

This document has been digitized by the Oil Sands Research and Information Network, University of Alberta with permission of Alberta Environment.

HISTORY OF THE ATHABASCA OIL SANDS REGION,
1890 to 1960's
VOLUME I: SOCIO-ECONOMIC DEVELOPMENTS

by

J.M. PARKER

K.W. TINGLEY

Boreal Institute for Northern Studies
The University of Alberta

for

ALBERTA OIL SANDS
ENVIRONMENTAL RESEARCH PROGRAM

Project HS 10.2

September 1980

TABLE OF CONTENTS

	Page
DECLARATION	ii
LETTER OF TRANSMITTAL	iii
DESCRIPTIVE SUMMARY	iv
LIST OF TABLES	xi
LIST OF FIGURES	xii
SUMMARY OF FINDINGS	xiii
ACKNOWLEDGEMENTS	xv
1. GENERAL INTRODUCTION: SOCIO-ECONOMIC AND ORAL HISTORY	1
2. HISTORICAL AND GEOGRAPHICAL OVERVIEW	6
2.1 Geographical Factors	6
2.2 The Native Peoples	8
2.3 The Fur Trade	11
2.4 The Missionaries	13
2.5 Transportation Changes	15
2.6 Government and Economic Development	16
3. CHRONOLOGY OF HISTORICAL EVENTS	19
4. A HISTORY OF SOCIO-ECONOMIC DEVELOPMENTS IN THE ATHABASCA OIL SANDS REGION, 1890 to 1960's: SELECTED THEMES	23
4.1 Introduction	23
4.1.1 Methodology	24
4.1.1.1 Principal Sources Consulted	24
4.1.1.2 Sources on the Athabasca region in the Public Archives of Canada	25
4.1.1.3 Some Difficulties Encountered during the Research	30
4.2 The Federal Initiative: The Geological Survey and the Mines Branch, 1975 to 1947	31
4.2.1 Geological Survey of Canada, 1875 to 1897	31
4.2.2 The Mines Branch, 1913 to 1947	34
4.3 Catalysts of Change: Federal Control Agencies, 1893 to 1924	60
4.3.1 The North-West Mounted Police, 1892 to 1917	60
4.3.2 The Forestry Branch, 1912 to 1924	92
4.4 Independent Private Enterprise, 1901 to 1946	113

TABLE OF CONTENTS (CONCLUDED)

		Page
4.5	Federal-Provincial Initiatives: The Federal Mines Branch and the Provincial Research Council, 1914 to 1960	121
5.	CONCLUSION	131
6.	REFERENCES CITED	133
7.	LIST OF AOSERP REPORTS	152

LIST OF TABLES

	Page
1. Indigenous and Immigrant Groups	2
2. List of Liquor Permits for Athabasca Region, 1903	64
3. "Census of Indians and Half-Breeds, Athabasca District, Winter of 1898-1899"	73
4. Patrols for 1916	101

LIST OF FIGURES

	Page
1. Location of AOSERP study area	5

SUMMARY OF FINDINGS

There is no doubt that the Athabasca Oil Sands region has been an eldorado for resource development. The major forces shaping its development, i.e., private enterprise, church missions and government enterprise, have come from outside the region. The economy of the fur trade predominated from 1778 until the 1950's. The role of religious organizations was one of civilizing the original inhabitants by introducing Christian religious practices and attendant material comforts of education and health care. Perhaps most significant was the provision of paternal protection from intrusions of government and industry in their expansion into the region. Oral history interviews indicate that this paternal activity lessened as churches began to focus upon the needs of newcomers.

Prior to 1890, society in the region was conditioned by fur trade economy and religious proselytism. The fur trade, dominated by the Hudson's Bay Company, sought economic benefits which depended on stable social conditions. To a certain extent social stability was reinforced by the presence of missionaries. These two external influences, Company and Church, complemented one another. [2] Separated by muskeg from the south and accessible only through the Churchill-Clearwater rivers, the society of the region remained relatively isolated until the establishment of Fort McMurray in 1870. This post portended the changes in transportation and routes which led to the entry of agencies of the Crown, the third major external influence to enter the region.

