Goose Creek in the fall. Now, you can hunt snow geese in the spring and can kill even a higher number of snow geese starting on September first, the beginning of hunting season.

Pre-CRD
I would go out on the river in the early 1970s, using the Catholic Church's freighter canoe, often on a Sunday afternoon. I would travel as far as Herriot Creek and the Morrier Islands. Most of the time I travelled by wooden freighter canoe but, I also used a 16 or 17-foot metal Lund. Metal boats are cheaper, but hold less people than the wooden freighters and are less stable.

After the diversion you needed to own an airboat and more specialized flat-bottomed metal canoes to travel the river because of the state of the river. In the past the trappers used the heavier wooden boats, but the water level changed due to the CRD.

I think it was very common for residents to go upriver in the past. You can get away from the town and have the sense of being in the real wilderness. I would see boats at the dock at Goose Creek and people would not need to worry so much about the tide to get on the river.

Before the CRD you didn't have to wait for the tide to access the river. Even in bad weather you would see 10 to 12 boats in the river or trucks by the dock at Goose Creek.

Cabins
There were a number of recreational cabins up the river that you could access from the Goose Creek system. These cabins were a destination point so there was a better chance of people using the upriver area in the past.

With the CRD project Manitoba Hydro bought out the cabins along the river because they could not be accessed anymore.

Drinking Water
Some people say there is too much chlorination added to the town water and that quality of the water has changed for the worse from pre-CRD times to today.

Post-CRD
By the time I arrived in Churchill the CRD planning process was well on its way to completion. Mark Ingebrigtson headed the town group to lobby Hydro for more town consultation, but the CRD project went on. Hydro realized the CRD would affect the flow of the river, but they were not prepared for the water level to drop as much as it did.

After the CRD I couldn't canoe up the river as much, plus I couldn't use Button Bay like other more experienced people because the waves were too big and the tides are difficult to manage. Also it wouldn't be fun for me to try and canoe around there.

I still canoe on the river, departing from the port, but now only two or three times a year and I don't fish as often. In the past, in June I fished for pike and then I cooked them. I also went up the culverts off the river for fishing and canoeing.

Post-Compensation
In the 1970s and 1980s I went by the pumphouse with hip waders to fish, but it's not that easy now. With the weir in place I can use the dock at the marina to take off canoeing, however I have only used it once in the last three years. There seems to be a lot of algae, so it's not as appealing as before.

The weir project did enhance fishing. If you go upriver from the weir with special boats you can access good fishing locations. However, when you are fishing from the culverts it's not as remote a feeling as when we fished in the past right on the river with our freighter canoe. Today you can go up four to five kilometres upriver after the weir.

I believe that the weir didn't specifically open up any new recreational activities that didn't exist prior to the CRD. There are Natural Resources fishing permits now, like there was before, although, Aboriginal People with Status Cards don't need the permits. I think fishing has picked up since the weir project, especially at the second culvert around Goose Creek, where there's a bridge linking the land over the creek. The families of John Bilenduke and Dick Hunter seem to have been the people that continued to find ways to access and use the river.

I went to the open houses, which Hydro organized to talk about compensation. Manitoba Hydro and our Town Council did the best they could. I think outdoor activities were enhanced for some. It was worth the money put in. The marina/picnic areas are not used much. The tower is used by bird watchers and is a destination point, but it only benefits a small number of people. Over the long term there could be more positive benefits when these facilities are used more.

Because of the Mitigation Trust Fund, Churchill has funded a number of local community projects, but it creates acrimony for people who don't success- fully apply for the funds. The money can provide for cultural and recreational activities. So, for the non-profit sector the fund has been positive.

The weir has possibly been a detriment to the Beluga whales, also possibly hurting the estuary by changing the environment. There has to be increased dredging because of the weir for the port to remain safe. The water close to the weir is full of algae and plants. There could be an increase in the silting up of the river. Also, the effects of the weir may not be understood until much later in the future. These detriments could outweigh the achievements of the weir.

Wildlife
Sometimes I will canoe from the lower dock, near the port, to the middle of the river to see the whales. However, I cannot go far because I might not get any help if I get in trouble. In two hours I can paddle about two kilometres of the estuary.

Some changes in the environment that have been noted in the last few years is that the moose population has increased. However, the reasons for this are not completely understood. It could be that southern game is moving north.

Commercial Usage
There was a sports whaling industry on the Churchill River in the 1940s, however it lasted only until 1968 because of a mercury contamination scare. The killing of whales for oils and margarines was stopped and replaced by synthetic oils. Also, alternate meat sources for fox farms were found.

The river has not been used for tourism fishing and hunting very much, since there are other places fairly close to Churchill that attract hunters and fisherman. Dymond Lake has a goose-hunting lodge and there is a lodge on North Knife Lake used for fishing. The demand on the Churchill River has not been there. The major tourism on the river and estuary is whale watching, primarily for the beluga whale.

Recreation
Churchill went through some redevelopment in the early 1970s. At first the military base had all the amenities and the Town of Churchill didn't have many health, social, educational or recreational facilities. There was no running water. But with an active international seaport and more facilities constructed, like the Town Complex and government housing the quality of life in Churchill was improved.

Churchill was lucky to get the facilities they did. The Town Complex provides a hospital, recreational facilities, and a public library, which is considered by many to be the best small library in Manitoba. At one point Churchill had the highest readership of all Manitobans because of the public library and its access for the school kids.

Churchill only received power generation from the CRD project 10 years after it was completed. When Lloyd Axworthy was the Federal Transport Minister in the 1980s there was more government focus on Churchill. He used his influence to get Churchill noticed. There were improvements to the port and the Federal and Provincial governments spent more money on Churchill.

Residents of Churchill have changed their recreational habits. Nowadays there are less people involved in outdoor recreation compared to the past. There still is recreational snowmobiling for eight months of winter. There is an increase in the volume of bingo traffic especially women. You can play bingo at home, on television and the radio, as well as at the Métis hall and Legion.

There is less outdoor physical activity than before. There is the odd person into computers. We have a fiddle club. The population of Churchill has decreased a lot, therefore the opportunity or quality of organized recreation has decreased. There used to be consistent leagues for curling and baseball, but now operating the leagues is a more difficult proposition. However, there are still leagues, now they're mixed teams. Before men's and women's curling or baseball teams were separate.

The economic position of Churchill presently is that there are few new full- time jobs. The port gives most employees only seasonal work. The tourism sector employs many people, but it is mainly seasonal employment. The work isn't consistent and a lot of the jobs are low paying. There haven't been many new families come to live in Churchill. Therefore, new social activities are not generated.

Churchill is probably at its smallest possible size, unless something major happens to destabilize the town further such as the loss of the port, or the loss of the Churchill Health Centre that has 33 beds. Wages are good at the health centre and these are mainly full time jobs. There are around 1,000 people living in Churchill. In the winter there are probably around 800. Without a population of 1,000 to 1,200 people it's hard for a community to maintain its social fabric.

There is always discussion of the port being open longer, increasing the volume of wheat, and or shipping other commodities. With extra ships coming and going there is the possibility of breaking even more often or making profits.

The Churchill River is a very strong reference point for the people of Churchill. People will say "upriver", and everyone knows that means going south on the Churchill River. People also say "across the river", which is on the west peninsula of the Churchill River. Also, the west side of the river is more rugged and natural.

Roy Bukowsky

Figure 12. Roy Bukowsky (photo credit Edye-Rowntree, 2006)

Roy Bukowsky studied at the Saskatchewan Institute of Applied Arts and Sciences in Saskatoon, Saskatchewan. He lived in Churchill from 1976 to 1987 as a Resource Development Specialist. Roy has been a Senior Environmental Specialist with Manitoba Hydro since 1991.

Post-CRD
In the mid seventies the Government of Manitoba determined that a "biological presence" was required in the Churchill area. Four individuals were hired to live and work in Churchill. Steve Kearney (Biologist), Brian Wotton (Conservation Officer), Neil Hickes (Wildlife Technician) and Roy Bukowsky (Resource Development Specialist) took up residence in Churchill in the early spring of 1976. Resource management programs were developed related to polar bear deterrents and tagging, Cape Churchill caribou monitoring, Kaminuriak Barrenground Caribou resource user (Cree, Dene and Inuit) traditional knowledge, waterfowl research, general wildlife resource inventories, public information and education and tourism potential.

With the exception of a regulatory interest in the fishery, not a great deal of emphasis was placed on the Churchill River by the governments of Manitoba or Canada. During the early post Churchill River Diversion years the river became impassable since 60 percent of the water was diverted to the south at Missi Falls on South Indian Lake. Although the river never did return to it's original natural high flows, on occasion, due to heavy rains, local watersheds north of the diversion at Missi Falls contributed large volumes of runoff waters which at least temporarily refilled the Churchill River, making boat travel somewhat easier.

Compensation
Ed Bazlik originated the idea of a weir in the mid 1970's and saw it come to fruition during the 1990's. The infrastructure that was constructed as part of the weir project included a marina to facilitate access to upstream destinations previously utilized as domestic fishing areas and recreational cabin sites.

Although the original cabins were purchased and disposed of by Manitoba Hydro, there is hope of a renewed interest in the use of the river. Manitoba Hydro and the Town of Churchill completed the Lower Churchill River Water Level Enhancement Weir Project (the Project) in late fall, 1998. The Project consisted of a low head, rock-fill weir constructed across the Churchill River just upstream of tidal influence, a marina/wayside park complex, fish passage facilities in the Churchill River mainstem and in Goose Creek and features to enhance fish habitat in a one and a half kilometre long reach of Goose Creek downstream of the weir (Goose Creek Enhancement Reach). Its purpose was to raise water levels in the lower Churchill River and thereby to improve boat access and increase the amount and productivity of fish habitat in the lower reaches of the river. A seven-year monitoring program was competed in 2006 to determine the accuracy of the predictions made in the Environmental Impact Assessment for the Project. A synthesis report will be written which will provide a summary of the scientific data and recreational surveys conducted during the seven-year monitoring period.

Recreation
Travel on the Churchill River was a regular occurrence by many residents of the area during winter months. In most years, access by snow machine was relatively easy and cabin owners along the river (for example the Allen and Bilenduke families) provided the ultimate experience in northern hospitality.

Frequency of Usage

Of the few trips that I did take up the Churchill River, the most memorable was the very first one with a highly esteemed member of the community who became a cherished friend. Jimmy Spence instilled in me, during that trip, and on many other occasions the true meaning of traditional values and respect for the natural environment.

Manford Bussell

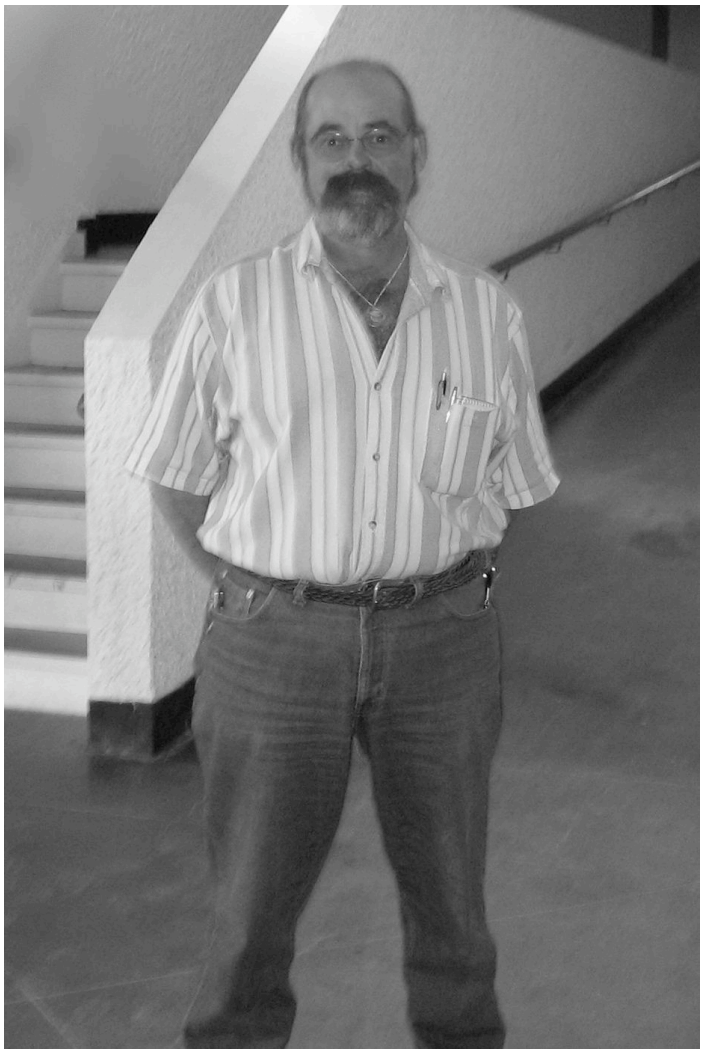

Figure 13. Manford Bussell (Photo credit Edye-Rowntree 2005)

Manford Bussell has lived in Churchill for 40 years. He was born in Hull, PQ. He is the facility manager of the Town Complex where he has worked for 30 years and has spent 18 years as a driver for SeaNorth tours.

Frequency of Usage
Before the CRD I went upriver on weekends and fished at Herriot and Heppell Creek. Usually the furthest I went was Deer River.

I often go snowmobiling in the winter. If I go very far I stay three or four days out of town. I also go on day trips and out for weekends but usually closer distances from home.

On holidays I could go out for a week to two weeks. Sometimes I also went moose hunting or went out with others, like Ernie Welburn who also went moose hunting. I mostly went hunting when I was younger though and usually for game birds.

When I was younger I would catch grayling, and northern pike, big ones too! Also, I caught sea trout and speckled/brook trout. I'll still fish from time to time. I go upriver or use the culverts in Goose Creek in the spring to fish. But in summer the fishing drops off.

I mostly rely on friends to take me out on the river. My father would some- times take my brother and I to Goose Creek. But my mother and father didn't really use the river a lot.

I have also been much further up the river to Hidden Creek, where the river becomes much narrower and the land changes...the fishing is better there. Before the diversion you could canoe there. I even felt that the climate was different around Hidden Creek. The Four's and Mountain Rapids is the furthest we have been up river.

I think the value of recreation is difficult to put a dollar figure to. In hindsight to be able to alter a river that drastically and alter nature that much is unacceptable to the quality of life of the residents and users of the river.

Pre-CRD
I started using the river in 1967, just recreational fishing, from the shore of Goose Creek. Later in the 60s and early 70s I went with Bill Ayotte upriver. The river was a place where one could get away from the town site, just go fishing and relax.

Cabins
Prior to CR30 locals had cottages along the river starting from the end of the road (15 to 20 minutes away from the town) and by snowmobile it took 40 to 50 minutes.

After the Missi Falls Control was put in Hydro bought the cabins and burned them down. Now people go as far as the Marina, very few go further upriver by boat.

Military
There has been a big population change. In the 1950s and 1960s the military was present in the Churchill area. This affected many individuals, their presence and then their leaving. There was some tension between "Camp" and town people at times, which caused problems between Fort Churchill and Churchill. Prior to 1973 the base had water treatment and running water, but the town didn't. So, water quality was different, with a different taste in the spring because of the ice melting.

Post-CRD
After the CRD you could use the river in the spring after the snowmelt. Otherwise we'd have to use an airboat or jetboat to get to Ernie Welburn's cottage, which is 115 kilometres from Churchill by boat.

After the CRD I could see the shoreline where the water used to be. Fishing went down significantly. I think more dredging was needed after the diversion because the flow of the river changed a lot and silting has changed.

Manitoba Hydro didn't fully anticipate the impacts of the CRD, but later there was a gradual understanding about the CRD's effect on the environment.

Post-Compensation
Even now with the weir fishing hasn't drastically improved. There have been some environmental changes from year to year...Now the river level fluctuates, the cabins are gone and the social interaction from the **recreational use** of the river is gone, as well as the sports fishing.

The new marina is used by a handful of people, but hasn't really benefited the people, just like the weir. However, the compensation package has helped, the interest from the mitigation trust fund is used to help fund the boy scouts, girl guides, hockey programs and other community programs.

Now the shorelines and characteristics of the river have changed. It's hard to create more than one weir because the land is very flat, so there would be too much flooding with more than one weir.

It sounds like Manitoba Hydro has come to the determination that the weir won't really work. There may be a salt-water marina built by the Port, which increases the opportunity for people to access the Bay and depend less on the tides for when you can go out and when you can come back into the port. A shift from upper river use to lower river/bay use is in the making.

Wildlife
I also have seen a change in the number of songbirds too. There are more of them now than before, maybe because of chemicals like DDT that were used by the military, or I think it could be climate change too. Caribou migration has also changed.

Commercial Usage
The river wasn't really used for commercial purposes in the past century. It was functional and used for recreational use. Some used traplines along the river.

Recreation
When the Town Complex was built there were 5,000 people in Churchill but it was built to accommodate up to 10,000 people. Now there are between 900 and 1,000 people in Churchill. The tax base is small and the costs are high. Other communities in the north don't have anything like the complex though.

There is less use of the river, but there are more snowmobiles. People now use Hudson Bay and Button Bay for fishing and snowmobiling. Recreation is now dominated by the Town Complex. There is the Internet and modern technology for recreational purposes, as well as a few people into photography and bird watching.

It is easier to be a 'couch potato' now, there are more distractions, but there were still 'couch potatoes' before television. Churchill has more tourism now, it is now more aesthetically pleasing and also people are more entrepreneurial.

Other popular recreational uses of the river would be to go upstream and go camping and have barbeques. Some people canoed from South Indian Lake down to Churchill, but now you can't do that because the water is gone. I think there's about the same number of people who would use the river, but a few people who are fishing around Churchill now often use Button Bay.

Chris Campbell

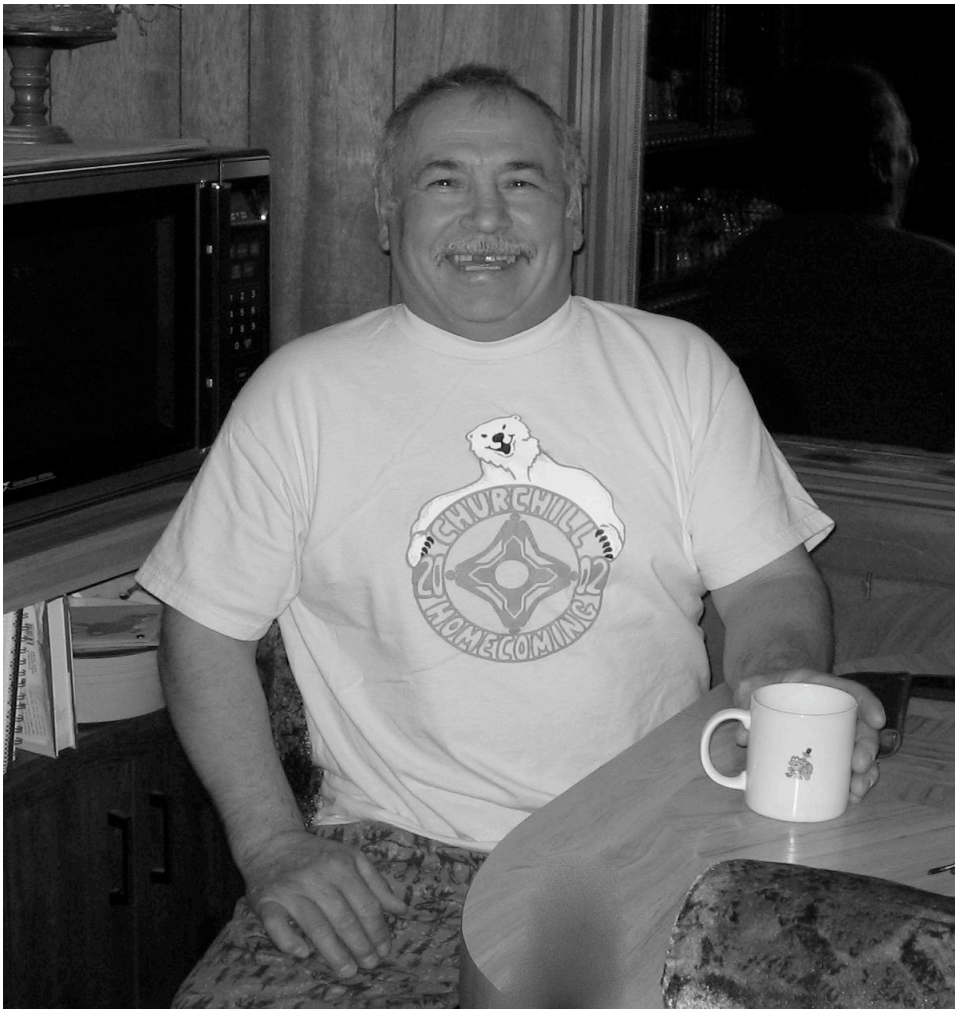

Figure 14. Chris Campbell (photo credit Edye-Rowntree, 2006)

Chris Campbell first arrived in Churchill in 1966. He was born in Winnipegosis, Manitoba, but moved to Churchill, where many of his family members live. He has worked for the Town of Churchill for 18 years.