It is the entry of government and new forms of private enterprise which will be emphasized in the socio-economic report (section 4) because they initiated the transition of the region from a fur trade economy to one based industrial resources. From the 1890's to the time of the transfer of natural resources to Alberta in 1930, the attitude of the federal government reflected concern, not only for the protection of these resources, but also the desire to ensure their development through the introduction of legislation

and regulations. These activities initiated changes in the society and economy; the communities of Fort Chipewyan and Fort MacKay, structured on the fur trade, may be contrasted with Fort McMurray, a community established as the vanguard of new developments initiated by government and private enterprise.

With these three external forces in perspective, the historical study was designed to consider three major areas of research: the interaction of indigenous and immigrant people; the changes in economic development; and the evolution of government developments in the region. From these starting points, two avenues of investigation emerged. The first avenue involved investigation of documents pertaining to the activities of agencies that were external to the region. The second avenue involved oral history interviews with residents indigenous to the Athabasca Oil Sands region. The results were a socio-economic study which reveals the growth of external forces in the region, and an oral history report (Vol. II) which reflects the lives of people in the region.

ACKNOWLEDGEMENTS

These research projects HS 10.2 and HS 10.1 were funded by the Alberta Oil Sands Environmental Research Program, joint Alberta-Canada research program established to fund, direct, and co-ordinate environmental research in the Athabasca Oil Sands area of north-eastern Alberta.

The assistance of B. Corbett and T. Cook of the Public Archives of Canada for facilitating access to records was greatly appreciated.

The authors also wish to acknowledge the many individuals who provided valuable information and made the field experiences an enjoyable and rewarding experience. Special thanks go out to S.M. Blair of Toronto; P. McCormack of Edmonton; R. Cheecham and R. Woodward of Anzac; D. Comfort, R.E. Duncan, and A. Strassbourg of Fort McMurray; T. Hanak, R. Fraser, N. MacKay, and Howard Wylie, of Fort Chipewyan.

There were many times when the time and patience of R.S. Jamieson and his staff at the Boreal Institute were sorely tested.

The authors wish particularly to thank Barbara M. Kasinska, Research Manager of the Human System, for her constructive insights into developing a historical framework of the Athabasca Oil Sands region.

1. GENERAL INTRODUCTION: SOCIO-ECONOMIC AND ORAL HISTORY

The reports in these volumes¹ represent the result of two years of historical research into economic developments and concomitant changes in the society of the Athabasca Oil Sands region between 1890 and 1960. Although the reports do not pretend to offer a definitive picture of all socio-economic developments, they do provide some important insights and analysis into selected aspects of a region only recently brought into focus by world energy needs.

Crucial to this historical study are the dimensions of space and time. The former concept is significant because geography played a significant role in the shaping of society. Time is equally important because it delineates the period between 1890 and 1960 as one in which increasing technological and economic forces began to shape a new society from the one which evolved between 1770 and 1890.

The spatial dimension involves exploration, surveys, and resource development, all of which depended on the region's geography. When access to the area changed in the latter part of the nineteenth century, a new form of society, one of settlement and development was introduced, if not imposed upon the old fur trade society. This new society, oriented towards efficiency and scientific management, began to supplant the traditional paramilitary and ecclesiastical order established by a monopolistic fur trade and missionary catholicism.

The time dimension, an interval of 70 years, establishes a chronological framework within which time modules (delineated by economic relationships between a particular group of people and their environment) contain both indigenous and immigrant groups (see Table 1). Over a process of time an immigrant may identify with a community's system of values and lifestyles. This identification could arise through social contracts, e.g., marriage, or the development of economic or religious interests, i.e., dependence upon a particular vocation or business.

¹ The oral history report is contained in Volume II.