Frequency of Use
I used the river all year round. Sonny Voisey had a cabin across from Herriot Creek by the Thibaudeau Islands, so we would go right to the islands without the need to pack because we had a place to stay and supplies were already there. Now you have to pack because of the diversion. There are no places to stay and it is more expensive to go upriver using jetboat or airboat.

Nowadays if you don't have an airboat or jetboat you might have to walk with your boat upriver. Five years ago I had to walk up the river because it was too shallow to use a prop.

I went out on the river with a number of different people, Sonny Voisey, Jack and Paul Batstone, as well as Charlie Schweder. They taught me how to travel upriver and I also went out with Maurice Morand, Bill Ayotte, Arnold Browner, as well as Lee and Danny Allen. I once stayed upriver for a week with Paul Batstone and Sonny Voisey around Fishing Creek. We also travelled into Herriot Creek as well, but now you can't do that because there are too many rocks and the water level is too low.

Pre-CRD
The furthest I went by boat was Limestone Rapids. There was a lot of water there in the past. At one time you would leave from where the whaling plant was, about three-quarters of a mile from the town and you would have to wait for high tide to go up the channel. After CR20 the river was deep all the way upriver.

I would go out to Fishing Creek and Little Cove by the Thibaudeau Islands to do my fishing, as well as around all the creeks and smaller rivers that went into the Churchill River.

Cabins
I never built a cabin, but we would visit many people along the river or they would let us use their cabins when we went out on the river. My wife and I would travel upriver together and see people along the way.

Last year the water rose so high the cabins were flooded, even the ones that were really far away from the river...but I think last year was a bit of a fluke.

Post-CRD
At times after the diversion I could walk across the river. You couldn't get into Herriot Creek or Fishing Creek because the water was so low, some creeks even dried up. Now we have to rely on rain and the water from other creeks and rivers that flow into the once mighty Churchill River. If there is little rain in the area the Churchill will be dry and you have to walk upstream in places.

My wife and I could only be guaranteed to go out once in the spring when the ice melt created high water levels and in the fall we could go once or twice depending on the year. In spring the Churchill used to be as much as two miles wide, but after diversion the river

was usually quite narrow and still is today...at least further upriver from the re-watered area. The tide from the Bay used to reach up to around CR20, but after the diversion it would go about as far as a mile past where the weir is now. The water coming downstream changed after the diversion. It's dirtier than it was, partly because there is usually much less water and it brings down so much dirt from the south.

You could catch jackfish between 20 and 25 pounds before the diversion, now the jackfish are much smaller and not in the best shape. Also you could catch 40 to 50 jackfish when you went out before the CRD, but now you can catch only a few.

Now you sometimes see scabs on the sides of fish too, I think Fisheries should do chemical tests on the fish to check for contamination. Before the CRD I would drink the water out of the river at any place, but now the water can be dirty. It's the worst when the water level is very low.

There was definitely more fishing before the diversion, but after diversion I think hunting was a little better.

These days I will use North Knife River to catch fish, but before the diversion I didn't have to go anywhere other than along the Churchill River to catch fish.

Post-Compensation
Because there was so much rain from the south in the last two years Hydro let more water downstream, so you could go upriver using a prop because there was lots of water.

Because of the high water levels in the last two years I have been able to go out moose and caribou hunting and fishing.

Last year the river got shallow in October, but then Hydro let more water downstream on top of the ice...this caused water damage to cabins that were a quarter of a mile inland, as well as knocked land off the banks, so the river wasn't safe.

I needed to use an auger last year to get into the river to ice-fish. You are now lucky to see two or three flocks of geese coming from the Thibadeau Islands when you go by, before there were many more geese that would take flight, as you would go by the islands. Maybe it's because the water is less clear and the birds can't see down into the river to catch the fish.

The mitigation fund is good for the trappers. If their equipment breaks they will get it paid for by Hydro, but what about the leisure craft users? The mitigation fund has also helped the community, but it hasn't helped many users of the river.

Recently they are talking about getting a marina between the flats and the harbour. This would help for access to the Bay or mouth of the river, but not as much for getting upriver. I think they need to clean the marina area of rocks too. The ice moves rocks around a lot in the spring ice break-up. This year I hit a rock going out from the marina with my boat.

Wildlife
There are a few young people that use the river, like Davy Lundie and Jason McCullough. They may start a hunting lodge because there's so many moose around. The numbers of moose are so high because of all the willows on the side of the river. The caribou are also thriving right now and there have been more black bears. However, they are a nuisance for cabin owners. I think there are more wolves around as well because there are more moose.

I taught Davy and Jason about the river channel and how to follow it to go upriver just like I was taught when I started. It takes them a lot less time to go upriver now, about 45 minutes, than it did when they started.

There are not as many geese as before though and I think they should do more testing on the ducks to see if they are healthy or not.

There are more seals around the river than before, so there must be some fish around the mouth of the river in the winter. There may be new places that the fish are going, but we don't really know where they are.

Commercial Usage
Joe Barron tried to do guided tours a little ways upriver river after the diversion using a jetboat. He hired me to be a part of some of the walking tours. The tours were designed to show people the land, vegetation and to do wildlife watching.

Recreation
The numbers of people on the river has gone down a lot over time. Before the diversion so many people would go up boating, fishing and hunting.

Even in the winter it is difficult to ski-doo upriver because there are more rocks on the sides of the river with less water. After the cabins were burned down by Hydro there is no place to travel to and that makes recreation more difficult too.

Recommendations
My ice-fishing shack was knocked over last year because Hydro increased the water level upriver. If you could predict the time when the water level would go up more accurately then people would be able to move their shack or other things onto Islands or off river so it wouldn't get destroyed. I think they should improve the compensation plan. Everybody that has a boat registered to the local office should be able to get some compensation for damage to their motor or boat.

Bonnie Chartier

Figure 15. Bonnie Chartier (photo credit Edye-Rowntree, 2006)

Bonnie Chartier was born in Churchill, MB. She is a naturalist and a guide for Churchill Wilderness Encounter, which she has owned and operated since 1976. Bonnie moved to Gimli, MB in 2001, where she owns a gift shop called B's Nest.

Frequency of Use
My father used the river a lot. I remember going upriver with my brothers and my Dad on fishing trips. He used to catch sturgeon by the top half of Governor Island.

We used the river all year round, from boating in the summer to snowmobiling in the winter. As soon as the river thawed we'd be out boating on the river and also snowmobiling upriver when possible in the fall and winter. We went to the cabin most weekends during the year, but depending on the year we may have missed about six weeks in the fall and spring due to ice either freezing or thawing on the river.

Cabins
In around 1968 we built a cabin along the river. It was a pre-fab building that we added onto a few years later.

The cabin we had was on the west bank of the Churchill River, about two miles north of Herriot Creek. The cabin was between Danny Allen's and Ernie Welburn's. Our cabin was often full of people, some people would sleep on the floor and sometimes people would tent outside the cabin. However, it was difficult because the ground was quite wet around the riverbank.

The cabin was our place of recreation. We used it all the time, in every season. For example every year we went there for spring break and we'd also take the girls out of school on Thursday and take them back on Tuesday for the Easter holiday. It was a great place to raise kids.

We didn't sell our cabin to Hydro right away and in hindsight we probably could have kept it there. Instead we went to Warkworth Lake and built a cabin out there, close to Goose Creek. Some of our old cabin was built onto the new one.

Pre-CRD
We did a variety of activities on the river, from boating, fishing, camping, snowmobiling and hunting. We'd often go up the creeks that flowed into the Churchill River looking for new places to explore. I went as far as Red Head Rapids, on a camping trip. It was very pretty in the springtime. I saw my first black bear at Red Head Rapids and it was chasing a polar bear. They were both about the same size.

In the spring before the CRD there were parties in the cabins upriver. We would have snowball fights when the snow was wet enough while driving our snowmobiles on the river. I remember having sore arm muscles the next day from all the snowballs I threw.

In the fall of the early 1970s we drove our trucks upriver to get to our cabins. This was before the snow was too deep and the ice was thick enough to drive over. The trucks didn't even have four-wheel drive, but we managed to get there and back.

Before the diversion there were hundreds of tundra swans and many ducks, but after the diversion their numbers declined drastically. They lost their nesting habitat as the river dried up and there was a lot of mud where the river used to be. However, the numbers of swans and ducks has been in- creasing because of the abundance of vegetation growing on the shoreline.

The shoreline is bigger now because the CRD reduced the flow and thus the width of the channel.

We had three hovercrafts, one big and two smaller ones that we used to travel on the river. We couldn't really use them after the diversion because the flow on the river was reduced so much.

The flow resembled that of a little creek instead of a real river after the diversion. You couldn't go boating up river because of the low water level and there were too many rocks that could damage your boat and motor.

Drinking Water
The quality of the water changed after the diversion. I noticed that the water was browner than before, which is probably because there was less water coming down the river.

Water quality also depends on how much rain we get coming down from the south. If there's more rain and fires in the south then the water is usually dirtier because there isn't enough water downstream to clean it out. Also, forest fires can cause an increase in the amount of debris in the river.

Post-CRD
After the diversion there wasn't much recreation on the river, especially for the first few years in the wintertime because of Manitoba Hydro's warnings about the dangerous ice conditions. They said that it was dangerous to travel on because of air pockets below the ice. So, many people were nervous about travelling on the river. However, after a while people did start to go back. Bill Ayotte, Glen McEwan, my brother Jack Batstone, Ernie Welburn and others.

Some people moved out to Warkworth Lake for their recreation, but it was much more difficult to access than the Churchill River, especially in the summer. You had to use many different paths to get to Warkworth Lake during the summer. Many people were afraid to travel out there because it was more remote and not easy to get to. In winter it was used more because it was easier to access...This was before people travelled with GIS.

The river was accessible in the winter, but in the summer very few people could boat on the river.

Post-Compensation
The weir caused the water to be backed up, which has helped people access the river more than the time after the diversion. So, recreation has increased a little, but people are still trying to see where they can go and what they can do on the river now that the weir is in place.

It costs a lot of money to do repairs on your motor and there are many rocks and shallow areas that can give boaters problems.
I think it is too soon to know the full effects of the weir on the surrounding flora and fauna.

I did bird counting for Manitoba Hydro from 2002 to 2004 in the summertime. The area we did the count was from the town to CR30. In hindsight we should have gone out every week and up and down both sides of the river.

Wildlife
I have noticed that there has been an increase in the number of black bears over time, but the number of polar bears around the river area has stayed about the same. The numbers of caribou on the westside of the river increased in the 1990s and the number of pine marten seem to have increased as well.

Commercial Usage
I began to get involved in tourism around the time the diversion was being finished. We really only used the river for one year for tourism purposes after that we moved on to land-based wildlife watching.

I did and still use the river for bird watching tours. After the compensation package there were three access points for bird watching, at CR30, at the marina-lookout tower, and at the weir. Before that there was only Goose Creek as an access point. The tours that are most popular go from the end of May to the end of June to try and see the ross's gull. Ross's gull watching started after 1982 and bird watching numbers have increased, also probably because of advertising.

In 2005 when the water levels rose so high it was almost impossible to see any birds because a lot of the nesting habitat was flooded. It is often hard to tell where birds have gone because of the terrain. It is difficult to access a variety of locations.

I think prior to the diversion there was some domestic fishing on the river and in Goose Creek. Also, Dave Daley has been trying to do tours up river.

Recreation
The type of recreation hasn't changed much over time. However, access to these activities has changed because you couldn't use the river in the same way after the diversion...especially for boating in the summer.

The river was our recreation, we could have done other activities, but we chose to centre our attention on the river. We often had a net in the river and angled for fish. Most of the time we caught jackfish and sometimes grayling, but I much preferred to eat jackfish. The guys would go trapping in the winter and there was hunting in the fall...our lives revolved around the river.

The population of Churchill has decreased a lot, it's probably around a third of the size it was in the early 1970s.

Recommendations
More access points for bird watching would be positive for bird watchers.

Dave Daley

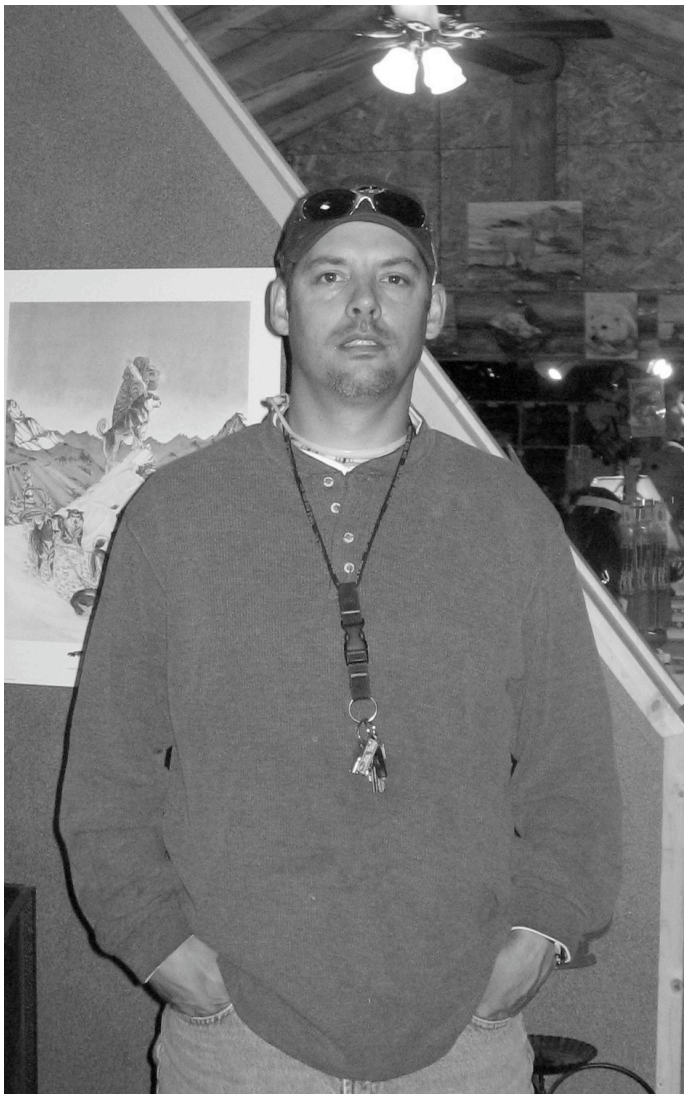

Figure 16. Dave Daley (Photo credit Edye-Rowntree 2005)

Dave Daley was born in 1963 and grew up in Churchill, MB. He currently works for Calm Air as an aircraft mechanic. He now owns a family store in Churchill and provides dog team tours, as well as tours up the Churchill River.

Frequency of Usage
I use the river all year round. In the spring I use it for fishing...I would catch sucker, but now there are not many left. In the summer I camp and go boating. In the winter I go ski-dooing and hunting and in the fall I go moose hunting from August to September. However, this year [2005] because the river is high there is no shoreline, so it's difficult to spot moose.

From Churchill to Deer River it takes 10 gallons of gasoline. Therefore, I need a purpose to go boating...otherwise it is just too expensive. In spring I often go bird watching and in a normal year I will also go fishing. However, it depends on the environmental conditions.

I think there aren't even 50 people who use the river in the winter by snowmobile. There is too much jumble ice to use the river with your snowmobile. People use the North River instead for moose hunting.

Pre-CRD
When I was younger I would canoe down the Deer River. Before the CRD there were a variety of fish upriver. Arctic grayling were lost within the first few years after the CRD. The numbers of trout and whitefish also declined considerably.

I didn't really see the Churchill River before the CRD. My generation does not really remember. The generation before me, like Clifford Paddock, felt the effects of the CRD worse than I did. Generations after me will understand the situation even less.

Post-CRD
I would use the river in the same way if there were no CRD. I was quite young when the river was diverted. Before the CRD it was easier to go upriver. Many people could afford to use the river too. A simple metal Lund boat costs 8,000 dollars, whereas a jetboat costs around 40,000 dollars. An airboat costs a lot of money too. The cost of my airboat for six years was about 30,000 dollars, but I do my own repairs.

Post-Compensation
I helped build the weir with my airboat. There are only a few people that have boats you can use on the river, so use of the river is limited. I think there are only a handful of people who use the river. There's Greg Lundie and Rob Mollard in the fall. Also, Ernie Welburn and Jack Batstone use the river throughout the year.

In low water years Hydro does not release enough water in the fall, so if the river freezes to the bottom in the winter it will kill the fish...that could be why the numbers of fish are declining.

The amount of water and quality of water depends on the year. It's either feast or famine. In 2005 the water was dirty and high, but it was easy to get upriver. The quality of the water is very inconsistent, depending on the amount of water. In 2005 the water may

have been at its highest level since the CRD. Depending on the year the water is either too low or too high. In 2006 the water was not as high as in 2005, but the marina was almost flooded again like it was in 2005.

The weir has raised the intake levels for the pumphouse at CR30 and it has probably increased the number of boats somewhat, but it's really the same people who are using the river.

The weir has reduced the numbers of fish on top of the decrease in fish numbers because of the CRD. The marina area gives the pretense of making the situation look better. The locals can use the picnic area, but the river has become a big weedy lake behind the weir. From the CR30 and upriver there are very few fish.

I don't think you can replace what has been lost. The effort was and is there, at least there was an attempt at restitution.

Wildlife
I was involved in the bird censuses. I did that up to two years ago with Bonnie Chartier. She was the counter and I used my boat to get us around.

Every year there are changes. It depends where the birds can nest. The wildlife comes from the south. I have seen caribou, moose, and polar bears and there has been a decline in the number of birds over the years.

Commercial Usage
My main use of the river is for recreation. However, I also take tourists out on the river. I used to trap too, but I have a full time job.

I am still one of the few commercial operators on the Churchill River. John Bilenduke used to share the bird census detail with me. John was a tourist operator on the river too. Recently, I have had to buy dry commercial dog food rather than catch fish in the river to feed my dogs because there aren't enough fish in the river. Even in the post-CRD, early 1990s you could dip-net suckers, but now when you go down there with a headlamp and use a dip-net you can't even find one sucker.

Recreation
Aboriginal people lost a lot. They would go to Herriot Creek pre-CRD, but they do not have the equipment to get there now. The River can only be used for two weeks in spring thaw with an outboard motor.

You have to have the right equipment to use the river and that equipment is expensive. In 2003 I could not use my jetboat and a jetboat only needs around five inches of water to travel on.

Recommendations
I believe there should be a road from Churchill to Deer River. This would help increase the numbers of people who would like to use the Churchill River and surrounding area for recreation. Even at Deer River the water is not always high enough to go out on, but it's a useful area to go berry picking. Not many people ever went further upriver than Deer River.

Manitoba Hydro only do fish counts by the weir. I think they should be doing more regarding the numbers of fish in the river. There should be more fish counts and in a variety of places, such as further upriver. There used to be suckers and whitefish there. Where did they go?

Hydro needs to take the time to listen to the people who use the river the most, as well as talk to the long-term residents who used the river and have a good understanding of the river's history.

Parker Fitzpatrick

Figure 17. Parker Fitzpatrick (Photo credit Edye-Rowntree 2006)

Parker Fitzpatrick was born in 1963 in Carmen, Manitoba. He has worked for Manitoba Hydro since 1982 and has lived in Churchill since 1992. Parker started trapping in the Churchill area when he first arrived. Trapping has been a life-long activity for him.

Frequency of Use
I have used the river since 1992 and use it in all seasons. Originally I hunted and trapped around Goose Creek, Ritchie Lake and the Mast River. Now I go to the Condie Lake area and the South Knife River Lake area. I use the Churchill River as a travel route to get to my trapline.

In the summer I use the river as a fishing route and I visit my friends at the their cabins along the river.

In the spring I use the river to access my place and in the fall after the freeze up I use it for Moose hunting. In winter I use the river for access to my traplines and this is when I use it the most.

I see moose, caribou, wolves and wolverines along the river. I trap for profit I make on selling the furs and go hunting for the food the animals provide. The price of fur goes up and down depending on the demand.

I have a jetboat with an outboard jet-drive and I use this from June until October. In the summer I go whale watching with friends and family. My children and I go water-skiing in the river in the summer. I use a snowmobile the rest of the year, from around December first to May first.

My use of the river has changed over time. Now there is a trail overland to my trapline, which is shorter than going upriver. But, if I use the river I get to visit my friends along the way. In the fall I go Moose hunting and I use the river to hunt in the winter...if the river is accessible as a travel route for winter hunting.

I usually go to my trapline and hunt by myself, but I sometimes go hunting with Ernie Welburn. I go hunting and trapping more than I go fishing.

There are four registered trappers that I know of, Jack Batstone, Ernie Welburn, Grant Fredlund and myself.

Drinking Water
There are natural changes in the quality of water. Examples include forest fires and dark black water, ‘tea water’ from the tundra. There are natural fluctuations in quality of water, in high water years the water is dirtier.

Post-CRD
In winter the river is now accessible past Deer River, but before the CRD it wasn’t really because of the high water level. The high water level caused ice jams and pile-ups that were too difficult to get through.

There were seven traplines along the Churchill River that were affected by the diversion. Also, there were around 20 cabins before the CRD, but most of the originals are gone.

Post-Compensation
The river wasn't like it used to be, but I wasn't here to experience that. Nowadays people do use the river for fishing.

The river is often very shallow. You need a jetboat to access the river, but if you could access the river with an outboard motor there would be a lot more people from town using the river.

Last year was a record year for water flows that made the river inaccessible in winter because the ice was so rough. This year the flow was down a little bit, there weren't as many dramatic changes this year...the water level was okay. I have been here 14 or 15 years now and in that time the river has been inaccessible twice, in 2005 and I think in the winter of 1997-1998.

The weir has not performed in the way it was expected to. It was built to create a recreation area, a lake 10 kilometres long behind the weir. The weir was supposed to re-generate trout, grayling and other target species to bring back fishing and recreation. Cabins in the area would bring access to the river for every season.

Manitoba Hydro gave the current trappers compensation, but it is 'grand- fathered' so if the traplines change hands Manitoba Hydro will not compensate the new trappers. The compensation program for the trappers is very good, there is helicopter access in the spring and fall and there were retroactive damage claims and an interim damage claim program, but to get compensation your trapline must be on the river and mine isn't.

This year I took a 16-foot Manitoba Hydro boat from the marina and almost knocked out the motor because of a rock in the main channel. Hydro paid for the damages, but if I didn't work for Hydro there would have been no compensation.

Everything is expensive in Churchill, for example to take your kids out of town for recreational activities. So, there is a need for more money to provide infrastructure. The biggest benefits of the compensation package are the funds that were made available to the town through the mitigation trust fund.

I think Manitoba Hydro has done some good by having an on-going presence in town as a good corporate citizen. For example Hydro sponsors the Hudson Bay Quest, which is a dog-sled race from Churchill to Arviat and they provide funding for Winter-fest, a winter festival in the Town of Churchill, as well as other unseen contributions and support to different projects.

In hindsight I think Hydro should have got rid of the boulders on the dried up parts of the river before they started the re-watering process, that way boating would have been safer when the water levels rose and covered up the boulders. Now you have to be very careful going upriver because there is a boulder field hidden just under the water, on the sides of the channel.

Wildlife
The fish are pretty much gone, except for a few jackfish around Goose Creek. The odd person might catch a grayling or pickerel. I have gone out with North/South Consultants and fished close to Herriot Creek to catch pickerel, but there aren't many.

The marine animals I see around the river are beaver, muskrat and mink. After the CRD there was better moose and wolf habitat. The flow of the river is a major influence in where the fish will be. Fish get washed downstream from Missi Falls when Hydro lets the water out.

Commercial Usage
People go out to watch whales in the summer around the mouth of the river. Dave Daley also would take people upriver to go bird watching, however if Manitoba Hydro doesn't let enough water through Missi Falls you can't go upriver.

Recreation
There is a community area trapline where people from town go out for the weekend. I spend six or seven weeks trapping, often on holidays. I have about three or four times the number of traps than the community trapline.

The river is important for access to moose hunting and for recreation. I take my kids upriver for snowmobiling, ice-fishing, water-skiing and tobogganing.
There are now less people out on the land. There are really just a handful of people who use the land. I think this is because of a change in culture, but four-wheelers and snowmobiles are popular.

Most people use around a 20-mile radius around Churchill for their recreation, mostly using four-wheelers and snowmobiles. If the river was accessible and there was an increase in fish numbers there would be a lot more people out on the river.

The stories of how people lived and used the river in the past are much different from today.

Recommendations
There is currently a community group looking at the possibility of a salt- water marina, which would create more access to the river. Possibly giving more time to get out on the river with less need to wait for the tide. The marina may give 24 hour access to the river. It may also bring more people from the North into Churchill because the port would be more accessible. The marina wouldn't change the use of the river upstream though. If there was a possibility of building dykes to ensure water levels were above the weir it would help to keep water levels high, but this would be an expensive project.

George Hickes

Figure 18. George Hickes (Photo credit Edye-Rowntree 2006)

George Hickes was born in the Northwest Territories, which is now part of Nunavut. He grew up in Churchill and is part of the Hickes-Tootoo family. He is currently the speaker of the Manitoba Legislative Assembly and has been the MLA member for Point Douglas since 1990.

Frequency of Use
I started using the river when I was about 10 years old. In the late 1980s I stopped going upriver. I didn't see the river much after the diversion. I left Churchill around the same time as the Churchill River Diversion in 1976. However, I went back and forth between Churchill and Winnipeg from 1976 and on.

We used the river around Herriot and Fishing Creek for hunting and fishing. We used the river from the Flats for drinking water and set nets there to catch fish to feed the dogs. Also, it provided food for my family as well. Mostly we caught jackfish, cisco and whitefish in the nets. It was rare to catch arctic char along the Flats. We used the Churchill River from the mouth of the river all the way upstream to Deer River.

We used the river more in the spring, summer and fall and not too often in the winter. In the winter we would use it for ski-dooing up the river. We used the river most often in the summertime. We would go to Fishing Creek and Herriot Creek to catch jackfish.

We would use the river for fishing or hunting, it all depended on the season. We would go goose hunting in the fall and in the summer we would go fishing. We would sometimes go caribou hunting in the wintertime. The river allowed us to get out on land in the winter.

In winter the river would be used for transportation, for crossing to hunt ptarmigan or caribou or to haul ice for water. My favourite time to use the river was in the summer for hunting and fishing. However, we didn't go out for recreational purposes. We went out on the river to put food on the table.

The length of the boating season depended on when the ice would break- up. It varied from year to year. We usually got out on the river in June and went out until the end of September. September first is the start of hunting season.

The time we spent per trip depended on how much time we had available to go upriver. Sometimes we would go out for the day, but then on long holidays we'd go up for a longer time, or stay upriver for the weekend. We pitched a tent when we stayed overnight.

The tides would impact the river up to around Mosquito Point. On the Flats you really had to watch for the tide. When we went fishing or hunting upriver we wouldn't stay too close to the river because of the insects in the summer and also because of the tide. The insects were really bad in July and August and depending on the day and where you were the insects could be really vicious.

We used the river everyday because we lived on the Flats. We lived close to the old whaling plant, so we would kill the whales to sell to the plant. Also, nets were set to catch fish for our dogs and to provide for our family. In the winter we would go out on the river to chop ice for our water, so when we lived down there we used the river all the time. Later, my brothers and I were into the whale capture business.

Beluga Whale Capture
I did the whale capture for years with my brother John. The amount of work we got depended on the year. Some years there were more captures than others. John was the owner of Nanuk Enterprises, he got the contracts for the whale captures and I was a jumper for him. Whenever he had contracts we'd go out, some years there were none and other years there were three or four...you never knew.

I think the whale captures were very exciting, especially with the media attention, at times there were television crews that would film the captures. The last capture was around 1993 and that was the only one I didn't participate in.

The Capture
First you'd chase the whales down and catch them. You'd catch them by jumping on them from the water and fling a rope around their head to control them. Another person would grab the tail and the others would pile in and help you get a hold of the whale. It took a team effort to make it work. I did the capture for around 25 to 30 years.

Community Usage
A lot of people used the river for subsistence purposes when I was using the river. Most people today would use the river for recreation. Not too many people have dog teams anymore, so there aren't a lot of dogs to feed. Some people would have used the river for their recreation in the past, like the DPW employees, the military personnel and their families before the diversion.

Cabins
There were very few cabins upriver in the past, only trapper cabins. Now there are recreational cabins where people go upriver for the weekend. However, in those days there were mostly only trapper cabins. So, we'd pitch our own tent when staying overnight upriver.

Change in Use
The Churchill River was very important to my family because we used it to feed our dogs and ourselves. It was also where we got our drinking water.

When I got older I lived in town, so I went on the river more for recreation then and less for subsistence. Often as people got older they would move into town from the Flats.

Many factors played into the decision when moving from the Flats into town.
In town I didn't depend on the river as much, because we had amenities. Before, on the Flats we had an outhouse and we had to haul water, so I relied on the river much more when I was younger.

We would catch jackfish, cisco, whitefish, arctic grayling and occasionally arctic char. Char is the best tasting among them. I hunted caribou once in a while but went out hunting often for ducks and geese. I didn't hunt moose because they weren't available close to the river. You had to go further into the bush to kill them.

I worked out at camp (Fort Churchill) for a while. After the military left many people worked for the Department of Public Works...in fact many people worked for the DPW at some point.

Not a lot of people can afford jetboats, so it was very difficult for people to get upriver. I'm glad they built the weir, so people can utilize the river a lot more than what they could have without the weir, which is great to see because people still like to go up fishing and hunting.

Dick Hunter

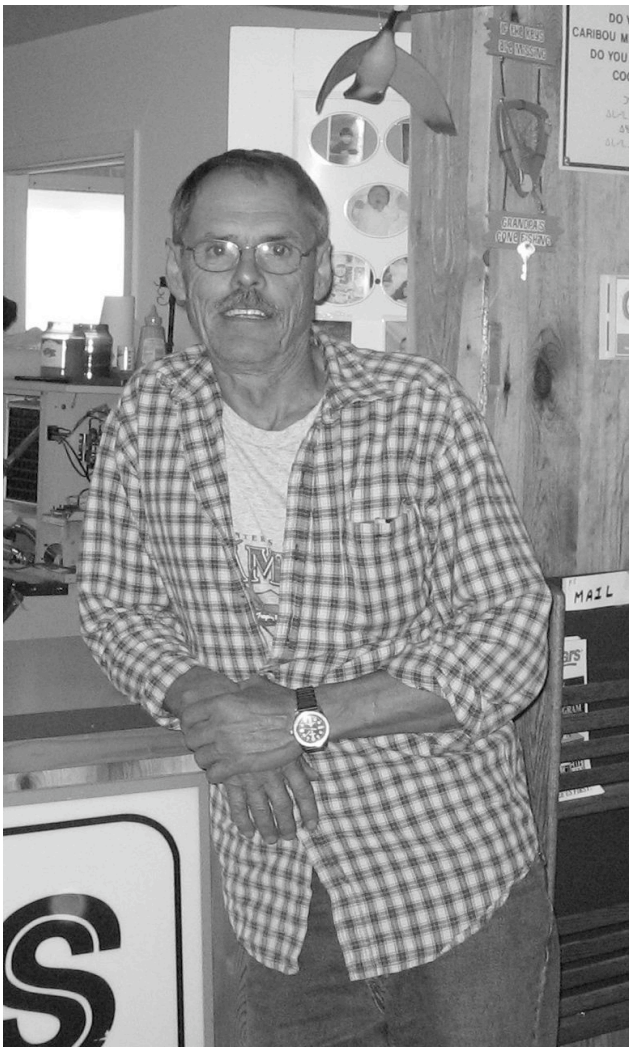

Figure 19. Dick Hunter (Photo credit Edye-Rowntree 2005)

Dick Hunter was born in 1948, in Peterborough, Ontario, but moved to Churchill in July 1973. He owns the Iceberg Inn and manages the Sears outlet for Churchill and the Kivalliq region of Nunavut.

Frequency of Usage
I would go to Deer River with family and friends on a Sunday and then drift down the river back to Churchill. It took around 12 hours to get back. We would catch grayling, but it was more about the recreation and having a good time.

You have to eat grayling right away because they don't taste good later. Their meat softens up and gets mushy the longer you wait to cook them. I would often go fly-fishing for grayling with my friend. We would fish from Goose Creek to Herriot Creek and at other times in Warkworth Lake.

I have tried to go ice fishing on the river for the last three or four years, but when I can find holes there aren't enough fish. I have been up to Hidden Creek with Ernie Welburn. There were six of us that time and we split the gas money.

Pre-CRD
Before the CRD I would use the river all year round, boating in my Lund in the summer and ski-dooing in the winter.

I would be able to go out for a total of three months a year before the diversion because it was possible to do so on the river, unlike going out on Hudson or Button Bay.

May long weekend I would go to Herriot Creek and I also went up for three weeks in the summer for fishing. When I was out fishing I would catch a few different kinds of fish, like jackfish, grayling, trout, sucker and even a few mariah, also known as burbot. We would make the suckers into paddies and suckers were also used for trapping bait, as well as dog food.

September first is when I started hunting and when the freezing weather often begins in Churchill. Also, my kids would go camping and swimming along the river in the past.

Cabins
I am still an outdoorsman. I have a cabin on Button Bay. The frequency of my trips has declined because I don't catch as many fish. So it's not as rewarding and you feel the bugs more than before when there were more fish.

Before the CRD there were around 15 to 25 cabins between the town and Deer River, but now there are only about six cabins.

Post-CRD
I have only gone fishing, using an outboard motor, one time on the river since the CRD. I broke a prop and never really used the river after that.

After the CRD in 1977 or 1978 people stopped using the river. Some tried using jetboats and there were six or seven airboats, but they would still bang against rocks. The river looked like it was dry.

Post-Compensation
Now you have to use an airboat to go upriver consistently. With the weir the river is still quite inaccessible.

The 25 million dollar weir does more for water intake than for recreational activity. The weir gets washed away every year, especially high water years. So upkeep is very expensive.

The most important part of the river for Churchill users is up to Governor Island, however the re-watered area only goes one or two miles past the CR30 pumphouse. So, the weir didn't make enough water available for the people.

The water level fluctuates more now. Some years there is less water and other years there is more, 2005 was a high year. It's hard to use the river for that reason. The water is very dirty when the water is high, like in 2005 when you couldn't even see 10 feet below the surface. That's bad for whale watching.

2006 was another high water year but not as high as 2005. It took my son-in-law and I two and a half hours to go up to Deer River on a summer weekend. We caught jacks, but the water was dirty. It took us about one hour to get back and we never hit a rock...the water level was quite high.

The Churchill River is very wide, two miles in some parts. There are too many rocks though, so my boat cannot get through the channel.

The possibility of having two weirs to hold the river back could make the river more usable further upstream. Three weirs were once looked at as a possibility but it wasn't part of the compensation.

For 25 miles around Churchill there isn't a lake deep enough for fish enhancement. The westside of the river has brook trout in a rock quarry that was part of the compensation package.

After the weir, Hydro will fly up fuel and supplies for the registered trappers, like Jack Batstone and Ernie Welburn.

Sucker, trout and grayling are gone and there are only a few pickerel in the river. I think from 1973 to 1976 there was 95 percent capacity of fish, now there is only 20 percent.

Wildlife
In 2005 there were fish-flies from the south, maybe because there was so much water or maybe because of climate change. I haven't seen them around Churchill before.

One good thing about the CRD is that you can hunt moose more easily. They have to come into the open more to get to the river. In 2006 I caught a moose close to Deer River. Moose hunting is good around the Willow Islands. There are also many birds along the river and I have seen polar bears as far south as Governor Island.

Recreation
I now use Hudson Bay, but it's harder...hit and miss because of the weather and the tides. Not many people use the river now, but there are still four or five trappers around. They go out in the winter. I can't get upriver though, I don't have an airboat or jetboat, they're too expensive. So, I use the Bay area where I catch arctic char.

We could use Goose Creek for two weeks in the spring for fishing and catch jackfish. I put on a fishing derby in the spring of 2005 and 2006. Most of the prizes went to the kids. Children 12 and under entered for free and the money raised went to local charities. This year we had 75 people come out.

The jackfish in the Churchill taste really good because the cold water keeps their meat firm, unlike the jack down south. Most of the time there is less camping and fishing along the river than before.

Recommendations
We have to pay a lot for water, which should be reduced. Also a road could be put in that goes from Churchill to Deer River.

Hydro won't replace most people's equipment, just registered trappers on the river. I think there should be some kind of compensation program for all users of the river.

Mark Ingebrigtson

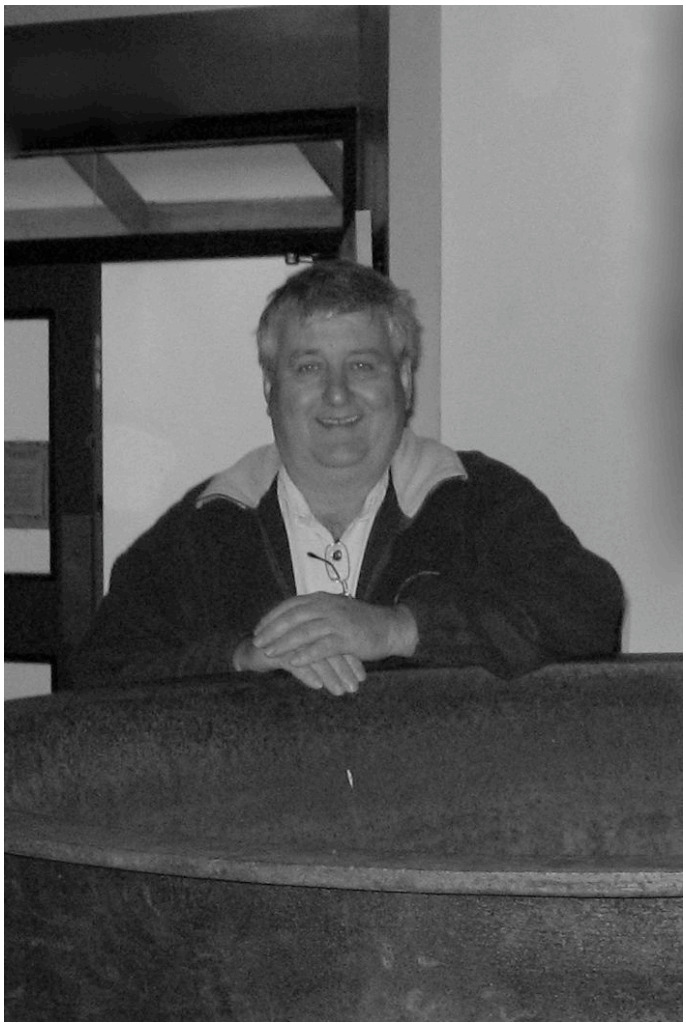

Figure 20. Mark Ingebrigtson (Photo credit Edye-Rowntree 2005)

Mark Ingebrigtson was born in 1950 and grew up in Churchill, MB. His father was from Norway and his mother from New Zealand. Mark owns and manages a tour company in Churchill called “North Star tours”.

Frequency of Usage
I used the river more in the winter. I preferred the snowmobile as my transportation. Winter was better because there were fewer bugs. I didn't do that much boating, again the insects were bad. You had to be a hardy person to go out in the summer. I went winter day camping. In the evenings it was nice to look up at the sky.

On weekends at the end of March or early April I would head up to Herriot Creek and stay in a borrowed cabin. I would go up by snowmobile. I would take a sleeping bag and dress in military wind pants. The military equipment was good quality stuff. It kept you warm when you had to sleep outside.

My use of the river changed because of my work. Now, I hike by the river maybe four or five times a year sometimes on the westside of the river. There are tent rings, which are around 3,500 years old across the river from the new Town of Churchill.

Pre-CRD
There were more boats at Goose Creek before the CRD. There was a big population change, so now there are less people that would use the river.

I headed the advisory council when the CRD was being passed. The town was against the diversion, but the negotiations with Hydro didn't work out for the town. The CRD was passed and went on without much say from the council.

Military
The military came in the 1940s. Churchill was used as a jumping off point, a strategic spot for the military during the Cold War. At one time there were 7,000 to 8,000 people in the Town of Churchill and at the base. Churchill was very cross-cultural at one point. In my grade-five class there were around 56 different nations represented.

Post-CRD
Since the CRD the use of the river by residents is contingent upon how much water Hydro lets through Missi Falls.

Post-Compensation
The mitigation trust fund had benefits for the Churchill community. The weir was built as part of a plan to ensure a safe place to access drinking water. They found a deep enough source at CR30.

There are much fewer people in Churchill now than before, from 7,000 in the 1950s to around 900 people now. However, much of the town infra- structure is the same as before.

Recommendations

Alternative energy could be used, such as wind power to create clean energy so Manitoba would not have to rely on hydroelectric dams as much. Wind power could be harnessed around the Churchill area. The wind is very powerful coming off the bay, so Churchill could generate some of its own electricity.

Harnessing the Hudson Bay tides would be another useful way to generate power. There are approximately two tidal cycles a day. Then you could have three sources of power not just hydro-electricity. I think that improvements to the river have reached a certain extent. There could be minor improvements, but big changes would probably not help.