Table 1. Indigenous and immigrant groups.

Time Period	Indigenous	Immigrant
From ? to 1770	Athapaskan, Chipewyan Beaver. Hunter-gathers	1) Cree trappers 2) Fur traders
From 1770 to 1870	1) Chipewyans trappers 2) Cree trappers 3) Fur traders	1) Missionaries
From 1870 to 1910	1) Indian trappers 2) Traders 3) Missionaries	1) Transportation personnel 2) Government officials 3) White trappers 4) Oil drilling personnel 5) Free traders
From 1910 to 1930	1) Trappers 2) Transportation personnel 3) Traders, merchants 4) Government officials	1) Oil sands personnel 2) Air transport personnel
From 1930 to 1970	1) Trappers 2) Transportation personnel 3) Traders, merchants 4) Government officials 5) Pre-GCOS personnel	1) GCOS personnel 2) Construction personnel
From 1970 to 1985	1) Trappers 2) Transportation personnel 3) Traders, merchants 4) Government officials 5) Pre-GCOS personnel 6) GCOS personnel	1) Syncrude personnel 2) Construction personnel

To comprehend the history of the Athabasca Oil Sands region, it is necessary to understand the viewpoints expressed by, and the dynamic relationships existing between, the indigenous and immigrant inhabitants, a relationship which was based on the need to successfully deal with their bio-physical environment. Central to the evolution of human community is the successive introduction of immigrants to the region and the eventual concept of themselves as indigenous residents. For the purposes of this study the terms immigrant and indigenous distinguish differences in degrees of commitment to the common good of communities established within the study area. Much of the drama and the tension that envelopes the history of the region is found in the social and economic relationships existing between immigrant and indigenous groups.

The dialectical tension between these groups may be summarized in two viewpoints, one academic, the other native indigenous:

In their approaches to the problems of frontier development, Canadian governments in line with the concept of the Crown as the ultimate source of authority and the repository of public interest, followed authoritarian and centralizing methods ... Hence the political experience offered by the northern frontier environment of Canada, rather than affording, in the ideal, an apprenticeship in self-reliance and responsibility, tended to be limited to the acceptance of outside authority, or to more or less irresponsible agitation. [1]

Many years ago we were a proud people and planned our own lives, now with this new way of living, we find ourselves too dependent on transient people who come here and don't know us and our proud past, when they learn our way of living, then they move away and we have to go through this painful thing again with new transients who boss and try to control us. We need an organizer so that these transient people become a service not a control. [3]

These statements depict two converging opinions of what happened in the years between 1890 and 1960. The first defines the approach of government to the development of the region; the second reflects the reaction of indigenous people to outside agents who endeavoured to reshape their lives. To understand these developments, it is first necessary to describe the geographical setting, and the human society formed prior to 1890. Following this overview, two reports are presented; the first study deals with the history of socio-economic development of the region between 1890 and the 1960's, and the second report, based on oral history interviews, synthesizes the experiences, recollections and reflections of individuals indigenous to the Athabasca Oil Sands region.

northward flowing rivers then deposited their burden of sand in this area, and the McMurray sands were formed. Two theories for the origin of the sands are given. Either paleozoic oil was carried by the rivers and deposited in these sands, or the heavy bitumen came from decomposing plants which were deposited in the sands.

In recent geological time, glacial action left deposits varying in depth from a few feet along the Canadian Shield to several hundred feet south of Fort McMurray. As the glaciers retreated numerous large lakes were formed and drained into the Churchill River-Saskatchewan River basins until the Mackenzie River basin was free of ice. Some of the lakes filled with organic deposits, and today the region is characterized by muskeg. [5] It is this muskeg which not only characterizes the land between Fort McMurray and Edmonton, but which posed a barrier to land connections with the region.