Gavin Lawrie

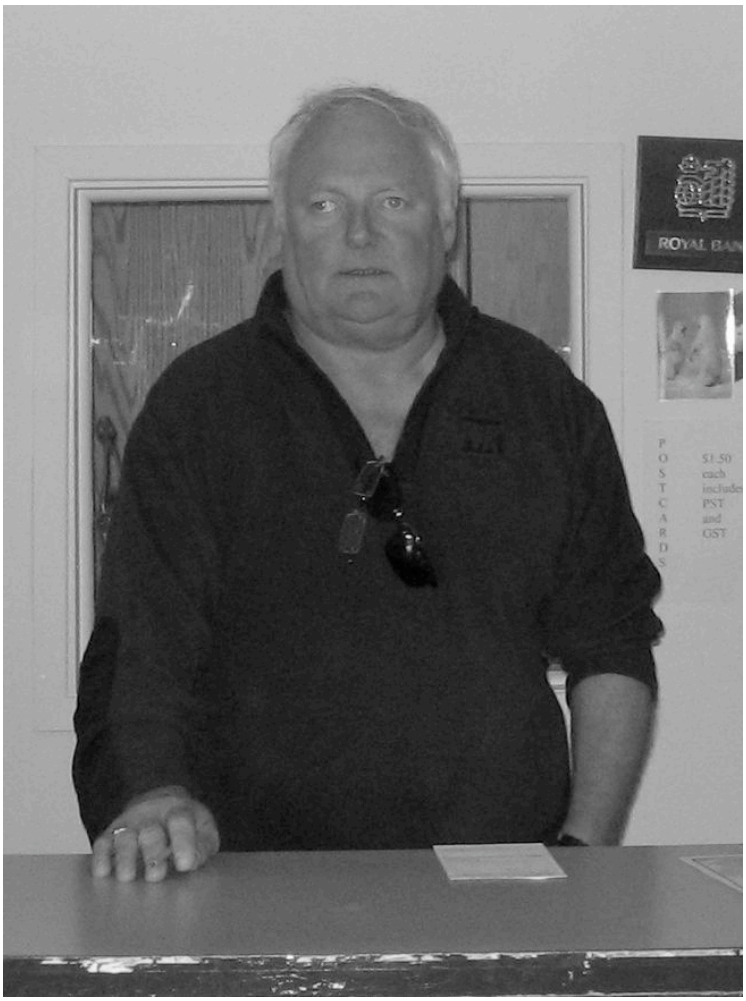

Figure 21. Gavin Lawrie (Photo credit Edye-Rowntree 2005)

Gavin Lawrie was born in Winnipeg. He has lived in Churchill since 1952. Gavin worked for Northern Employment Support Services for 21 years and has been owner of the Aurora Inn in Churchill for approximately 10 years.

Frequency of Usage
At one time I used the Churchill River for fishing, ice fishing, to get to hunting locations, and ski-dooing. So, I used the river all year round. However, I used the river the most often on weekends in the summer.

I would use my cabin and went fishing around Herriot and Fishing Creek. When I was out on the river or at my cabin I enjoyed visiting other people. By the 1960s I was ski-dooing upriver in the winter.

I went upriver in my own boat. It was an 18-foot canoe with a 20-horse power motor. Later on I bought a metal Lund to travel upriver.

I used to fish with Ernie Welburn. Ernie has used the river continuously, from prior to the diversion to the present time. However, I have not been further upriver after the CRD.

Pre-CRD
I used the river from the early 1960s to the time of the diversion in 1976, when the river was no longer navigable.

When I used to go upriver I would go with family and friends. Often I went upriver with my wife's uncle. He could catch the number of fish limits easily. He caught grayling, jackfish and the odd pickerel.

More people used the river before the CRD. The fishing was very good in the past, for example before the diversion there were many arctic grayling.

Cabins
Often people would stay in tents, but later there were more cabins and as time went on the cabins got bigger.

On weekends, in the summer and winter people often went from cabin to cabin visiting each other. During the summer a lot of the partying and socializing occurred upriver rather than in town.

I stayed around the area of my cabin most of the time, but on occasion also went upstream of Fishing Creek. Other people would use my cabin when I wasn't using it. Eventually everyone had to sell their cabin to Hydro. The cabins were then burned down by Hydro. Also, there was no place to access the cabins be- cause the river was gone. John Bilenduke and I were two of the last people to sell our cabins. I fought hard for compensation with Hydro.

I still have a cabin at Goose Creek. I go out with my grandchildren, but do not use the river at all. There are still quite a few cabins at Goose Creek, however, these cabins are quite far away from the river. There are also a few cabins further up river past CR30.

Post-CRD
There were rocks and boulders that you can see when you fly over the old fishing spots. I was surprised how much the water level dropped after the CRD. There were kilometers of just mud and boulders.

Post-Compensation
I was on the Town Council when the process of compensation from Manitoba Hydro was being decided. I was involved in the early stages of the agreement.

Negotiations really got moving because of Rod McKenzie. The town might not have got any compensation without him. Early on people had conceded defeat, it looked like there wouldn't be any compensation, but we were able to get to people in the right places to finalize the compensation.

Churchill was the first non-aboriginal community to get some compensation for past environmental damage. Hydro built a marina, started a trust fund and put in a weir as part of the deal. The weir created a lake that is about 10 kilometres long.

The compensation package couldn't please everybody. For example, the new water line was positive, however we pay a lot for the water. Another idea for compensation was a road from Goose Creek to Deer River, but Manitoba Hydro thought the building costs were too high.

I think there is still work to be done to complete the compensation package. Hydro needs to construct a few more things, like the barbeque pits and wind breaks by the marina at Goose Creek.

The weir has ensured there is more consistent, usable water, not like after the diversion when there was almost no water. However, there are major problems with ice damaging the weir. Also, I think Hydro expected that there would be more fish in the river after the weir and fish enhancement were created. From what I've heard there aren't a lot of fish in the river now.

This year [2005] is the first time I really noticed a return to the high water level that existed before the CRD. There may have been other years of higher water levels than normal, but not as dramatic as in 2005.

Recreation
After the river changed I went further east for hunting and also out west, because the river was not an attractive place to go. I have used the Seal River and the North River as alternative recreational locations.

Recreation has changed over time. Now people drive to creeks to go fishing in the spring, but in the summer the creeks are normally dry. There's still a lot of ski-dooing and some recreational trapping. People can make a little bit of money off of trapping. I think younger people are not as outdoorsy as the younger people in the past. However, there were no televisions or computers back then.

There are fewer sports teams now compared to the past. This is because the population in Churchill has decreased, from approximately 3,500 to 1,000 people. With so few people the community cannot support the infra- structure alone. An example of this is the heating bills and upkeep of the Town Complex, which are too high for the population base of Churchill.

Recommendations

Further negotiations should be looked at now because the compensation has not worked the way it was supposed to. The weir isn't helping people get back on the river, so something needs to be done to change this situation.

Mike Macri

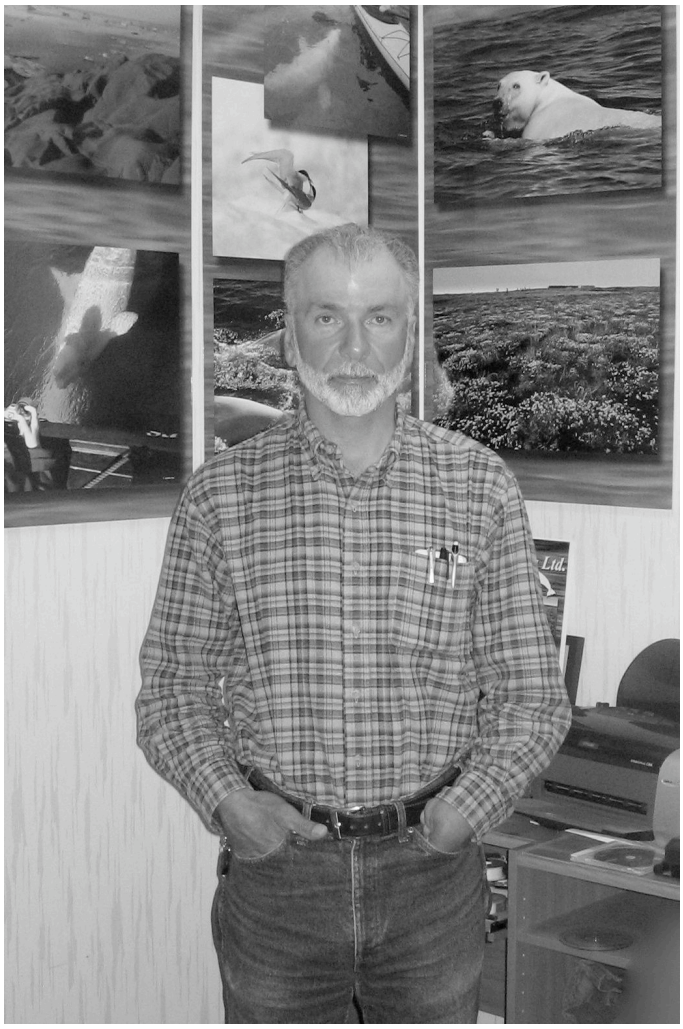

Figure 22. Mike Macri (Photo credit Edye-Rowntree 2005)

Mike Macri was born in Windsor, Ontario. He arrived in Churchill in the mid-1960s and has lived in Churchill since he was sixteen. Mike is an outdoors person, and enjoys being near wildlife.

Frequency of Usage
I would be out on the river every chance I got, right after ice break up in June until early September.

My first trip was with John Bilenduke who took me up to Deer River where we mostly fished for jackfish. From early to mid July the fish were lively and better to eat. Grayling were caught a little later on. In September there was hunting and during the winter there was recreational ski-dooing. I also like goose hunting up river.

Pre-CRD
You always had to know the river, and be careful of the motor because of the rocks. It was easier the further upstream you went.

Drinking Water
The water intake was changed from CR20 to CR30. Manitoba Hydro used my zodiac for some of that work. The water intake was changed to make sure the town had a deep enough place to draw the water from.

Post-CRD
After the CRD the river was too difficult to navigate. There were places so shallow you could only walk with your boat and areas full of dead fish. What had happened was shocking. Fish and other marine life died off. Mud and boulders were left behind, visible from the retreat of the water.

There was different vegetation, eagles ate the fish or could catch the fish easier than before because the water level dropped so much. The eagle population also went up and the number of moose increased. Where there was once river was taken over by willows, a favourite food for moose. However, the moose could have been driven north by the fires to the south too.

Post-Compensation
Whales used to go further upriver. They would go to the warm water of the estuary, close to Mosquito Point, where the water temperature is 16 to 20 degrees, whereas the salt-water of Hudson Bay is four degrees Celsius.

After the weir was constructed the whales have been more scattered. They don't use Mosquito Point as they did in the past.

Airboats only need four inches of water to travel on, but they are expensive. Some users of the river made their own boats, now they are five or six generations better than they were when they first came out. Ernie Welburn has taken me upriver on his airboat.

The weir created something similar to a small shallow lake, but there aren't many fish in the 'lake'. After the weir there has been less fishing instead of more. There are fewer fish than there used to be before the CRD. There isn't any more sturgeon and there are fewer grayling, but there are still some jackfish. The marina only has two or three boats in it.

What damage is being done to whale habitat and eventually the shipping channel, as ice from each breakup knocks the boulders from the weir down river? Every spring hundreds of tons of rock are replaced by material trucked in from another location.

The river flow rate depends on the season. Normally the river flows at 500 cubic feet per minute, however in 2005 it was flowing at 80,000 cubic feet per minute in August.

Recreation
I think the town government could have got a better deal from Hydro, but there was some compensation. Hydro did recognize that damage was done to the community. Hydro electricity is a clean and an efficient power, beneficial to the province and the environment. However, the river was altered too much. It takes time to heal and change and then come to a different environmental balance.

People in Churchill like the outdoors, to be in the wilderness, watch birds, see wildlife. Their biggest fear is that they can't enjoy any of these things. The Churchill River is one of the last non-polluted rivers. This population of beluga whales has been thriving. The area has clean air and water.

In the past garbage was thrown around, then environmental awareness increased and gradually there has been more interest in preserving and watching the wildlife. Now there is not just hunting and fishing, photography is also important. You have to get closer to the animal to get a good photograph, that way you can see the personality of the animal.

Recommendations
Not enough studies have been done regarding the dispersion and number of Beluga whales pre-diversion, post-diversion, then post-weir. Serious research needs to be done regarding the long-term impact of the weir on the whales.

People are beginning to realize that the weir was not a good idea and most don't want to use the 'lake' either. The problems caused by the weir are greater than the benefits.

The community should also get a break on their hydro bill, which could improve Churchill's situation business wise, as well as for individual residents. Lower hydro bills could mean an increase in trade and attract business because hydro would be cheaper than elsewhere.

Glen McEwan

Figure 23. Glen McEwan (photo credit Edye-Rowntree, 2006)

Glen McEwan arrived in Churchill in 1965 and has used the Churchill River ever since he got there. He first started work with the Department of Public Works then worked for the Local Government District of Churchill. He is now employed as a Millwright for Transport Canada.

Frequency of Use
I would use the river all year round before the diversion. In the summer I went up the river to catch pike and grayling using a rod and reel. I often went upriver fishing on day trips. You could even go out on the river after supper for a few hours and catch a limit of fish. I would go further upriver on the weekend.

Fall was a good time to go up fishing with nets to get fish for winter. Thanksgiving weekend was the last time you could get upriver because if you went later you could get caught in freeze up.

I usually would start snowmobiling upriver by November 11th. Most people only go up as far as Deer River by snowmobile, which is about 25 miles upriver. In the wintertime we would go up and ice fish using a chisel and later on an auger. I remember going to Deer River and fishing in the ice holes made by the Dene fishermen who were up before us by dog team.

The ice break-up varied depending on the year, you would be able to go on the river by boat as early as late April and as late as the end of May. I have gone as far as Red Head Rapids, about 40 miles upriver. In spring I would catch trout at Red Head Rapids. My favourite time to go upriver was in early June, before the bugs came out. This was also the time when fish were spawning, so there was good fishing at the mouth of the creeks and little rivers along the Churchill River.

Cabins
On the eastside of the river between Goose Creek and CR30 there were six cabins, Bill Paddock's, Charlie Schweder's, Gavin Lawrie's (Art Crips), mine, Maurice Morand's (Ron Barrill) and John Bilenduke's. On the westside there was Danny Allen's, Al Chartier's, Ernie Welburn and friends', Jan Kristiansen's and Dave Lundie's cabin.

Once Hydro bought the cabins out, I relocated my cabin over to Button Bay to fish for arctic char using nets. My parents relocated their cabin at Lundie's point to Goose Creek.

Pre-CRD
I would go upriver almost every weekend in the summer. Before the CRD there was a lot of activity on the river, especially around the cabins. Once they were gone people used the river less. You used to be able to catch grayling before the diversion, but they've been pretty well all killed off now. The pike you'd catch would be much bigger in the past too.

Sturgeon were prominent in the Little Churchill, as were brook trout in certain rivers. You could net whitefish in the fall for winter storage and I even saw muskie, much like a pike with bars on its skin rather than spots.

The army was around Churchill mostly before 1965, but there were still some troops around, who did military exercises in the area.

Post-CRD
After the first few years of the CRD you could still catch a few fish. We tried to fish by my parent's cabin at Lundie's Point, but eventually there were no fish. Some year's it was impossible to get to where my cabin was and you couldn't catch grayling anymore.

After nine-tenths of the water was diverted I would say nine-tenths of the fish disappeared. In summer the numbers of fish were very low and with this decrease in fish population there was less desire to go out on the river.

After the diversion Hydro regulated the water flow downstream at the spillway from Missi Falls and we would have to depend on precipitation levels to make the water levels high enough so that we could use our boats and outboard motors.

Hydro has blamed people for over fishing Goose Creek, but it was the only place you could really fish, before people were more spread out and there were more fish available in many places.

I had an airboat for three years, from 1985 to 1988. I went to Red Head Rapids once with it, but the airboat was noisy and you needed a lot of gas to run it, which was very expensive.

Wildlife
Moose and caribou hunting have been quite consistent over time, the diversion didn't drastically affect their numbers. If anything it may have increased some moose habitat as willows grew up in areas of the riverbed, such as at the Morrier and Thibaudeau Islands. I think mink and muskrat may have died out because the water level on the river had become very instable...before the diversion the water level was more stable.

Commercial Usage
A few people ran tours on the river, but there's not enough fishing for a lodge to be started up. Dave Daley and Joe Barron are examples of people who would take people upriver. Barron got a grant to setup his camp, but it didn't work out and he sold it. Daley still runs his tours. John Bilenduke also tried doing tours on the river, but he had to stop because of health problems.

Post-Compensation
I still go out to Button Bay in the summertime for recreation and to catch arctic char. Lately I have gone up with my family and another family to Deer River and stayed out overnight in the beginning of April to ice fish.

Deer River is still one of the few places along the river where the fish population has remained high enough to catch fish consistently. I'm concerned about the pressure put on the fishery at Deer River because it is one of the only places left to fish on the lower Churchill River.

You still need an expensive boat to be able to use the river consistently, from year to year. These last couple of years (2005 and 2006) the water level has been high, so it was possible to get upriver using an outboard motor. I choose not to risk expensive lower end damage because of rocks in the river since the compensation package didn't include provisions for a jet drive motor.

The mitigation fund, as part of the compensation package has helped fund sports activities in the community to make up for the loss of recreation. The compensation package has supplied some alternatives for recreation, with the marina and the higher water levels above the weir. Boating has increased in the area adjacent to Goose Creek.

The marina is also nice to have, I use it once a year and my family may go to the quarry to go swimming in the summer once or twice a year. There are some small trout in the quarry, which you can catch...but not enough for many people to take fish from there.

The weir has been a benefit to Hydro because it maintains the water level at CR30, as there were years where there was hardly enough water to supply the town's needs.

I think the weir has changed the fish migration of brook trout, the sea-run trout, which go from salt water to fresh water. They come upriver to spawn in the fall and go back to salt water in the spring, but they are not seen in the river anymore.

The grayling are now almost gone and you can hardly catch any suckers. Suckers are very important because they support the whole system. I heard that there were more suckers and pickerel, mostly just last year with the increase in water flow coming through Missi Falls. Also, that pickerel were caught around Deer River and pickerel hadn't been seen there before.

Recreation

With cabins on the river there was more activity year round. There was always someone up there. Now there are less people partly because there are fewer cabins. In winter people still go up the river but mainly for day trips.

One of the things that kept me in Churchill was the river. I had boating and fishing access, but after the diversion I had to find alternatives.

I think times have changed quite a bit, before you could go out on the land and do what you'd like to do. However, now there are more rules and regulations, like the Churchill Wildlife Management area and then Wapusk National Park. Big parcels of land have been taken and the residents can't get the same use and it has cut down on people's options.

There was a lot more people hunting before compared to now. That could be because of the difference in population, we went from around 5,000 people in the 1960s to under a thousand people now.

Land management has definitely changed...the cabins on the river are gone and the diversion changed recreation a lot. Now it is harder to go out on the land because there are more restrictions in where you can stay and what you can do.

Recommendations

If Manitoba Hydro were to maintain the minimum flows that were originally agreed upon it would give us more water and better access to navigate the Churchill River. I also heard that there are times when Hydro shuts off the flow downstream. With another Hydro station on the Nelson River there may be even less flow downriver in the future.

I think if there were generating stations on the Churchill River it would have been better for the people of Churchill, we would have a better flow rate and the there might have been less impact on the environment.

Maurice Morand

Maurice Morand was born in Montreal and came to Churchill in 1964 (no photo). He originally went to Churchill to visit his sister, but found work there. He worked from October 1964 to September 1976 at the rocket range. Afterwards he became a power engineer.

Frequency of Usage
I started to use the Churchill River in 1974. I used it every week. I had a cottage along the river, in the winter I would ski-doo and in the summer I would go boating.

I bought a 20-foot canoe with a motor in 1975. The canoe was good for fishing. I was interested in going further upriver because the fishing got better the further upriver you went. I caught northern pike, grayling, trout, and pickerel. I mostly fished and camped overnight.

The river was used mostly for recreation. Trappers would use a boat to get out and take their dogs with them. Then they would leave the canoe there and come back with dogs.

Pre-CRD
Fishing Creek was good for catching fish. The creek was quite shallow. The fishing was different at Deer River because the water was deeper there. You could catch big fish there. Hunting was done all over the place. Hunting became easier with the introduction of ski-doos. In 1972 or 1973 ski-doos started to become more available. Before that there weren't many.

The river cost me a lot of money. I ruined motors on the river because of the low water level. The rocks would smash the bottom of my boat. The river was difficult to navigate, but after travelling on the river one would know the channels. However, during ice break up the rocks would move so you could not be sure of a safe passage.

Those years before the CRD was when there was so many fish. You would not keep all the fish you caught. One afternoon I caught four jackfish that I just gave away because it was easy to catch more.

Cabins
My friends built a cabin in the late fall. I would go out every weekend from Friday to Sunday to fish or hunt and be together with friends. My cabin was built on high ground by the mouth of Herriot Creek and the Churchill River. There was good fishing in front of my cabin. You could catch whitefish or grayling. You did not even have to bring food with you.

In the early 1970s there were a few cabins on both sides of the river. In one area of about a quarter of a mile there were around 10 to 12 cabins...one of those cabins was mine.

In 1976, Hydro bought my cabin. They had meetings regarding how much the owners of the cabins would be paid. I held out until Hydro finally offered enough money for me to sell. Hydro also had the option for people to move their cabin to a different location. But, this was very costly.

Drinking Water
The quality of water was in jeopardy when the CRD took out so much of the water. So, the pumphouse was moved from CR20 to CR30, further upriver. Also, a water treatment plant was built to make the drinking water safer.

Post-CRD
I tried to use the river after the CRD, but could not get upriver through the channel. The river was almost all dried up. Before the CRD, some parts of the river were 50 feet wide and a foot deep and other places the river was a quarter of a mile wide. These extremely wide stretches of river were reduced to around a hundred feet after the CRD.

After the CRD the channels changed every week. The river was full of rocks. I couldn't fish in my favourite spots because those special places did not exist anymore. Deep holes that were good for fishing were gone.

One day in springtime I tried to go out and fish. I left at nine in the morning and returned at four in the afternoon...in that period of time the water level dropped a foot and a half.

In springtime it is possible to go out on the river because the water is quite high due to the thawing ice.

Post-Compensation
At the present time, there are more willows on the sides of the river, which attracts a lot of moose. The moose hunting is better than the fishing.

In November of 2005 there were ice jams on the river because the water level was so high. The river was not easy to travel on in the winter of 2005-2006 because the ice was rough. The river water was higher in 2005 than in 2006.

I still have two boats. Last year I went up the river to the quarry. But, I haven't really used the river after the weir was built. A few people use airboats, but they are dangerous and expensive.

I went to a few of the meetings the Town of Churchill and Hydro organized for the community. The Town of Churchill made some gains through the compensation process from Hydro. The river was raised by six feet by the weir. From Deer River to Goose Creek there is a 32-foot drop in elevation.

The compensation package from Hydro was not very favourable to me. I feel that the people came and went during two or three years of public meetings. They explained their plans and discussed costs. I believe that the people who used the river did not gain that much. The weir was part of the plan to ensure a safe water supply that comes from CR30.

Some of the compensation was more decoration, such as the marina that was put in. The tourists have benefited, the people can take photos from the tower by the marina.

I have seen people by the marina. I have been there two or three times. If you bring wood, you can have a picnic in that area. I have a new cabin, but it is in the Goose Creek area, about a quarter of a mile away from the river. There is fishing by a bridge in Goose Creek. You can catch jackfish there. But, there are not as many fish as there used to be before the diversion.

The weir has created a lake instead of a river. There are not as many fish in this water as the Churchill River before the CRD and people have not been using the river like they did before the diversion.

Wildlife
There is good moose hunting around the Goose Creek area. Before, you had to travel a ways to get moose...around Deer River, which is 31 miles from town. Trappers who want to catch caribou would go to Red Head Rapids.

Recommendations
A road from Goose Creek to Deer River would be good because the river water is deeper around Deer River, so people could use the river around that area. What I would really like to see is the CRD taken out and the old river back the way it was before diversion.

Clifford Paddock

Figure 24. Clifford Paddock (photo credit Edye-Rowntree, 2006)

Clifford Paddock was born in Churchill, MB. He has used the river since he was a child at his father's cabin. He presently works at the Churchill Northern Studies Centre as the Fleet and Facility Supervisor.

Frequency of Use
I haven't used the river for about 10 years. Usually I would go out upriver on weekends and take extra days to stretch this time to three or four days.

I would start using my boat in late June until late fall. After Christmas I would start to go up the river until around March, but depending on the year I was able to travel by snowmobile in April as well.

I enjoyed using the river all year round, but winter was especially good because you could go off exploring beyond the banks of the river. We were able to go to different lakes, which aren't accessible in the summer.

Pre-CRD
I usually went fishing just outside my family's cabin. I mostly fished from the land when I was younger. Later on I went myself by boat to different spots, like Herriot Creek, Fishing Creek, Deer River or any little creek/stream that flows into the Churchill River.

The fishing was good... you could find deep holes to fish. Bill Ayotte, Jack Batstone and Ernie Welburn knew the good spots to fish.

I would mostly catch jackfish with a rod and reel, as well as catch the odd grayling as well. If you used a net you could catch whitefish, sucker and trout.

My Dad's first boat was a moose head canoe. Later he got a 16-foot aluminium boat. I used a 12-foot boat with a 9.9 Johnson motor. I would go out on the river with my friend, who also had a 12-foot boat, so we could go into shallower spots on the river. I used this boat until the diversion.

In the winter I would go ptarmigan and rabbit hunting around the Morrier Islands. Travel in winter was limited to just past the Deer River prior to the diversion. Rapids like Red Head and Limestone likely didn't freeze over completely, high banks past Deer River made travel difficult.

Post-CRD
The diversion happened around 1975 or 1976, so I had only been out on my own for about four or five years. There was a time after the diversion that I didn't use the river because often it wasn't really accessible unless you had the right type of boat.

In the early 1980s when I got an airboat I started to the use river again. The original airboats were built in Churchill. There were three people with airboats, Glen McEwan, whose family had a cabin by my family's cabin on the river, Stewart Cochrane and Len Smith. We tried the airboats out close to home first and then took them upriver and found that they worked well in rapids. Airboats need about three to four inches of water to operate. I bought Stewart's boat and put a reduction unit on the prop, which made it easier to get out of the water and haul more payload.

Even after the diversion you still had to follow the channel when using the river, that's something that didn't change from prior to the CRD. Although in spring you don't have to follow the channel because the water is so high.

If the water was high you could go upriver using an outboard motors, but you would still have to dodge rocks. By using the river in summer you got to know the routes, channels and rapids, which made travel in the winter safer. The water was not as deep after the diversion so you could find your way around the rapids and go further upriver.

We would go up to our cabin at Hidden Creek approximately 75 miles upriver. The fishing was good and further upriver you could catch pickerel.

In spring there is a lot of people fishing off the CR30 road, mainly at the bridge and all the little culverts along the road. By mid-summer the water level could drop so low that you are unable to fish.

Cabins
Every July long weekend Len Smith, Ernie Welburn, myself and a few friends would go on a fishing trip to Hidden Creek and travel as far as Mountain Rapids approximately 140 miles upriver. In winter we travelled up the river by snowmobile to Hidden Creek. We put up a tent, later we brought up building materials by Bombardier and snow machine and eventually built a cabin.

It's about a three-hour boat ride to Hidden Creek and around two and a half to five hour trip by snow machine depending on the ice conditions. Some years the ice is very rough and you have to take a longer route.

I now have a cabin 10 miles south of the Churchill Northern Studies Centre, by Twin Lakes. I started to go here after the cabin at Hidden Creek burnt down. I now go to Twin Lakes for recreation. In the winter I snowmobile and can do some hunting, for caribou, moose and ptarmigan. I still have my airboat and plan to introduce my son to the river in the near future.

Post-Compensation
Last winter you couldn't travel on the river because the ice was too rough to travel on. The water level was so high in 2005 that Ernie's cabin at Caution Creek was flooded.

It was first thought that there could be a series of weirs built that would create water backed up to Deer River, but I think only one weir was built to make sure that the water intake at CR30 would be safe. I was against the building of the weir.

Hydro said the idea of the weir was to bring back recreation and fishing. They also said building the weir would create employment, but only about half a dozen people were hired and for a short time, around half a year. There is a local contractor who fixes the weir...it often needs repairs.

From approximately 1975-1997 the river was adjusting to the new environmental conditions caused by the CRD, but then everything was changed again when they re-flooded the land. So, the environment has been changed again and we don't know the effects of these changes yet.

The marina should have been built right after the CRD. It was something that was promised by Hydro because of the diversion. There has never been a proper boat launch at CR30. It was always a pain to launch a boat, but after the marina was built I think it's easier to get on the river. Right now the weir only backs up the water 10 kilometres and the further upstream you go the shallower the water is because of the incline of the land going upriver.

From the weir you can use an outboard motor, but there are many boulders hiding just below the water. The weir created a shallow lake, which is supposed to be for recreation and fishing, but not many people use it. You can only use the river for the day, without cabin development there is no place for people to go and stay.

I think there have been some good and bad things done with the compensation fund. I think in hindsight the town could have come to a better compensation package than they did. A good part about the settlement is that Hydro has to pay for weir maintenance, as well as all other compensation construction.

Wildlife
After the diversion there was more birdlife, the river was narrower, so there was more habitat. Then the weir flooded some of that area, as a result Hydro made an artificial island to leave some habitat for the birds. I don't think the diversion or weir caused a big change for most wildlife.

Commercial Usage
There weren't any fishing lodges that I know of along the river before the CRD, but there was the odd person or group of people who would get a guide to take them up the river. After the CRD Dave Daley started doing some tours upriver to watch birds and other wildlife.

Recreation
I think there are people that would like to go out on the river. Some want to build cabins by the river, but there is a province wide moratorium on building cabins. This is bad for Churchill because it has hurt our recreational opportunities. I believe the province should look at making recreational cabins in the north possible. Cabins would ensure that people would have a place to go when out on the river and would encourage people to use the river again.

Recommendations
I think a marina should be built in the town. More people could take advantage of boating and not be affected by the tides as much. This marina would be good for locals and tourists.

Mike Spence

Figure 25. Mike Spence (photo credit Edye-Rowntree, 2005)

Mike Spence was born in Churchill. His parents were from York Factory. Mike grew up along the Churchill River in an area called the Churchill River Flats. He has been involved on Town Council since 1989 and is currently serving as Mayor.

Frequency of Usage
Recreation changes for each season, but often the river was used just to relax, go out for a ride, to go camping or hunting in the fall. The spring and summer were for fishing.

Pre-CRD
Depending on the time or year, there was tenting and people tended to be nomadic and moved along the river. It was a busy river at one time. There was a lot of weekend travel, just to get away and enjoy the day. People had their favourite areas for goose hunting. There was the six-mile stretch from the Flats that was popular.

Cabins
There are now few cabins. Manitoba Conservation has allowed no new construction. Manitoba Hydro and the Town of Churchill need to develop a final plan to allow for the construction of cabins upriver from the weir, which will help bring people back to using the river again.

There were around 12 cabins on different parts of the river. There are now about six cabins on the river being used. They use them in every season.

Post-CRD
In 1976 the Churchill River was diverted, but the impact was really felt by 1978. This greatly affected the use of the river.

Churchillians weren't aware of the dramatic change that the CRD would have. The big effect was in the summer and fall when the river was needed for navigation routes for hunting and fishing. The CRD also caused a loss of potential tourism opportunities on the river.

Low water flow caused salt-water intrusion from the Bay, which caused vegetation on the banks to disappear.

There have been significant environmental changes due to the CRD, but climate change may also possibly have had an affect.

Post-Compensation
Churchill was beginning to deal with the issue of the river in 1992. The town hired a consultant to deal with the loss of the Churchill River. The town put a position together and began negotiating with Manitoba Hydro in 1993. The result was that the Town of Churchill and Manitoba Hydro signed a mitigation compensation package in 1997. Reintroducing the use of the river to Churchill residents was a priority.

In 1997 a seven-year fish enhancement project began in the re-watered area, as part of the compensation package. People were waiting for the opportunity to fish, but fishing didn't improve in this time period.

The weir was part of the compensation package. It was designed to create a lake effect upstream to provide the opportunity for recreational activities, but the ice break-up continues to cause leaks in the weir.

So, the area that was to be re-watered has not lived up to its expectation. If the re-watered area could reach Herriot Creek, it would be a great improvement for recreational use.

There has been frustration with the problems caused by the CRD, which have not been solved by the weir and enhancement project as of yet.

On the westside a gravesite was discovered during the pre-construction of the rock-weir structure. Now there is a walking trail and a swimming area for recreation. The community was involved in how this was developed. The trust fund has been used to maintain the marina.

Wildlife
The numbers of wildlife are much different, for example there aren't as many swans as before when we went hunting in the fall.

Commercial Usage
There was a whaling factory on the river for commercial purposes up until the late 1960s. The whales were made into dog food and also used for oil. With the closure of the whale factory tourism opportunities opened up.

There was Fort Prince of Wales tours and whale watching in the Churchill Estuary by people like Jimmy Spence, John Hickes and Mike Macri's SeaNorth Tours.

Recreation
Since 1976 two generations of Churchillians lost the use of the river and will never witness the once mighty river. The river cannot be utilized in the same way...you can only remember how the river once was.

The lifestyle has changed along with the changes in the river. Whereas in Nunavut, their rivers and lakes have not been affected by hydro projects and are fully utilized for traditional and recreational purposes.

The creeks and rivers that flowed into the Churchill were important hunting and fishing spots, like Herriot Creek, Heppell Creek, and Deer River. People departed from Churchill or from Goose Creek.

Recommendations
A new marina within the port area would be a positive project, and would help re-introduce residents to the river. Cabin development along the river is also a community priority, because it will create a destination point for people when they travel upriver.

It's obvious that the mitigation compensation package has not lived up to its obligations. So, Manitoba Hydro and the Town of Churchill need to resolve this issue. It is crucial this problem be solved within the next couple of years. Already a lot of people are now going by memory. The long-term users of the past are grasping to remember how it was.

Ernie Welburn

Figure 26. Ernie Welburn (photo credit Edye-Rowntree, 2006)

Ernie Welburn was born on July 29, 1945. He was raised on a farm in Winnipegosis, Manitoba. Ernie came to Churchill to work as a heavy equipment construction operator in 1965. He worked at the Port of Churchill and then for Transport Canada.

Frequency of Usage
I used the river in all seasons, although there are times in the year when you can't use the river, like the October freeze-up when there's slush ice on the river. It depends on the year when you can use the river, sometimes you can go earlier and sometimes it's later depending on when the ice breaks up. You could start to use it possibly in the beginning or middle of June.

I use the river mostly on weekends and holidays when I can go upriver with friends. I would go upriver for two to three days at a time...you would go as long as you could, take an annual leave day to make it a little longer.

I have been as far as the Four's, a group of us would go every July first. I would store gas at locations along the route so we could go further. I am now retired so I could go upriver when I want, but it's more interesting to go with friends, so I usually go out on weekends the same as I would in the past.

I like it better in the wintertime you could do more things in the wintertime... you aren't just restricted to the river. The fall is beautiful though and in spring there aren't many bugs. In the summer there are lots of bugs though.

Pre-CRD
In the beginning in the winter you were not able to travel further upriver than the tip of Long Island by snowmobile, just past Deer River. In the spring you could get up to Red Head Rapids if you had a good boat. We would go in the spring because the water was higher, which was due to the ice melt. The Churchill River is shallow, with reefs and islands so you never know when you'll hit a rock, but it was easier going downriver. You could float downriver to get home.

Before the CRD some years were shallower than others, it depended on the rainfall. I don't think there was a case before the CRD that you couldn't go up Deer River using a conventional motor in the fall, but after the CRD it depends on the year. The last couple of years have been good because of the high water. That was one of the reasons for the airboats because you couldn't get up river with a conventional motor.

I first went upriver with Bill Ayotte and then with Jack Batstone in the spring and fall. I went upriver with Jack in the late 1960s and the early 1970s.

Before the CRD you could catch fish all along the river, at Herriot Creek, Fishing Creek, Munck River and Deer River were some of the favourite spots of the river users. Jack Batstone and I would go past Limestone Rapids to Crosswell Creek to fish as well. People would fish near the creeks and other smaller rivers off of the Churchill River because that's where most of the fish would congregate. However, now you can't get to those places anymore because of the low water levels. There are very few fish because of the diversion.

In the summer the river was used for recreation and fishing. The fall was for goose and moose hunting, down past Deer River. I went goose hunting around Deer River. In the spring fishing was popular at Deer River and there still is fishing activity there in the summer.

Cabins
I now have a cabin at Caution Creek, it's about 120 kilometres from town. It's another 78 from Caution Creek to the Little Churchill River, which is around 200 kilometres from town. I had a cabin at Hidden Creek that was shared and built by three others beside myself, Manford Bussell, Clifford Paddock and Rob Untereiner, but it burnt down in 1996. I used the insurance from the cabin to build the new one at Caution Creek.

Now it's around a dollar 46 for a litre of gas and it takes 45 gallons of gas to go to my cabin at Caution Creek. So, it costs around 300 dollars just to get there. I go straight to my cabin to access all the supplies I have stored there.

Drinking Water
At times the river is dirty. In 1996 there was a forest fire that wiped out some of the forest that holds the banks together, which caused landslides when it rained later on. So the water got dirty from the earth that was carried into the river by the landslides upriver.

I think Churchill has got some of the best water around. I've never stopped using the water from the river. When I am at my cabin I have always used a bail to collect drinking water from the river and I haven't had any problems.

Post-CRD
I think the CRD started in 1978, but we really started to feel the effects by 1985 and on because those were low water years even without the diversion. I got an airboat in 1982...I needed it because the water was too shallow to use an outboard motor. The airboat was homemade in Churchill. A couple of guys built them, Len Smith and Stewart Cochrane.

I started trapping in 1994 around Caution Creek. I would trap for pine marten, as a hobby. I try to break even every year. The last few years the numbers of marten have been quite high. I don't think it's to do with the diversion, but to do with the equipment we have now, with snowmobiles today we can access more areas, before it was hard to get to these places. In the past we would go to Deer River by ski-doo and it was a major undertaking, but today you can go hundreds of miles with snowmobiles.

There was better hunting after the diversion because there was more grass on the riverbed. Moose weren't restricted to the shore. You could find them all along the river. I had 26 sightings of moose on one trip and that was only for four days...years ago that wasn't the case.

Post-Compensation
The numbers of people on the river has dropped. If you can't buy an airboat or jetboat you can't always get on the river. So, there are only a handful of regular users of the river. Before the CRD you could get upriver no matter what boat you had. In spring and fall there were always a number of boats up river.

The users of the river go through phases, you will get another group of young people who will go out on the river, but it's a very expensive hobby. They have to buy the right equipment to able to go out on the river.

As a trapper along the Churchill River I get compensation from Hydro, four trips a year to my cabin by helicopter to bring supplies out there because of low water. That's the compensation for all trappers who have traplines along the river.

I'd go up twice in the spring and twice in the fall by helicopter, so it's a very good deal for me. However, I don't think it was fair to the people who used the river before. A lot of people used the river besides trappers, but didn't get compensated. There is the marina, it's nice, but it hasn't helped most of the people get back on the river.

The weir backed up water six miles upriver, but after that the river is still the same as it was after the diversion. People's feelings were hurt because the compensation was not enough. Future generations that use the river won't be able to see and understand the river as it once was.

The problem with the trapper's compensation is that it is 'grandfathered' so if new people take over those traplines they won't get compensation from Manitoba Hydro. One of the trappers settled for a boat instead of getting the helicopter trips each year, but I didn't because my cabin and trapline are so far upriver. I think the compensation for trappers should continue no matter who has the trapline. The next guy will have just as much trouble to get upriver in low water times as we do now. I think the compensation was some help to the town, but not enough for the river users.

Before the CRD there was no getting around the ice jams on the river because of the high water level, but you can get upriver now, although it depends on the year. Some years the water is higher than others. With the high water levels in the last couple of years I had to go around by land because you couldn't travel further upriver after Deer River. We had to make a road inland to get back around to my trapline. It took seven hours to get there, but if I use the river all the way up it only takes three and a half hours.

First I had an outboard boat, then an airboat and after that a jetboat. There was a couple years where I couldn't use my jetboat, I had to go back to using the airboat...that was around six or seven years ago. We had some really shallow years. From 1985 until the last couple of years the water hasn't been very high, however the last couple of years we had lots of water. 2005 was a very high water year, but even this year guys were going up to Deer River and further with outboards. They were still hitting rocks but they could get there.

Wildlife
There are more moose now. Their numbers have progressively increased since the CRD. There is lots of shoreline now and fresh willows and grass growing up that makes good feed for animals. The last few years there I have seen more wolves. There aren't a lot of caribou along the river, but there are a few Woodland Caribou. I have seen them as far as the Little Churchill River in the summertime.

Commercial Usage
When I was young, a man nicknamed Jackfish Johnson would catch fish at Goose Creek and sell them. He was from Gimli, Manitoba, but he was already older when I came to Churchill. Mostly the river is used for sport, the CRD took that away, 90 percent or more of the recreation disappeared.

Recreation
The more money you have the better the equipment you can buy, which means the more places you can go and things you can do.

One of the main reasons I stayed in Churchill is to enjoy the outdoors. We have the freedom to be able to go out ski-dooing or boating. Also, vandalism is very rare around town. A lot of people have respect for your property because they may rely on you at a future time to take them upriver. I think to live in Churchill you have to like the outdoors.

I go upriver to enjoy the outdoors, although I still like hunting I don't do as much as I used to. Moose hunting is a lot of work...even though I don't hunt as much as before the preparation and skill still comes back to me. The river is important to me because I enjoy exploring, there's always something new to see along the river, like the different wildlife. The best part about going upriver is being outdoors.