Most significant, however, are the waterways which lie along the southern edge of the Canadian Shield, and those draining from the Rocky Mountains to the west. These rivers, the Churchill, the Clearwater, and the Athabasca, provided the means of exploration and commercial access to the region. Therefore the establishment of nodal points along these water routes was critical to control of economic development. The river systems enabled the fur trade to maintain an economic unity in the region between 1770's and the 1880's. Between 1778 and 1870, the Clearwater River, flowing from the east, had served as an access route to the Athabasca River leading to Fort Chipewyan. About 113 kilometres east of the confluence of the Clearwater and Athabasca rivers, a narrow height of land separates the Hudson Bay and Arctic Ocean drainage systems. This Portage La Loche, 21 kilometres in length, marked a major obstacle in the transportation system. The increasing demand for heavy trade goods caused the fur traders to seek better routes. [6]

Above Fort McMurray, the Athabasca River is marked by 145 kilometres of rapids which were a barrier to steamboat navigation, but not to scows. Approximately 400 kilometres above Fort McMurray, the Athabasca River reaches its most southerly bend which is

140 kilometres north of Edmonton. A route to the south became possible as improvements in transportation occurred.

2.2 THE NATIVE PEOPLES

It has been acknowledged that, without the co-operation and the assistance of the native Indian tribes, Canada's economy, society, and government would have been hindered in its development. Their contributions were in woodcraft, food, transportation, and exploration. Pemmican was an indispensable aid to the travellers of the western plains and the boreal regions. The snowshoe, toboggan, and birchbark canoe made long journeys possible while native knowledge of the woods and trails led many an intrepid explorer into new regions. Inter-marriage with the white men brought a new breed of men, the Métis, who, along with the Indian tribes, became the mainstay of the fur trade economy in the eighteenth and nineteenth centuries.

Prior to contact with the white men, native Indian tribes maintained a relatively stable economy of hunting and fishing within a given region. Although tribes went to war against one another, their primitive weapons were not too effective. When Henry Kelsey was sent west by the Hudson's Bay Company in 1691, he reported that the Assiniboine and Cree occupied the parkland region along the Saskatchewan River. North of them the Beaver Indians controlled the Peace River basin, Lake Claire, and the Athabasca River and often went as far south as the Clearwater River. These people, dwelling in brush shelters, hunted the moose and buffalo, but in the decade preceding 1760 they were driven out of their territory by the Woods Crees from the east and south. [7]

Coming from Algonkian linguistic stock, the Crees are today the largest native group in Alberta. The word Cree comes from the French term, *Kristeneaux*, although the Cree called themselves the *Nahiwuk* or exact people. Although there are two Cree groups, the Plains and the Wood, only the latter was indigenous to the region before 1918. [8]

During the 1600's the Cree were situated around Hudson Bay and, thereby, were among the first indigenous people to profit from contact with the European traders. Obtaining metal implements and firearms, they began trapping furs and trading their worn-out trade articles to tribes to the west of them. As their trapping grounds became depleted, they began to migrate into western regions occupied by other tribes. [9]

Because the Crees were the first to succumb to the blandishments of European trade goods, they proved to be a reliable ally of the fur trader, especially in hunting big game for the fur trade posts.

Nevertheless, the coming of the white man also brought its problems. The Crees abandoned their hunting culture in favour of a trapping culture. Their lifestyle began to revolve around the fur posts where they brought in provisions in exchange for shirts, blankets, and other cloth objects. Changes in the means of subsistence also brought changes in their society and government.