The mode of travel has changed because the equipment has improved. This summer I spent more hours on my boat than ever, around 70 hours, because it is a better boat and I can use it more often than my old one. If there were no diversion I probably would have bought a bigger jetboat to explore new places and go farther upriver.

Chapter 5. Discussion

This chapter discusses and presents information from the participants involved, which was published in the book *Residents' Perspectives on the Churchill River* (Edye-Rowntree et al., 2006), while incorporating various background literature. The themes were identified through the analysis of the interviews conducted in Churchill, as well as from the study of background literature related to the topics.

The section on impacts is divided into two parts, one on the impact of the CRD and the other on the mitigation compensation package. The impact of the CRD has been documented in reports by Boothroyd (1992; 2000) and Four Directions Consulting Group (1994; 1995). The opportunities portion concerns the possibilities for improving the residents' situation in regards to the impacts caused by the CRD and compensation package. The responses to the impacts and opportunities section discusses how residents have adapted to the changes on the Churchill River. The section on changes in lifestyle and recreation were primarily gathered from information in the interviews and documents how recreation has changed in Churchill from the pre-diversion period to the present day and what the probable explanations are for these changes. The impact/implications of climate change on the lower Churchill River section addresses how this study relates to the issue of climate change and its impact on the Churchill region. The future initiatives section combines propositions from the interviewees regarding the future of the residents' use of the lower Churchill River, as well as ideas from the literature.

5.1 Impacts

5.1.1 CRD

A number of different impacts caused by the CRD, such as loss of boating access, a reduction in fish population, loss of cabins, loss of potential tourism on the lower Churchill River and loss of recreation were identified by the participants in the study, as well as in the studies by Four Directions Consulting Group and by Boothroyd and Associates.

The reduced rate of flow in the river caused by the diversion has lowered the water level downstream from Missi Falls Control structure, which impacted and continues to impact Churchill today (Boothroyd, 1992; 2000; Four Directions Consulting Group, 1994). The majority of participants indicated by the late 1970s access to the river became restricted, which was attributed to the reduced rate of water flow. The decreased flow rate and lower water level caused a number of social impacts to residents. Some of the most significant impacts are presented in this discussion.

Cabins:

Prior to the river diversion Manitoba Hydro purchased the recreational cottages upriver from the Town of Churchill that "encroached on the Power Reserve secured for the Churchill River Diversion project. The cottage owners received compensation for 27 cabins and associated facilities located within a Severance Line established by Manitoba Hydro" (Boothroyd, 1992: 37). The acquisition of the cabins was a legal issue, as well as a safety concern. Following the purchase of the cabins they were demolished (Epp, 2007). Nevertheless, one cottage owner in Boothroyd (2000) indicated that they did not

know the cabins were going to be destroyed after Manitoba Hydro purchased them.

The loss of these cabins meant a subsequent loss of destination points and social activities for users of the river. Many participants believe that with the cabins upriver, there was a greater likelihood of people going upriver. Paddock (2006) indicated:

> Cabins would ensure that people would have a place to go when out on the river and would encourage people to use the river again.

Social activities:

Before the CRD Churchillians often went upriver for recreational and relaxation purposes. They would camp, barbeque and have social gatherings. Some respondents indicated that there would be many people upriver at the cabins for parties and social interaction between friends and neighbours. These sorts of activities were very limited after the diversion because of the difficulty in accessing locations upriver, as well as the loss of their destination points, the cabins.

Bussell (2006) stated:

> Other popular recreational uses of the river would be to go upstream and go camping and have barbeques. Some people canoed from South Indian Lake down to Churchill, but now you can't do that because the water is gone.

Boating access:

Bill Ayotte (2005) indicated that it was often impossible for users of the Churchill River to travel upriver using a conventional boat and outboard motor. Most years the water level was extremely shallow and there were too many rocks to be able to navigate upriver without damaging their equipment. The limits to boating access caused a dramatic decline in the numbers of people able to use the river.

Dick Hunter (2005) indicated:

> I have only gone fishing, using an outboard motor, one time on the river since the CRD. I broke a prop and never really used the river after that. After the CRD in 1977 or 1978 people stopped using the river. Some tried using jetboats and there were six or seven airboats, but they would still bang against rocks. The river looked like it was dry.

Also, locations previously frequented by residents, such as Herriot Creek and Heppell Creek (Fishing Creek) were regularly inaccessible, which further reduced the attractiveness of boating on the river.

Chris Campbell asserted:

> At times after the diversion I could walk across the river. You couldn't get into Herriot Creek or Fishing Creek because the water was so low, some creeks even dried up. Now we have to rely on rain and the water from other creeks and rivers that flow into the once mighty Churchill River. If there is little rain in the area the Churchill will be dry and you have to walk upstream in places.

Business opportunities:

Presently Dave Daley does some tours upriver in his jetboat, as John Bilenduke (Bilenduke, 2006) and Joe Barron (Bilenduke, 2006; Campbell, 2006; McEwan, 2006) did in the past, but business ventures are unstable due to periodically low water levels, making accessibility of the river difficult. Daley (2005) declared, "in 2003 I could not use my jetboat and a jetboat only needs around five inches of water to travel on".

The river was and still is used as a transportation route for bird watching, such as at the tower by the marina at Goose Creek (Chartier, 2006). Bonnie Chartier planned on having a hunting and fishing lodge on the river (Boothroyd, 2000; Chartier, 2006), however the diversion adversely affected her ability to begin this enterprise, so she concentrated on land-based wildlife watching (Chartier, 2006).

The diversion also affected the potential for tourists to use the river. For example many canoeists could not access the lower Churchill River after the CRD, or were dissuaded from travelling on it because it was no longer an untamed river (Four Directions Consulting Group, 1994).

Two businesses selling and servicing outboard motors closed due to lack of business (Four Directions Consulting Group, 1994). Residents could rarely use outboard motors and conventional boats to get upriver after the diversion, thus these businesses went bankrupt.

Fishing activity:

Locals noted that the fish population declined significantly due to the observed reduction in aquatic habitat. People from Churchill were unable to catch fish like they did before the diversion. Bilenduke (2006) asserted:

> You couldn't catch big fish after the CRD. After the CRD you couldn't catch fish off the land, or catch a fish every time you went out like before the CRD.

The majority of the participants noted that fishing activity was greatly diminished as a result of the low water levels and reduced flow rate. There were still some places where people could fish, such as at Goose Creek (McEwan, 2006), however the fishers were limited to very specific times of the year when they could catch fish, such as in the spring (Hunter, 2005). Previous studies, such as Boothroyd (1992; 2000) and Four Directions Consulting Group (1994) also noted a reduction in aquatic habitat and fish population following the diversion.

Many of the participants fished for northern pike and arctic grayling, however residents also caught brook trout, burbot, whitefish and sucker (Daley, 2005, Hunter, 2005; McEwan, 2006; Paddock, 2006). A few people used to catch sturgeon as well before the CRD (Chartier, 2006; McEwan, 2006). Some residents netted Arctic char in Button Bay and the Churchill River estuary (Bussell, 2005; Hickes, 2006). Suckers and cisco were and are caught for bait or to feed dog teams (Daley, 2005; Hickes, 2006). Furthermore, North/South Consultants conducted surveys on the recreational fishery of the lower Churchill River and its tributaries in 1994 (McRae & Remnant, 1995) and in 2005 (Neufeld & Remnant, 2006), which compared the status of recreational fishing prior to diversion with the time periods subsequent to the diversion and following the weir.

Hunting access:

Access to locations around the lower Churchill River decreased when the water flow and level was reduced by the diversion (Four Directions Consulting Group, 1994; Hedman, 2007). However, both Darryl Hedman, a Manitoba Conservation Wildlife Manager and respondents who hunt for moose also indicated that the numbers of moose along the lower Churchill River have increased since the CRD, as a result of an increase in riparian vegetation (Fitzpatrick, 2006; Hedman, 2007; McEwan, 2006; Morand, 2005; Welburn, 2006). Brandson (2006) felt that the increase in moose has not been completely understood yet. In fact, there may be a variety of reasons for the rise in moose population in the area, such as forest fires in the south and climate change. The ACIA report projected that due to the increase in temperature habitat changes will occur and southern game will move northward (ACIA, 2004).

Prior to the diversion there were many ducks and tundra swans, however post-diversion their numbers declined considerably (Spence, 2005). Nesting habitat was lost when the river channel narrowed and mud replaced where the river used to be. Boothroyd (2006) stated:

> Waterfowl use of the diversion route and the Outlet Lakes area was significantly lower compared to pre-project numbers. Use of the Churchill River by Canada geese was lower because the water level was reduced. There was a reduction in attractive shoreline habitat...on the lower Churchill River rock or mud was exposed because of the decrease in water levels.

However, according to Chartier (2006) waterfowl numbers improved again when vegetation started to grow on the shoreline. Nevertheless, even though there was a perceived waterfowl population increase in the lower Churchill River area, a 1996 North/South Consultant's survey indicated that residents were not as likely to use locations upriver for hunting as they were compared to prior to the diversion (McRae & Remnant, 1997).

Trapping access:

Trappers from Churchill, whose traplines connected to the Churchill River received compensation for the reduced access to those areas caused by the diversion (Fitzpatrick, 2006). For example Manitoba Hydro provides Ernie Welburn with four trips a year by helicopter to his trapline (Welburn, 2006). This compensation has assisted trappers in gaining more consistent access to their traplines. Increased access was a priority of the compensation as a study revealed that spring break-up generally came three weeks earlier after the CRD, thus possibly reducing the length of the trapping season (Four Directions Consulting Group, 1994).

A limited amount of information was recorded from the research concerning trapping and the population of furbearing animals, however Four Directions Consulting Group (1994) indicated that the population of aquatic furbearers such as muskrat, beaver, and mink had decreased after the diversion, due to the reduction in suitable habitat and a decline in the fish population.

Winter travel:

Travel on the river during the winter season was negatively and positively affected according to different sources. Two participants pointed out that in their experience after the diversion it was often easier to travel upriver during the winter because the ice was smoother when the water level was lower. In a high water year, such as in 2005, the ice was rougher and more difficult to travel on (Fitzpatrick, 2006; Welburn, 2006).

In contrast, Four Directions Consulting Group (1994) reported that because the CRD caused the water level to decrease more rocks were exposed on the surface, thus snow machines were damaged more frequently. Also, due to regular raising and lowering of the water level in winter 'shell ice' was formed. Shell ice is dangerous to users because it is thin and people can easily fall through it.

Potable water:

The pumphouse at CR20 was relocated approximately four miles upstream to CR30 to ensure a safe supply of drinking water. The old pumphouse was at risk to salt-water intrusion due to the reduction in the fresh water level. The low water level might also

have caused the water to freeze to the bottom at CR20, which would leave the town with no drinking water. The change in pumphouse locations occurred before the diversion and when the Churchill River Weir was constructed it further decreased the risk of the water freezing through at CR30 by increasing the water level. The weir created a reservoir like effect upstream to create a deeper, more stable supply of water at CR30 (Ayotte, 2006; Boothroyd, 2000; Canada & Manitoba, 1975).

Four Directions Consulting Group (1994) suggested that the reduced flow in the Churchill River meant that there was an increased exposure to contaminated water. Observations noted were that the water was very brown and there was concern that a chemical used to treat the water may be hazardous. Another perceived worry was that there was mercury in the water. Studies on dam construction have found that upstream flooding as a cause of water regulation may discharge mercury into a river (Rosenberg et al., 1995; Rosenberg et al., 1997). However, North/South Consultant's monitoring has revealed that water quality and chemistry has not changed significantly comparing pre and post-weir construction (Bernhardt, 2007). Furthermore, muscle mercury concentration in fish did not increase as much as was predicted in the weir project's Environmental Impact Statement (Bernhardt, 2002; Manitoba Hydro & The Town of Churchill, 1997).

5.1.2 Weir/compensation package

The Churchill River Water Level Enhancement Project was designed to mitigate and compensate for the damage caused by the diversion to the residents of Churchill. A few of the participants felt that the mitigation compensation package assisted in

improving access to the Churchill River, but only slightly. One respondent indicated that it might produce long-term benefits to the community. Furthermore, participants believed the mitigation trust fund has had a positive affect on recreational programs. However, many observed that the weir has been inadequate in attracting residents to return to the river.

Water level and habitat:

Brandson (2005) and Chartier (2006) pointed out that the impacts of the weir might not be understood until much later in the future. Also, the negative impacts of the weir could be greater than the benefits accrued over a long period of time. Some harmful impacts could include the silting up of the river and thus the need for more dredging for the port to remain safe, as well as an increase in algae near the weir.

As a result of the future concerns regarding the effects of the weir Bonnie Chartier (2006) indicated:

> Further monitoring of the effect of the weir on the habitat is necessary to assess the expectations/goals of the project.

The shorelines and characteristics of the river have changed due to the weir. North/South Consultants monitoring reports have indicated that the re-watering process was successful and that there is more wetted habitat in the 10-kilometre reach upstream from the weir. The re-watered area was designed to create more and better access to the lower Churchill River (Bernhardt, 2002; 2005; MacDonald et al., 2004).

Wildlife-Beluga Whales:

Two participants indicated that the impact of the weir on the beluga whales in the estuary could be a cause for concern. Mike Macri (2005), who has been doing whale-watching tours in the Churchill River estuary for over 30 years observed a change in the movement of beluga whales after the weir was constructed. He has observed that:

> After the weir was constructed the whales have been more scattered. They don't use Mosquito Point as they did in the past. Whales used to go further upriver.

According to North/South's monitoring there have not been significant changes in the beluga whale population throughout the post-weir time period, although it was determined in the pre-project studies that the weir most likely would not impact the beluga whale population. The monitoring of belugas during construction revealed no significant effect on the whales' movement (Manitoba Hydro & The Town of Churchill, 1997; North/South Consultants, n.d).

Fish:

A major component of the Lower Churchill River Water Level Enhancement Weir Project was to increase the productivity and amount of fish habitat in the lower Churchill River. The weir constructed on the Churchill River was built to increase the area of wetted habitat (both in depth and area), which was designed to provide further overwintering habitat for fish and as a result, aid in providing better ecological conditions for fish. Increasing the overwintering habitat, as well as enlarging the feeding and spawning habitat, with a larger forage base was expected to create a larger population of fish in the area of the Churchill River influenced by the Enhancement scheme (Bernhardt,

2005; Manitoba Hydro & The Town of Churchill, 1997).

The reservoir like area created upstream of the weir has had an impact on the number and type of fish in this location. North/South Consultants have conducted studies on the fish population in the reservoir and fish enhancement areas, as well as conducted a questionnaire regarding the sports fishery in 2005. This survey was compared with the sports fishery survey conducted before the weir was constructed in 1994. Furthermore, the interviews conducted in 2005 and 2006 in this study obtained insights into the participants' perspectives on the changes in fishing activity.

The majority of participants believed that the numbers of fish have not increased significantly during the post-weir/fish enhancement years. Many observed a slight increase in the northern pike (jackfish) population in the post-weir period, however each year the numbers of pike seem to be different. Bernhardt indicated that North/South Consultants have found an increase in northern pike caught in winter gillnetting in the post-weir period. Nonetheless, species such as round whitefish, which prefer riverine conditions, have declined (Bernhardt, 2005).

Recently more walleye have been caught on the lower Churchill River, which was an infrequent occurrence before the weir was constructed. Walleye are a lacustrine type species of fish, rather than a riverine fish (Bernhardt, 2002). Bernhardt notes that, "there has been a shift in catch composition towards species that favour more lacustrine conditions" (Bernhardt, 2005: ii), which was predicted in the Environmental Impact Statement (Manitoba Hydro & The Town of Churchill, 1997).

Dave Daley, a participant, has observed a reduction in the number of sucker in the lower Churchill River. North/South Consultants have also documented a decline in the

number of sucker within the Goose Creek Enhancement reach that is contrary to the predictions made in the EIS (Bernhardt, 2005; Bernhardt, 2007).

Bernhardt (2005: 11) asserted:

> The number of fish captured in the pre- and post-Project winter gillnetting studies has remained low (<100 fish per year), and there has not been any consistent change in overall mean CPUE [catch per unit effort] (all species combined) since the weir was constructed.

This corresponds with data from 1999-2002 in the open water season, as Bernhardt (2005) reports that North/South Consultants found no consistent change in overall mean gillnet CPUE. Therefore, the data implies that fish abundance in the re-watered area has not improved yet.

Fitzpatrick (2006), Hunter (2005) and McEwan (2006) have observed that the Arctic grayling population has not increased since the weir and fish enhancement strategy was implemented. North/South Consultants also have found that there has not been the expected increase in Arctic grayling in the Goose Creek fish enhancement area (Bernhardt, 2002; 2005). The Environmental Impact Statement indicated that the Goose Creek fish enhancement scheme was expected to have positive results on the grayling population, as a result of new overwintering and spawning habitat that would be created. The numbers of grayling would be concentrated in the higher water velocity areas within the enhancement reach rather than the reservoir area (Bernhardt, 2002; Manitoba Hydro & The Town of Churchill, 1997; North/South Consultants, n.d.). However, grayling may not have been able to colonize the reach because of their apparent small size and may not be successful due to the abundance of northern pike and burbot (MacDonald et al., 2004).

River Users:

Some respondents indicated there has been an increase in the number of people accessing the river because of the weir and fish enhancement strategy, such as Bazlik (2005) and Brandson (2005). Brandson stated:

> Fishing has picked up since the weir project, especially at the second culvert around Goose Creek, where there's a bridge linking the land over the creek.

Most participants believed there has not been a considerable change in the number of users, especially when comparing the pre-diversion time to the post-weir period. Also, most fishing is done from the culverts and is not as remote a feeling as travelling upriver to fish. The weir has created the potential for users to use the re-watered portion of the lower Churchill River, which extends approximately 10 kilometres upstream from the weir. Nevertheless, further upstream use has not changed much since the weir was constructed. Recreation has improved slightly as a result of the re-watered area, however residents are re-discovering good places to travel and fish on the river since the weir changed the river environment (Chartier, 2006).

A few respondents indicated the need for creating access to the river for future generations (Brandson, 2005; Paddock, 2006; Spence, 2005). Outdoor activities, such as boating, fishing and hunting are significant in the bonding experience between fathers and sons (Brandson, 2005; McEwan, 2006; Paddock, 2006). Documenting the importance of activities on the lower Churchill River can assist in producing action from Manitoba Hydro and the Town of Churchill to aid future generations in being able to access the river.

Mitigation trust fund:

Many respondents indicated that the mitigation trust fund has helped the community of Churchill. A number of local community projects have been funded through the mitigation trust fund. The money has contributed to various cultural and recreational activities. The non-profit sector has benefited from the mitigation trust fund, for example as Bussell (2006) pointed out:

> The mitigation trust fund is used to help fund the boy scouts, girl guides, hockey programs and other community programs.

However, not all applicants can be successful when applying to the fund (Brandson, 2005) and a few participants felt that the compensation did not improve matters for individual river users, as Morand (2005) stated:

> I believe that the people who used the river did not gain that much...tourists have benefited, the people can take photos from the tower by the marina.

5.2 Opportunities

Many residents felt there should be opportunities for more and better mitigation and compensation from Manitoba Hydro. Some of the opportunities were already discussed with Manitoba Hydro and are currently in discussion. However, some of the participants felt that since they had already received some compensation for the effects of the CRD that they would be unlikely to receive future benefits.

Manitoba Hydro is still involved in the compensation process because the Churchill River Weir has not completely fulfilled the expectations that were agreed to when the mitigation compensation package was signed. One example of the weir's objectives was to improve access to the river for residents. However, since construction of the weir, the numbers of river users has not increased as was anticipated. Nevertheless, the number of river users has also declined as a result of the decrease in Churchill's population over time. In addition, fish populations were expected to increase because of more aquatic habitat available, however the response has not been as positive as was originally predicted (Bernhardt, 2007).

Monitoring is still on-going and people from both Manitoba Hydro and the Town of Churchill hope to create better recreational opportunities for the residents, as well as improve access upstream on the lower Churchill River. Fitzpatrick (2006) suggested improving mitigation by:

> Building dykes to ensure water levels are consistently above the weir…to aid…in keeping the water levels high, however it would be an expensive project.

Another opportunity for mitigation compensation that was mentioned in the 1994 Four Directions Consulting Group report is the possibility of contributions from Manitoba Hydro to build a salt-water marina by the Port of Churchill.

Salt-water marina:

Currently there is a community group discussing the prospect of constructing a salt-water marina that would help create more access to the river, particularly the estuary as well as better access to Hudson and Button Bay. Spence (2005) indicated:

> The new marina in the port area could be very positive for the community and assist in re-introducing the residents to the Churchill River.

The marina may generate 24 hour access to the river because people would not need to wait on the tides to determine when they could go out and return (Bussell, 2006). Fitzpatrick (2006) believed the marina may attract more northerners to come to Churchill, because of the increase in accessibility, but believed that it would not change the use of the river upstream.