Because the Crees readily adapted to European influences, they became addicted to the use of liquor. A separate post, Pierre au Calumet, had to be maintained for them on the Athabasca River because they were too dependent upon a provisions-liquor trade, while their neighbors to the north, the Chipewyans, were less inclined to accept liquor as an article in the trade. [10]

During the first half of the eighteenth century, the Chipewyans were described by Diamond Jenness [9] as being the most numerous tribe, and they occupied the largest territory in Canada's western interior. The Dene or Tinne, "the people" as they called themselves, were given the derogatory name, Chipewyan, which means pointed skins in Cree. The most plausible reason for this name is given by David Thompson who said it resulted from the peculiar method by which they dried beaver skins. [11] Later sources, including E. Petitot, stated that the name came from the pointed tunics they wore as clothing. [12] Their numbers, however, drastically declined when the smallpox outbreak of 1780 killed over

three-quarters of them, and they were driven north of the Churchill River to the edge of the barrens by the more warlike Crees. [7]

The extent of their lands gave them an advantage that other tribes did not enjoy. They could never be made dependent upon the fur trade posts because they could withdraw into the barren lands and follow their culture of hunting the caribou. There was little the trader could do to prevent this action. As a result of the fur trade two groups of Chipewyans developed. One group, the fur trappers, gave up their hunting-fishing culture and congregated in the areas around trading posts like Fort Chipewyan while a second group, the caribou eaters, preferred to follow the old lifestyle. Early in the nineteenth century, Fond du Lac, at the east end of Lake Athabasca, was opened for trade with the caribou eaters. [10]

Although the Chipewyans were timid and peaceful in their disposition, Samuel Hearne called them, "the greatest philosophers, as they never give themselves the trouble to acquire what they can do well enough without". [13] In short, they were shrewd traders. Surviving fur trade accounts indicate that the Chipewyans were not willing to exchange furs or provisions for liquor, but offers of ammunition and dry goods would soon close a bargain. [10]

In 1826 the Hudson's Bay Company withdrew liquor from the trade and by the late 1840's it was unknown to the Chipewyan Indians. However, liquor became a problem in the fur trade after the sale of the Hudson's Bay Company lands to Canada in 1869 and the subsequent advance of free traders into the territory. [1]

Another significant factor in the process of acculturation between immigrant trader and indigenous native was the custom of intermarriage. Marriages en facon du nord provided mates for the fur traders, and, just as important, they allowed the traders to establish more or less permanent contacts with the Indians. These alliances had two effects: they tended to make the Indian people more dependent upon white society; and they produced a "new nation", the Métis, who, in addition to following nomadic lives of hunting and fishing, also became the labour force for the fur trade.

As the fur trade declined in importance, the native people not only lost a viable means of livelihood but also their cultural identity. New economic developments tended to by-pass these indigenous peoples.

2.3 THE FUR TRADE

During the last two decades of the eighteenth century, the fur trade reached the Athabasca country. The fur trade expanded towards the far northwest from its bases on Hudson Bay and the St. Lawrence-Great Lakes system. When the Canadian pedlars from Quebec reached the Saskatchewan and the Churchill rivers in the 1760's, they precipitated a clash with the English traders from Hudson Bay. The Canadians were able to intercept the Indians carrying furs intended for trade with the Hudson's Bay Company posts at Churchill and York Factory. This intervention of the Montrealers upset a well-developed system of inland trade which extended through Chipewyan and Cree middlemen to the Athabasca Dogrib and Copper Indians of the far northwest. This method of trade dated back to 1691 when Henry Kelsey journeyed inland to bring the Indians and their furs down to Hudson Bay. The northern Indians were introduced into this system in the early eighteenth century when James Knight sent William Stewart and Richard Norton inland from Churchill. Although the Hudson's Bay Company did not establish permanent inland posts until after the Montrealers began to intercept the Indian brigades, it is worth noting that the Northern Indians in all likelihood received their first taste of the fruits of European culture through the Bay. [10]

During the 1770's it became increasingly clear to the pedlars that the country north of the Saskatchewan harboured a vast potential in furs. In 1771 and 1772, Thomas Corry, first of the pedlars from Quebec, intercepted Indian brigades on the Saskatchewan. His retirement after two successful seasons of trade was probably an incentive to the traders who followed his track in 1773. The Frobisher brothers, with the aid of Louis Primeau, were

instrumental in making the first approach to the Athabasca. Primeau undoubtedly supplied information regarding the Churchill River, since he apparently wintered along this system for the Hudson's Bay Company in 1766-67. Thomas Frobisher wintered on Ile-a-la-Crosse Lake in 1775-76. The success of the Frobishers, especially in intercepting the trade to the Bay, stood as a testimonial to the existence of a rich source of furs in the upper Churchill country and the unexplored regions beyond Ile-a-la-Crosse. The success of the Quebec traders may be attributed to their offering goods at lower prices and in greater quantity than the organization of Indian middlemen who extorted unreasonably high prices from their fellow Indians of the far northwest. [10]

When the Frobisher brothers retired from the interior with their fortunes, the redoubtable Peter Pond, who had been on the Saskatchewan since 1775, formed a "concern" with six other peddlers at Sturgeon Fort in 1778. With the five canoes provided by the partnership, Pond made his approach through the Churchill River system, over the Portage La Loche (Methy Portage) separating the Hudson Bay and Arctic drainage basins, down the Clearwater River to the Athabasca River, where, on the point some 64 km south of Lake Athabasca, he spent the winter of 1778-1779 trading furs. [10]

The later expeditions of Peter Pond to the Athabasca in 1780, 1781, and 1783, led him to formulate the idea of exploring inland from the Athabasca in hopes of reaching the Pacific Ocean. His idea was a result of the recent discovery of an inlet (Cook's Inlet) by James Cook on the northwest coast of America. Cook believed that his inlet was the mouth of a large river from the interior. Pond in 1785 petitioned Lieutenant-Governor Hamilton of Lower Canada for government support of an expedition to seek the way to the Pacific Ocean; his petition also included a request for a monopoly on his route to the Athabasca and the fur trade of that region. Although the government was impressed by Pond's ideas, no official privileges were given to the fur trader-explorer, nor did the recently formed North West Company gain any official support for their projects. [10]

Since Pond's initial Athabasca enterprise yielded him at least 8000 made beaver, other peddlers were quick to enter the country. The approach to the Athabasca in the 1780's was marked by strife and bloodshed. In 1782, Jean Etienne Waden was killed at Lac La Ronge in a trading dispute with Peter Pond. Acquitted of this murder in Montreal, Pond became implicated in the violent death of John Ross in the Athabasca country in 1787. These tragedies seemed to have a sobering effect on the Montrealers. The principal trading concerns made an agreement in the same year to form the greater North West Company. Peter Pond retired from the fur trade, but he left his young protégé, Alexander Mackenzie, to carry out his dream of finding an inland water route to the Pacific Ocean. [10]

Alexander Mackenzie immediately persuaded his cousin, Roderick Mackenzie, to establish an inland post which would serve as a northern entrepot for further exploration and expansion of the fur trade. In the fall of 1788, Fort Chipewyan was built on the west side of Old Fort Point on Lake Athabasca. For the next century Fort Chipewyan was the emporium of the northern fur trade. [14]

Fort Chipewyan occupied a strategic position in the fur trade, situated at the west end of Lake Athabasca, water routes connected with the Peace River to the west, the Slave River to the north, the Athabasca River to the south. Although the delta supplied fowl for the table, the most significant sources of food were the fisheries. A staple diet of fish at Fort Chipewyan permitted the post to accumulate stores of dried meat and pemmican which were used to feed the voyageurs as they made their long journey to the outside. These dried provisions were collected from the Peace River country where the wood buffalo ranged. [10]

2.4 THE MISSIONARIES

The second wave of European civilization in the Athabasca Oil Sands region appeared in the form of religious missionaries who, in their sincere role as proselytes, tended to abet the extension of white authority over the land.