The marina could be a benefit for tourism, as well as for local people (Paddock, 2006). Tours going between the Fort Prince of Wales and the Port would be more convenient as tides would not impede the schedule of tours as much as in the past. The salt-water marina may change where residents would use the river, possibly going from upper river usage to more usage of the downstream area, nearer to the salt-water marina (Bussell, 2005).

Access points:

Chartier (2006) indicated that more access points for bird watching would be positive for bird watchers. The building of the weir and the compensation package did provide more access points for bird watchers. Now there is CR30, the marina-lookout tower and the weir. Prior to the construction of the weir Goose Creek was the only access point.

New Cabin Development:

Cabin development was an important issue for many of the participants. One of the most significant reasons mentioned was that this new development would create destination points for residents on the river. The cottage development would entice people to start using the river again (Spence, 2005).

The Hydraulic Engineering and Operations Department of Manitoba Hydro initiated a study concerning the possibility of cabin development in the reservoir area created by the weir. They studied 28 potential locations in 1998 and 1999 and found that there were nine suitable sites for cabin development. These conclusions were determined using environmental, geotechnical and hydraulic factors. The report clarified that specific locations within these nine areas needed to be identified through field and office investigations and that appropriate government approvals had to be obtained prior to any development (Adams & Shumilak, 1999).

Cabin development is still one of the most important issues to be explored between Manitoba Hydro, the Town of Churchill and the requisite levels of government needed to approve such a development scheme.

5.3 Responses to Impacts and Opportunities:

Recreation on the Churchill River declined considerably following the diversion, as a result of low water levels, reduced access to the river and a loss of destination locations. River users had to adjust to the change in environmental conditions caused by the CRD. In some years winter travel on the river was unsafe because of air pockets below the ice. As a response Manitoba Hydro warned river users of the dangerous ice conditions, which kept people off the river (Chartier, 2006).

Chartier (2006) stated:

> Many people were nervous about travelling on the river. However, after a while people did start to go back…Glen McEwan, my brother Jack Batstone, Ernie Welburn and others.

Due to the decline in river accessibility people also used other locations to pursue their recreation and some found new ways of travelling on the Churchill River.

Alternative ways of travel on the river:

Many of the participants indicated that they stopped using the Churchill River after the CRD because they could not access the river with a conventional boat and outboard motor. Nonetheless, the river was accessible for a short period of time following the spring snowmelt. Otherwise airboats or jetboats were necessary to travel on such shallow water. Bill Ayotte (2005) declared:

> After 1978 access on the river became more restrictive due to the loss of water. Use of a conventional boat and outboard motor was curtailed. Use of the river was now restricted to those that had an airboat or jet drive motors.

Therefore, residents' recreation changed after the diversion, especially those who spent a lot of time on the river. A few users of the river were able to devise ways of

continuing to use the river. The majority of the participants indicated that after the diversion you needed an airboat to consistently access the river. Also, canoeists would use specialized flat-bottomed metal canoes to endure the rocks and shallow water. Airboats and jetboats are both very expensive, therefore not many people could afford to buy and operate them. You had to be a very committed river user to buy an airboat or jetboat. Repairs were also difficult and many owners fixed their own vehicles (Daley, 2005; McEwan, 2006; Paddock, 2006). One participant (Morand, 2005), stated that he felt airboats were dangerous to operate. However, at times even the airboat and jetboat users could not travel upriver as a result of the low water level.

Alternative recreation locations:

River users often were required to travel to substitute locations for their recreation, such as Button Bay (Hunter, 2005), North River, Seal River (Lawrie, 2005), North Knife River (Campbell, 2006) and Warkworth Lake (Bazlik, 2005; Chartier, 2006). Many of the Churchill residents were obligated to use other areas for fishing and hunting because they could not access the Churchill River as a result of the low water levels. Hunter (2005) has a cabin on Button Bay and currently fishes in that area, however he indicated that he would much prefer to use the Churchill River if he could.

> The frequency of my trips has declined because I don't catch as many fish…I would be able to go out for a total of three months a year before the diversion because it was possible to do so, unlike going out on Hudson or Button Bay.

Manitoba Hydro compensated owners of cabins on the lower Churchill River for the loss of their cabin locations on the CRD severance line. Some of these owners responded by relocating their cabins (or parts of their cabins) from the Churchill River to

other areas, such as Clifford Paddock who moved his cottage to Twin Lakes near the Churchill Northern Studies Centre. The Chartiers' relocated to Warkworth Lake (Paddock, 2006). Chartier (2006) stated that the Warkworth Lake area:

> …Was much more difficult to access than the Churchill River, especially in the summer. You had to use many different paths to get to Warkworth Lake during the summer. Many people were afraid to travel out there because it was more remote and not easy to get to. In winter it was used more because it was easier to access...

Other participants adapted by using locations such as the North River and the Seal River for their recreation (Lawrie, 2005). Currently residents use Hudson Bay and Button Bay for fishing and snowmobiling. Often these alternative locations were not readily accessible to many residents. For example Brandson (2005) was not comfortable using Button Bay as an alternative location for recreation due to tides and high waves, which make boating there more difficult to manage in comparison with river travel.

Business/Tourism:

Potential business and tourist opportunities had to be located elsewhere due to limited access to the Churchill River. There are other areas around Churchill that have attracted fishers and hunters. Brandson (2005) asserted:

> Dymond Lake has a goose-hunting lodge and there is a lodge on North Knife Lake used for fishing.

There are very few residents that presently use the upriver region of the Churchill River as part of their tourist business. Daley (2005) occasionally does sightseeing tours on the Churchill River, however he cannot rely upon his business or tourism upstream on the Churchill River. According to Four Directions Consulting Group's report (1994) this may be because of the instability of water levels, which fuels low demand for services on

the river. Also, the Churchill River is no longer perceived as an untamed, wild river as a result of the CRD. An example of the impact the diversion caused on river tourism was that the Chartiers' start in the tourism business changed from a focus on the Churchill River to land-based wildlife watching (Chartier, 2006).

Response to CRD:

As discussed in the impact section, the CRD had many negative affects on the users of the river. These harmful influences stemmed from the reduced flow of water downstream and the low water levels. Nevertheless, two respondents, Fitzpatrick (2006) and Welburn (2006), observed that winter travel was easier some years because the ice was not as rough going upstream as it was when the water level was high. Many participants also believed there was an increase in moose population. Hunting was often easier by the river because more willows grew on the sides of the river channel, which attracted moose to those feeding areas.

Studies conducted in the past often indicated that the navigation season would be lengthened due to the reduced flows in the Churchill River. With less freshwater going into the estuary there would be more salt-water influence, which would delay the formation of slush ice (salt-water freezes at a colder temperature than fresh water). The studies indicated that the navigation season could be increased by two weeks because of the reduced rate of flow, allowing for an increase in the shipping season from the Churchill Port (Canada and Manitoba, 1975; Manitoba Hydro, 1994). However, a study conducted by Henley (1974) revealed that the primary reason for formation of slush ice is due to the decrease in the mean October temperature rather than the flow rate on the

Churchill River. “A combination of low temperature, blizzard conditions and heavy snowfall facilitates and hastens slush-ice production” (34).

Response to weir/compensation package:

Some participants indicated the weir was not worth the money spent because there have been few new users of the river since its construction. They indicated that approximately the same number of people use the river now as compared to the time period after the CRD. A few participants believed an example of a significant improvement would be to create better access to an important destination point. Bilenduke (2006) indicated that better access to the confluence of Herriot Creek and the Churchill River would be a positive step in improving residents’ recreation on the river.

Most interviewees indicated that the mitigation compensation package has not met their expectations. They believe further negotiations are necessary to satisfy the needs of past long-term users of the river, as well as potential users of the river. Many participants feel that the weir has not notably increased the number of users on the river, even when considering the reduction in population over time.

Brandson (2005) believes the weir and compensation package would be worth the money spent, if the facilities are used more in the future. Currently, the marina is only used by a handful of people, thus participants felt that the marina has not really assisted the majority of potential river users. Since the weir and marina were constructed people will travel as far as the marina, but few travel further upriver by boat (Bussell, 2005).

A couple participants, Campbell (2006) and Hunter (2006), indicated that the compensation plan could be improved by ensuring that everyone who has a boat

registered to the local office be eligible for compensation if their motors or boats were damaged. Manitoba Hydro will not replace or repair people's equipment if it is damaged, except for registered trappers who have traplines that are connected to the river (Fitzpatrick, 2006; Welburn, 2006).

5.4 Changes in Lifestyle/Recreation

Changes in Churchill residents' lifestyle and recreation have been influenced by the CRD, however there are other explanations as well, such as technological advances, socio-economic changes and a decrease in the region's population.

River Recreation:

Many participants indicated that the type of recreation in Churchill has not changed much over time. However, access to these activities changed due to the diversion, for example boating in the summer became severely limited following the diversion. For many of the participants, their recreational activities centred on the river.

Brandson (2005) stated:

> I think it was very common for residents to go upriver in the past. You can get away from the town and have the sense of being in the real wilderness.

Bussell (2005) affirmed:

> The River was a place where one could get away from the town site, just go fishing and relax.

Technology:

Technology has partially shaped residents' recreation over time. However, many of the respondents indicated that there are some recreational activities that have been consistent throughout the years, like hunting, trapping and fishing. These activities were once subsistence based rather than recreational (Boothroyd, 2000; Hickes, 2006; MacIver & MacIver, 2006). How people have travelled in the region has changed considerably. Some of these changes were adaptations as a result of environmental change, for instance the use of airboats and jetboats on the Churchill River. Moreover, residents have

embraced new outdoor activities, such as photography and wildlife watching (Macri, 2005).

Other changes related to technological accessibility include more in-door activities compared with the past. Many of the interviewees stated that when they were young there was significantly more time spent outdoors because there were not as many electronic games. A few participants said that younger generations are spending more time watching television, as well as playing computer and video games.

Outdoor activities are still popular. Nevertheless, these activities often involve the use of machines, such as snowmobiles, quads, airboats and jetboats. With the most up-to-date machines, such as jetboats and snowmobiles, people are able to travel to locations more quickly and access more difficult locations than they were able to previously (Fitzpatrick, 2006; Welburn, 2006).

Population:

There has been a significant population change from the pre-CRD era to the present time. There were approximately 7,000 to 8,000 people in the Churchill region, which included Fort Churchill and the Town of Churchill (Ingebrigtson, 2005). However, there are currently less than 1,000 people living in the Town of Churchill all year round (Statistics Canada, 2007).

The military base at Fort Churchill had a major affect on the Town of Churchill. The base was in operation from the 1940s to the mid-1970s (Fleming, 1988). After the military left the Department of Public Works operated the facilities, however these jobs were eventually lost (Fleming, 1988; Hickes, 2006). The population decreased

considerably after the base and rocket range shut down (Fleming, 1988; Ingebrigtson, 2005).

Organized recreation has adjusted to the decrease in population. The opportunity for organized recreation has been reduced with the decline in population. For example, Brandson (2005) stated:

> There used to be consistent leagues for curling and baseball, but now operating the leagues is a more difficult proposition. However, there are still leagues, now they're mixed teams. Before men's and women's curling or baseball teams were separate.

Bazlik (2005) asserted:

> In the past the river was a good part of everybody's recreation...it was everybody's river. The population was higher back then, so more people used the river. Even the transient population, like the teachers and nurses would use the river.

Churchill's population will most likely remain stable, however it most likely depends on the fortunes of the port, the Churchill Health Centre and on the tourism industry (Newton, 2000).

Participants indicated that fewer people use the river now due to the effect of the CRD. However, the population decline, the aging population, as well as the influence of technology and lifestyle changes have also reduced the number of river users. Nevertheless, it is probable that even with a larger population base there would still be a relative reduction in river users post CRD.

Socio-economic changes:

There have been few new full-time jobs generated in Churchill. The Port and the tourism sector provide seasonal employment for many residents, however there is few year round employment opportunities. As a result of a decreasing population new social activities have not been generated.

There has been much discussion concerning the length of the port season, as well as increasing the volume of wheat and of the possibility of shipping other commodities. Brandson (2005) affirmed:

> With extra ships coming and going there is the possibility of breaking even more often or making profits.

Churchill redeveloped in the early 1970s. Prior to this time the military base at Fort Churchill had amenities, while the Town of Churchill did not have many health, social, educational or recreational facilities. However, in the 1970s more facilities were constructed, such as the Town Complex and government housing, which improved the residents' well-being (Boothroyd, 1992; Brandson, 2005). When the Town Complex was constructed there were about 5,000 residents in Churchill, however it was built to accommodate up to 10,000 people. Currently, with less than 1,000 people living in Churchill the tax base is small and the costs of the town infrastructure are high (Bussell, 2005).

5.5 Impact/Implications of Climate Change on the lower Churchill River

It seems probable that the magnitude and immediacy of the impacts caused by the CRD on river users' access to the lower Churchill River prevailed over observations of impacts concerning climate change on the river.

The participants did not often identify climate change as a factor in their use of the river over time, which is likely as a result of the direct impact of the CRD in affecting the manner they were able to access the river. However, in 2005 Hunter (2005) observed fish-flies in the Churchill region for the first time. He also indicated, as did many other respondents, that the water level in 2005 was at an unprecedented level, which he associated as another possible factor in the appearance of the fish-flies. Increases in precipitation in the north may be the result of climate change impacts (ACIA, 2004; Stewart & Lockhart, 2005).

Concurrent research on the lower Churchill River region has indicated that residents have observed environmental changes that are linked with a warming regional climate (Gilligan, 2007; Stirling & Parkinson, 2006). Earlier break-up in southern Hudson Bay and later break-up in northern Hudson Bay have been documented (Gagnon & Gough, 2005; Stewart & Lockhart, 2005). Participants have observed a longer ice-free season and the weather has been less predictable in the region, which has affected residents' off-road transportation (Gilligan, 2007). The boating season is longer, however participants indicated that the lower Churchill River was not as accessible due to the lower water levels created by the CRD (Edye-Rowntree et al., 2006; Gilligan, 2007).

Further research must be identified to discover the impacts of climate change in comparison to environmental changes in the region, such as the CRD. Climate change

will most likely have a broader impact on Churchill's regional environment over a long period of time, while environmental changes, such as the CRD are more localized in comparison and have had significant short-term impacts on the physical and human environment in the region.

5.6. Future initiatives

The future ability of residents to access the Churchill River depends on the future water level and water flow rates on the lower Churchill River. New dams planned for construction on the Burntwood-Nelson River system mean Manitoba Hydro plans to be harnessing the flows on the Churchill for the foreseeable future.

Bazlik (2005) stated that residents were not as cohesive as they could have been when the CRD was being discussed. He also suggested that this is still a problem at the present time.

> …Even today the community isn't as unified on the Churchill River issue as it could be.

A more unified, cohesive community approach may aid in creating a more favourable situation for the residents of Churchill concerning the lower Churchill River.

Manitoba Hydro and the Town of Churchill could investigate their method of communication with river users to produce better outcomes. For example, Chris Campbell's (Campbell, 2006) ice-fishing shack was knocked over in 2005 because of an increase in the water level upriver. A better system of communication between Manitoba Hydro and the river users would create the conditions for them to adapt and act accordingly to changes in flow rates and water levels, such as relocating their shacks or equipment onto islands or off the river. Manitoba Hydro currently posts water flow/water level warnings to the various communities affected by the CRD (Manitoba Hydro, 2005; Manitoba Hydro, 2006c), however it may be possible to improve the communication between river users and Manitoba Hydro through the establishment of a committee to address these concerns.

Respondents indicated that many of the Churchill residents are only going by memory of the times they spent on the Churchill River. Spence (2005) asserted:

Long-term users of the past are grasping to remember how it was.

Therefore, a concerted effort is needed to make further improvements to river access, which would bring residents back to using the river. A salt-water marina and cabin development could have a positive impact in the quality of residents' recreation on the lower Churchill River, nonetheless ensuring a stable water supply further upriver is still an unresolved issue.

New developments, such as the possibility of exploring and developing alternative sources of energy may in time assist in creating a more diverse range of energy production for the Churchill area, which could benefit the local economy. Ingebrigtson (2005) asserted:

> Wind power could be harnessed around the Churchill area. The wind is very powerful coming off the Bay, so Churchill could generate some of its own electricity. Harnessing the Hudson Bay tides would be another useful way to generate power. Then you could have three sources of power not just hydroelectricity.

Furthermore, encouraging alternative energy production may also potentially reduce the government of Manitoba and Manitoba Hydro's reliance on the CRD to produce electricity in the future. Less water diverted from the Churchill River would mean higher minimum flows and a higher water level on the lower Churchill River, which could provide better, long-term accessibility for river users. Residents could travel upriver as a result of the higher water levels in previous popular locations such as Herriot and Heppell Creek. Nevertheless, due to the importance of the CRD in the production of hydroelectricity to the province

of Manitoba it is highly unlikely the province would consider changing the operation of the Churchill River Diversion.

Future mitigation compensation:

There were a variety of ideas put forward by the Town of Churchill and Manitoba Hydro for the mitigation compensation package. A number of these ideas were incorporated into the existing package, however some participants believe that there were components of the compensation that have not been implemented. For instance, Lawrie (2005) asserted:

> Hydro needs to construct a few more things, like the barbeque pits and wind breaks by the marina at Goose Creek.

Other components that were not implemented were suggested as further mitigation or compensation for the continued adverse effects of the diversion, such as a road from Goose Creek to Deer River. This would help increase the number of people using the Churchill River by creating another access point (Daley, 2005; Hunter, 2005; Morand, 2005). Water bills could be subsidized or reduced as further compensation. These lower costs would assist businesses and individual residents and could attract potential business to the area (Hunter, 2005; Macri, 2005).

Future research:

Manitoba Hydro could facilitate more fish counts in a variety of places on the Churchill River, especially further upstream. Fish counts have been conducted near the weir, however not many studies have been conducted in the upstream locations post-weir construction. For example, Daley (2005) an avid outdoorsman and user of the Churchill

River insisted that Manitoba Hydro should find out what happened to the whitefish and sucker populations since the diversion and weir impacted the river.

Moreover, Manitoba Hydro could conduct studies involving long-term residents and river users to reveal their understanding and perspectives on the changes in the river (Daley, 2005). Additional in depth studies should be encouraged too, for instance the long-term impact of the weir on the beluga whales in the estuary and more generally the impact of the weir on the flora and fauna in the region (Brandson, 2005; Chartier, 2006; Macri, 2005).

Chapter 6. Conclusions and Recommendations

6.1 Conclusion

This study, in addition to previous research has documented the importance of the Churchill River to residents. The thesis also explores how the CRD and mitigation compensation package have affected Churchill residents' ability to use the lower Churchill River. The diversion has altered the Churchill-Nelson River regimes, as well as influenced the surrounding terrestrial habitat. Both levels of government (Canada and Manitoba) have been involved with Manitoba Hydro to provide remedial measures, as well as negotiate mitigation compensation measures to affected communities. The Town of Churchill signed a mitigation compensation package with Manitoba Hydro in the summer of 1997. The weir and the fish enhancement strategy were important aspects of this package designed to alleviate the effect of the CRD on the lower Churchill River. Post-monitoring of these remedial measures has revealed that further research is necessary to discover why the anticipated outcomes have not been realized. The majority of participants made similar conclusions regarding the mitigation compensation package. They acknowledged that there were benefits, such as the mitigation trust fund, which has funded a number of community-based projects. However, there have also been disappointments, for instance the Arctic grayling population has not increased as expected in the Goose Creek fish enhancement region. Several respondents were also concerned about the affect the weir may have on the flora and fauna of the surrounding environment in the future.

Many of the issues that were discussed in this study had been revealed in previous studies concerning the impact of the CRD on the Town of Churchill. The decline in river

access was a fundamental concern for residents because it was and is such a focal point for recreational and harvesting opportunities. Consistent access to favourite locations on the river remains limited. Currently many of these key sites are not as attractive as prior to the diversion because of the habitat changes on the river. There are not as many fish available as compared to the pre-diversion era.

Several respondents were skeptical about future opportunities to improve the mitigation compensation measures. A few respondents seemed to think that the time for mitigation and compensation was over. Participants also pointed out that the lower Churchill River Weir was creating stable water levels for water intake, however did not provide enough re-watered area to dependably travel upstream. They indicated that no new realistic options existed to improve upon the current mitigation compensation package. Thus, a revival of public interest in using the river would be difficult to accomplish. However, other respondents mentioned the potential construction of cabin development upriver and of a salt-water marina built by the Port as components of continued compensation. Several participants indicated that these projects could help re-introduce residents to the river. Moreover, there are other possible compensation ideas that have been suggested by residents and consultants in past studies, such as constructing a road to Deer River to improve access to the river. These compensation ideas should be analyzed more thoroughly as options to enhance Churchill residents' access to the river. Other potential environmental changes in the lower Churchill River region, such as climate change have been documented by scientists and observed by locals in northern Canada. Climate change impacts must be minimized and opportunities explored to ensure the future well-being of Churchillians and other sub-Arctic and Arctic people.

6.2 Recommendations

- Establish a process where representatives from the Town of Churchill, Manitoba Hydro and other possible stakeholders can address community concerns related to the lower Churchill River Weir, the compensation package, CRD and future hydro projects.

- Create a mechanism to regularly communicate Manitoba Hydro's activities, initiatives and future developments with Churchill residents.

- Investigate the feasibility of enhancing residents' access to the river through a variety of projects, such as a salt-water marina by the port, cabin development in the re-watered area upstream of the weir, facility upgrades to the marina at Goose Creek, a road to Deer River and the construction of additional river access points.

- Continue to monitor the weir's condition and impact on the river to assess its viability. This should include continuing the long term monitoring of the fish community.

- Conduct additional, focused research into Churchill residents' perspectives on how to further improve their access and use of the lower Churchill River.

6.3 Facts for Policymakers

- Strategies to minimize environmental impacts are essential to manage current and future environmental/climate changes.

- Financial support is required at the community level to respond and adapt to environmental/climate changes.

- The Manitoba provincial government and Canadian federal government need to recognize the importance of the lower Churchill River for the cultural and spiritual well-being of Churchill Residents.

- Programs to educate/train Churchill Residents concerning regional environmental/climate change need to be supported by the Manitoba provincial government and the Canadian federal government.

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Appendix A-Glossary of Terms

Airboat: Airboats have a flat-bottom and are powered by a propeller fastened to an aircraft or automobile engine. The propeller is the normal size and shape of an airplane propeller; thus, a large metal cage is used to protect passengers and other users. The flat bottom lets airboats navigate effortlessly through shallow waters, such as swamps, lakes and rivers (p.18-19) (Wikipedia, 2006a).

BCE/CE: Before Common or Current Era/Common or Current Era

Churchill Resident: Interviewees/participants include former long-term residents (lived in the community for approximately 10 years) now living outside the Town of Churchill, in addition to current residents of Churchill, Manitoba.

Churchill River Diversion (CRD): The diversion of the Churchill River began in 1976; Manitoba Hydro constructed the CRD to create an increase in the water flow through the dams along the Nelson River drainage basin. Missi Falls control structure, at the head of South Indian Lake determines how much water from the Churchill River system is needed for the Nelson River system. Water started flowing from the Churchill into the Nelson in 1976-1977.

Dredging: "To clear the bottom of or deepen (the seas or a river) by bringing up mud and waste" (Allwords.com, 2005, http://www.allwords.com/word-dredging.html). Retrieved June 26th, 2006.

Fort Churchill: First referred to a fur trade settlement, located across the Churchill River from the present day site of the Town of Churchill. It officially closed in 1932. After the military infrastructure was constructed (to the East of the Town of Churchill) it was referred to as Fort Churchill.

Jetboat: A jetboat is a watercraft driven by a jet of water expelled from the back of the boat. It is different from a powerboat or motorboat, which use propellers in the water behind the boat; a jetboat takes the water from under the boat into a pump-jet inside the boat, and then ejects it through a nozzle at the stern (p.18-19) (Wikipedia, 2006b).

Manitoba Hydro (Hydro): was founded in 1961, it is a Provincial Crown Corporation, and is the electric power and natural gas utility in the province of Manitoba. Most of the electrical energy is provided by hydroelectric power; therefore the electricity rates are low and stable. Manitoba Hydro "is the fourth largest electrical utility in Canada" (Wikipedia, 2006c).

Mitigation compensation Package: The agreement made by Manitoba Hydro and the Town of Churchill in the spring of 1997. The compensation package given by Manitoba Hydro to the Town of Churchill included the construction of: a rock fill weir and connected dykes, a quarry on the west side of the river, a marina/wayside park area, a Churchill River Mainstem fish passage structure, a weir maintenance material storage section, a Goose Creek Fishway and Enhancement Reach and a human constructed island

on the river to supply replacement water bird nesting habitat in the new upstream reservoir (Manitoba Hydro & The Town of Churchill, 2001).

Monitoring and rehabilitation programs began during the construction time. Some of them are: research; such as water velocity barrier studies for fish, aquatic and terrestrial ecosystem based monitoring and historic resources studies (Manitoba Hydro & The Town of Churchill, 2001).

Other monetary settlements included: three million dollars to the local government for the harmful consequences of the CRD in 1993, two million eight hundred thousand dollars for a community-managed mitigation trust fund to deal with adverse effects not alleviated by the weir and marina complex, plus five million dollars as a capital payment to finalize Manitoba Hydro's existing annual commitment for the town's water supply system (Boothroyd, 2000).

Recreational use: non-commercial use of the river. The Residents of Churchill used (and are using) the river mainly for enjoyment, such as boating, sport fishing, swimming in the summer and for relaxation. However, the river has been and is also used for income-related activities, such as hunting and trapping.

River Usage (Use): usage or use of river in this research study means people employing the river for means of navigation, boating or snowmobiling for leisure or for other activities such as fishing, hunting, trapping and swimming.

Weir: There are different types of weirs, which could be made up of a variety of materials. Churchill's weir is a rockfill barrier put in place to block most of the flow of water going downstream, but there is a spillway in the middle so fish and water are still able to flow downriver. The weir's principal function is to elevate the water level upstream so residents are better able to access the lower Churchill River.

Appendix B-Ethics Approval Certificate

15 July 2005

TO: **Joel Edye-Rowntree** (Advisor J. Oakes)

Principal Investigator

FROM: **Wayne Taylor, Chair**

Joint-Faculty Research Ethics Board (JFREB)

Re: **Protocol #J2005:081**

"Linkages between Local and Scientific Knowledge: People and Climate Change, Water, and Geese in Churchill, MB"

Please be advised that your above-referenced protocol has received human ethics approval by the **Joint-Faculty Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement**.** This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note that, if you have received multi-year funding for this research, responsibility lies you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

Appendix C- Informed Consent Document

Informed Consent Document

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The purpose of this project is to learn more about how people from Churchill have used the Churchill River over time. This study will assess and analyze the environmental changes on the Churchill River from 1970 to the present time. The project is part of a master's thesis, titled *Usage of the lower Churchill River by Churchill Residents from 1970 to 2006*. Your interview will take about one to two hours to complete. Once the interview is transcribed, you will receive a draft for review. Your reviewed interview will be included in an essay, article, poster, or book, along with a photograph of you and a brief one to two sentence biography. You will receive a complimentary copy of all publications to show my appreciation for taking the time to participate in this master's project.

If you would like the interview taped, please let me know. If you do not want to be taped, that is okay; I will write down the information you want to share.

Accept Audio Recording	Accept Photography
_____	_____
Participant's Signature	Participant's Signature

The interview themes or questions focus on how the Churchill River has changed over time, the environmental changes (natural and human induced) and the effect on the users of the river. Please feel free to not discuss any themes or questions you do not feel comfortable with. You may also end your participation in this project at any time during the interview process. This research is funded by the ArcticNet Networks of Centres of Excellence Canada, the Northern Research Fund (Churchill Northern Studies Centre), the Northern Scientific Training Program, the Oakes-Riewe Research Award and by Manitoba Hydro.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the project and agree to participate.

In no way does this waive your legal rights nor release the researchers, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the project at any time, and/or refrain from discussing any themes or questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

If you have any questions, please feel free to contact Joel Edye-Rowntree at (xxx) xxx-xxxx, umedyer2@cc.umanitoba.ca or my professor, Dr. Jill Oakes at (204) 474-7352, jill_oakes@umanitoba.ca The University of Manitoba Joint Faculty Research Ethics Board has approved this project. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Secretariat at (204) 474-7122. A copy of this consent form has been given to you to keep for your records and reference.

_____ _____

Participant's Name (Please Print) Date

_____ _____

Participant's Signature Date

_____ _____

Researcher's Signature Date

Appendix D- Ethics Amendment Approval and Renewal Approval

AMENDMENT APPROVAL

07 June 2006

TO: **Joel-Edye-Rowntree**

Principal Investigator

FROM: **Wayne Taylor, Chair**

Joint-Faculty Research Ethics Board (JFREB)

Re: **Protocol #J2005:081**

"Usage of the Churchill River by Churchill Residents from 1970 - 2005"

This will acknowledge your request dated June 2, 2006 requesting amendment to the above-noted protocol.

Approval is given for this amendment. Any other changes to the protocol must be reported to the Human Ethics Secretariat in advance of implementation.

RENEWAL APPROVAL

07 June 2006

TO: **Joel-Edye-Rowntree**

Principal Investigator

FROM: **Wayne Taylor, Chair**

Joint-Faculty Research Ethics Board (JFREB)

Re: **Protocol #J2005:081**

"Usage of the Churchill River by Churchill Residents from 1970 - 2005"

Please be advised that your above-referenced protocol has received approval for renewal by the **Joint-Faculty Research Ethics Board.** This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Appendix E -Transcribed and Edited Interview Review

A copy of this form will be returned to you for your records and reference. If you would like more detail or have any questions, please contact Joel Edye-Rowntree at (xxx) xxx-xxxx, umedyer2@cc.umanitoba.ca or my professor, Dr. Jill Oakes, at (204) 474-7352, jill_oakes@umanitoba.ca. You will be provided a complimentary copy of publications of this work. Please take the time to read this carefully. Please sign either line (1) or line (2) below.

I have been asked to review my transcribed and edited interview and provide any additional comments or suggestions for revisions.

1) I have reviewed my transcribed and edited interview and have no further comments.

_____	_____	_____
Participant's Name (Printed)	Participant's Signature	Date

OR

2) I've reviewed my transcribed and edited interview and have attached my comments.

_____	_____	_____
Participant's Name (Printed)	Participant's Signature	Date

_____	_____
Researcher's Signature	Date

Appendix F- Interview Schedule

Part 1- Background

First -introductions, the researcher's background and the purpose of the project

Afterwards I would introduce the consent form and the transcribed edited interview form for the respondent to look over.

Example questions: Where were you born? Where did you grow up? How long have you lived in Churchill?

Later I would write a three or four sentence biography about them as part of the transcription (with picture if they consented).

Part 2- Maps

I take out the 3 maps I have of the Churchill region (from Conservation Manitoba).

Example questions: Where did you go on the river? Did you have a cabin on the river? If so, where?

Where were the best places to fish/hunt/trap, etc? Where has the river changed? Which 'spots' were popular for users of the river? (Same sort of questions for them about their present use of the river if it is applicable)

Part 3- How did/do they use the Churchill River (Frequency of use)

Example questions: How often did you use the river in a year (month/week)? Did you go out on weekdays and weekends or just weekends? What seasons did you use the river? How come? What time of year did you enjoy using river? How come?

How long did you stay out on the river when you went out? (Same sort of questions for them about their present use of the river if it is applicable)

Part 4- Personal Reflections

Example questions: How did you travel on the river? Has that changed over time?

Have the uses of the river changed over time for you? How come?

Who did you go out with? Did you notice the numbers of people using the river change over time?

Did your grandparents/parents or friends use the river? Would they use the river for the same reasons as you?

Why was the river important to you? (Specific experiences?)

How has the river influenced your way of life?

(Same sort of questions for them about their present use of the river if it is applicable)

Part 5- General/Community Questions

Example questions/topics:

Do people use the river in every season? If so, what are the reasons the river was/is used?

Were there or are there commercial uses of the Churchill River?

Has the wildlife changed from when you used the river first until now? (New species seen? Changes in vegetation type?)

How do the younger generations differ from the older generations in using the Churchill River? Change in recreation over time?

Have you noticed any pollution in the river over time? Has the quality of the water changed for you?

Did the diversion change your use of the river? How? Did you notice other environmental changes?

Has the compensation package (marina, watch tower, trust fund, fish enhancement areas) helped you? Why or why not? Has it helped the community? How come?

In your experience what has been the affect of the weir on people (fish/wildlife) using the river? Do more people use the river now than before the weir?

Do you have anything else that you would like to add to the interview?

Note: Questions were not always worded the exact same way for every interview, however the main concepts in each section were presented in each interview.

I also asked more questions that were suitable to the interviewee's situation (for example if they used the river for fishing, then we would talk about fishing for an extended period of time).

Appendix G-Consultant Interviews

Warren Bernhardt

Warren Bernhardt is a senior aquatic biologist with North/South Consultants, Inc, an environmental consulting firm who were responsible for the aquatic environmental assessment and post-project monitoring for Manitoba Hydro's Churchill River weir project (no photo).

I have been involved in the design, implementation and reporting process for aquatic environmental studies for the Churchill River Weir Project since 1994. Studies we conducted included pre-weir baseline data collection for preparation of an environmental impact statement, monitoring during construction of the weir, and post-construction monitoring to determine how the aquatic environment has responded to physical changes resulting from construction and operation of the weir. Our studies have focused on all major aquatic ecosystem components and included aquatic habitat mapping, water chemistry monitoring, as well invertebrate, fish, and marine mammal responses to the project. The intent of the post-project monitoring program is to determine whether aquatic ecosystem responses to the weir were accurately predicted within the Project environmental impact statement and, if not, to attempt to determine why.

The project was completed in 1999 and now we are starting to get an understanding of changes due to the project. From what we now know, many of our predictions were accurate, but we have also observed some unexpected changes. We expected that there would be little change in water chemistry, in invertebrate communities, and little effect to marine mammals. So far, our monitoring indicates that these predictions were accurate.

Construction of the weir created additional aquatic habitat upstream of the weir, and it was expected that the abundance of fish would increase in response to this. However, monitoring has not shown as substantial an increase as we had hoped. Instead, we have seen some fairly large changes in fish community composition. The largest and most surprising change has been the decline in use of Goose Creek by longnose and white suckers, as well as declines in fish that like fast water, such as Arctic grayling and round whitefish. It was expected that the abundance of fish species that preferred fast water would decline slightly because of the creation of a more lake-like environment, but the extent to which the abundance of suckers have declined was unexpected. We are not sure what the reason for that is, but future studies will hopefully help determine this. We also expected an increase in the abundance of fish that like slower water, such as northern pike and walleye. So far, we have seen a slight increase in the abundance of walleye,

while the abundance of pike, which would be expected to increase in the new environment, has shown little change. Overall, I think that fish community responses have been somewhat different than expected. Part of the reason for the unexpected shifts in fish community may be because aquatic habitat has not stabilized since the weir has been constructed.

Recreational fishing has changed somewhat since the weir has been built. Before the weir was built, most people would fish along the CR30 road for northern pike during spring, when high water velocities within stream crossing culverts made it more difficult to access upstream areas. Occasionally brook trout and Arctic grayling were also captured. This fishery usually lasted about two weeks. After construction of the weir, water level has increased within the various channels of Goose Creek downstream of the CR30 road and it is easier for fish to ascend through the culverts. Consequently, the fishery is less intense for the two-week period but tends to last longer. There are not a lot of people going upriver, except people that have airboats or jetboats. While the weir provides deeper water for a short distance (~ 10 km) upriver, shallow water conditions still exist in areas farther upstream.

Peter Boothroyd

Peter Boothroyd was a consultant with Boothroyd and Associates when he was retained by the Town of Churchill to research the impacts of the CRD on the Town of Churchill (no photo). He assisted the town in negotiating the mitigation compensation package with Manitoba Hydro. Peter worked as a consultant on this project from approximately 1992 to 1999.

Time
The research phase took six months and resulted in a report to the community, which was also submitted to Hydro. Manitoba Hydro agreed to negotiations on possible mitigation measures. The report was the basis for negotiations by the town with Hydro. The key issue was addressing the reduced level of water on the lower Churchill River.

The town and its advisors with Hydro and their advisors worked together to explore mitigation and compensation options that would be feasible. The group came up with a plan to mitigate the impacts of the CRD, which resulted in a mitigation and compensation package. The weir, marina, various fish enhancement works on river and conversion of the quarry on the west side of the river stocked with fish for recreational fishing were the main mitigation components. The compensation component was a trust fund. Hydro also provided some funding assistance with the leaking water supply pipeline. The weir was completed by the summer of 1999. In 1999, they had to add some materials to complete the construction, however most of the weir was finished by the winter of 1998.

CRD-Environment impact
I did three studies on the impacts of the CRD on the environment when I worked for the Canadian Wildlife Service. One was on the effects of the CRD on Canada geese on the lower Churchill River. Another one was near Nelson House and the effects of the CRD on waterfowl use of the diversion route. The third study was on the effects of the Lake Winnipeg Regulation (LWR) project on waterfowl use of the Outlet Lakes area north of Lake Winnipeg.

These studies were done when I worked for the Canadian Wildlife Service. The results became part of the Federal Ecological Monitoring Program that also looked at the effects of the CRD and LWR projects on mercury levels and fish production. The results of the three studies show that there was a negative effect on waterfowl. Waterfowl use of the diversion route and the Outlet Lakes area was significantly lower compared to pre-project numbers. Use of the Churchill River by Canada geese was lower because the water level was reduced. There was a reduction in attractive shoreline habitat in all three of the

studies. On the lower Churchill River rock or mud was exposed because of the decrease in water levels, so there was new habitat. Churchill lost about two-thirds of its flow (or 80% of its flow) on average, but it depends on the weather, how much precipitation there is in the region. In 1997 the water level was higher than normal on the Churchill River because of the floodwaters from the south. So, Manitoba Hydro released more water down the lower Churchill River.

Lake Winnipeg is used as a gigantic reservoir to store the water from the dams on the Nelson River. There are limits on how much water can be stored in Lake Winnipeg and Southern Indian Lake. If the levels get too high on Southern Indian Lake then more water is sent downstream on the Churchill River.

The diversion and Lake Winnipeg Regulation were created to maximize flows downstream on the Nelson River to produce as much hydroelectric power as possible, through generating stations like Jenpeg and Limestone.
The compensation package was a landmark arrangement between the Town of Churchill and Manitoba Hydro. It was the result of a lot of work being done cooperatively by the town and Hydro. Kischikamee Treaty Council members also received a separate settlement package, along with sharing in the benefits of the compensation package that went to the Town of Churchill. The Kischikamee membership is diverse, however the majority are Cree. They possess unique rights as Aboriginal Peoples; therefore they qualified for additional compensation. The infringement of Aboriginal rights, their inability to continue fishing, hunting and trapping, because of the CRD was the basis for separate compensation. They received a trust fund from Manitoba Hydro. There are less than 100 members in the Kischikamee Treaty Council.

CRD-Socio-economic Impacts
One of the key purposes of the mitigation measures was to ensure safe boating for recreation on the river. There was usually so little flow in the river, rocks protruded from the surface. Some parts of the river were no longer accessible. Key recreational sites that people liked to visit weren't accessible. For example residents could not get to Herriot Creek. Travel on the river was enjoyable and fishing was a big part of that. People realized it was not safe to travel on the river after the CRD. A few people who had the finances used airboats, but even then it was fairly hazardous. Bob Brennan (the CEO of Manitoba Hydro) went on an airboat and experienced how dangerous the river is when the boat bounced off a rock. I believe this helped with the town's negotiations with Hydro when he saw first hand what had happened to the river.

Being able to enjoy the river again was a key point in the town's negotiations. The river is essential to the town, in fact it is the reason Churchill is located there, as an outlet to Hudson Bay. An example of the impacts of the CRD on the residents would be that there is less boating, which had impacts on the family unit. Traditional bonding that took place on the river was not possible or was significantly reduced, which is an example of the decline in overall spiritual and mental health due to the low water levels.

Changes in Residents' Feelings toward Compensation
At first people were pessimistic concerning compensation because there had already been many meetings, discussions and committees (designed to resolve this issue), but no changes had come about from the discussions.

It was 14 years after the CRD had been implemented that these consultations and negotiations were taking place, which also could have contributed to the residents' pessimistic attitudes. There was a saying in Churchill that "God died and Hydro took over". The research I conducted in 1992 and the resulting report brought about some change in people's attitudes, it showed the town meant business concerning mitigation and compensation.

Compensation package
The fish enhancement works were intended to offset both the adverse effects of the CRD and fish habitat eliminated due to the weir. Initially, construction of several weirs or dams was considered. However, due to the river gradient the dams would have to be quite high, so there was concern about flooding and the mercury that would be released, which would bio-accumulate in the food web. Therefore, the size and placement of the single weir that was selected were very important. Goose Creek is in a low-lying area, so flooding was limited by constructing a low level weir.

Mike Spence and John Bilenduke negotiated the details of the trust fund with Hydro. The trust fund the community received was quite generous. There were more dramatic changes in the lakes and landscape due to flooding caused by the CRD in the Nelson House area.

North/South Consultants and TetrES did the environmental assessment on the Weir Project. North/South provided the aquatic background and TetrES supplied the terrestrial expertise. An environmental impact statement was jointly produced for Manitoba Hydro and the Town of Churchill. The provincial and federal governments were both involved in assessing and approving the weir project. The Department of Fisheries and Oceans gave an authorization to Manitoba Hydro to complete the project. The Navigable Waters Protection Act was invoked when it was known that the weir would affect navigation of the Churchill River.