In the early 1820's the Hudson's Bay Company, holding a monopoly over the fur trade, decreed that religious services should be observed on a regular basis. Shortly before Christmas, 1841, James Evans, a Wesleyan missionary, arrived at Fort Chipewyan where he received a warm reception by the native people, who held a great respect for the spiritual world. However, it was a Roman Catholic Oblate priest who established a permanent mission at Fort Chipewyan on 8 September 1851. Two years later, the Oblates opened a mission at Fond du Lac on Lake Athabasca where the Hudson's Bay had re-opened a fur trade post. With the opening of a mission at Lac la Biche in 1852, the Catholics established a key point in their missionary efforts in the region. Although the Church of England opened a mission at Fort Chipewyan in the 1870's, the majority of the indigenous people became, with the exception of the fur trade personnel, Roman Catholic in their beliefs. In 1896, the Athabasca district listed 3056 Catholic Indians and 194 Anglican Indians. [1]

The role of the missionaries was twofold, i.e., they endeavoured to help the indigenous peoples in their material wants and to minister to their spiritual needs. They often found themselves as educators and spokesmen for the Indians and Métis. As the economic world began to change, missionaries took a lead in the effort to ameliorate the worsening condition of the native people. [1] Mission work involved schools and farms at Lac la Biche in 1862 and at Fort Chipewyan in 1874. [1] These schools were supported by grants from the Department of Indian Affairs. Farming practices were encouraged by the missionaries. One of the most successful efforts was made by H.B. Steinhauer who persuaded native families to begin small farms around Whitefish Lake. [1] Therefore, the churches became allies of the Crown in providing welfare and education to the nomadic peoples of the region.

At the same time, missionaries became recorders and publicists of this little-known region. One result of these mission fields was to create a public awareness of the potential of the region. Then, as white settlement advanced northward, the

missionaries gradually turned their emphasis towards traditional church structures in an effort to accommodate new immigrant peoples.

2.5 TRANSPORTATION CHANGES

The extension of missionary activity meant an increased need for supplies from the outside. Initially, the missionaries were dependent upon Hudson's Bay Company transport, but the Roman Catholic Church decided in the 1850's that the Lac la Biche mission should be a base for an independent transportation system into the north. During 1856, Bishop Tache descended the Lac la Biche River to the Athabasca River and thence to Fort Chipewyan. Freight was shipped overland via cart from Fort Pitt to Lac la Biche, and the first scow carried goods down the new route in 1869. In 1870 Bishop Tache endeavoured to build a road from Lac la Biche to Fort McMurray, but the project proved too difficult and too expensive and was subsequently abandoned. [15]

At the same time, H.J. Moberly was assigned to establish a post at the confluence of the Clearwater and Athabasca rivers. Fort McMurray, as it was named, was intended to assist in improving the transportation route over Portage La Loche because feed was available for oxen on the prairie near the post. [5]

When steamboats were introduced on the Saskatchewan River in 1875, the Churchill River-Clearwater River route began losing its traffic. The arrival of the Canadian Pacific Railway in Calgary in 1883 sealed the fate of the old canoe and York boat route. In the same year the Hudson's Bay Company cut a road from Fort Edmonton to Athabasca Landing and launched the S.S. Grahame at Fort Chipewyan. [16] Fort McMurray became the southern terminus for northern transportation in the Mackenzie River basin. These developments opened the isolated north of the fur trade to the expanding industrial frontier of southern Canada, represented by Edmonton interests. The completion of the Alberta and Great Waterways Railway to Waterways in 1925 cemented the growing relationship of metropolitan Edmonton to an oil sands hinterland based on Fort McMurray. [17]

2.6 GOVERNMENT AND ECONOMIC DEVELOPMENT

When the Canadian Pacific Railway began its task of linking Canada together by rail, the federal government assigned the Geological Survey of Canada to assist in the western surveys. It was also given the responsibility of recording natural and human history phenomena discovered in the process of geological survey work. A second government agency also began the task of land surveys. During the last three decades of the nineteenth century, a considerable part of the Athabasca Oil Sands region was surveyed and mapped.

In 1875 the North-West Territories Act¹ established, with some limitations, an indigenous government in western Canada. In 1882 four districts were created by order-in-council. North of the 55th parallel, the district of Athabasca was unorganized, untaxed, unrepresented, and therefore controlled by the federal government in Ottawa through the Department of the Interior. [1]

In 1888 the Canadian Senate sponsored a committee to enquire about the resources of the Great Mackenzie Basin. Its report publicized and promoted the region as a rich resource potential in furs, agriculture, and minerals. [18] Although the forecast was overly optimistic if not unrealistic, it did serve to focus attention on the region.

As transportation improved in the region, resource development in the form of commercial fisheries advanced into the region. In 1891 a fisheries inspector was appointed to oversee a number of districts, including Lac la Biche. A Game Preservation Act was passed in 1894 which banned the hunting of wood bison until 1900 and imposed closed seasons on big game, fur-bearing animals, and birds. Although liquor prohibition of the 1875 Act was lifted in 1891 in the organized districts of Assiniboia, Saskatchewan, and Alberta, it was continued in Athabasca district. This ordinance led to an extension of the North West Mounted Police patrols and posts in the region. [1]

Throughout this period the native peoples had been pretty well left on their own, although the Indian Department had encouraged

¹ The spelling of North-West was officially changed to Northwest in 1906.

ranching and farming practices. During the 1890's it was suddenly discovered that the native population was about half of what it had been reported by the Indian Department. It was discovered that the native peoples were suffering as a result of changes in living styles, the introduction of alien ailments such as measles, and a decline in game resources. [1]

When meat, fur, and fisheries were endangered as white society moved north, especially during the Klondike Gold Rush, the government entered into treaty negotiations for the region which were concluded in 1899 (Treaty No. 8). [19]

Although the new provinces of Alberta and Saskatchewan were created in 1905, the federal government continued to control resource development in these provinces until 1930. In 1907 the Canadian Senate conducted a new survey of Canada's northwestern resources which resulted in another optimistic forecast of potential development. [20] About the same time, Count Alfred von Hammerstein began drilling operations in the Fort McMurray district in an elusive search for the oil believed by geologists to be trapped beneath the oil sands. A series of wells had been drilled in the Athabasca Oil Sands by the Geological Survey in the 1894 to 1897 period but had been abandoned with no definite results. [21]

When the oil sands became known to outsiders, they began a speculative rush into the region. The Senate hearings of 1907 motivated governments to consider seriously the oil sands as a source of petroleum and, more important at the time, as a source of asphalt to pave the badly needed roadways of western Canada. J.A. Cote, J.K. Cornwall, and A. von Hammerstein spearheaded a campaign to open up the Athabasca country. In 1913 the federal government assigned a young engineer, S.C. Ellis, to survey the extent of the tar sands. His maps and reports sparked a flurry of interest on the part of governments and promoters. [4] Although most of these entrepreneurs failed in rapid order, the Research Council of Alberta was formed by the Alberta government in an attempt to rationalize the problems of mineral development, especially in the areas of coal and the oil

sands. [22] The government also sponsored the construction of the Alberta Great Waterways Railway to Waterways in 1921.

During the 1920's, a Research Council engineer, Karl A. Clark, designed and built an experimental plant at Waterways in 1929. The plant established the possibility that gasoline could be refined from the thick impervious bitumen. Although the depression temporarily adjourned the Alberta government project, two men, Max Ball and Robert Fitzsimmons, developed projects at Abasands and Bitumount, respectively. Although their attempts fizzled in financial failures, the outbreak of World War II in 1939 caused the federal government to begin an attempt at a new plant at Abasands in the 1940's. Although this venture literally went up in smoke in a disastrous fire in 1945, the Alberta government was sufficiently concerned to begin a second Research Council experimental plant at Bitumount in the 1945-51 period. This time the plant proved to be a success and at the first Alberta conference on the tar sands in 1951 a commissioned consultant, Sidney Blair, reported that it was now commercially feasible to produce oil from these stubborn sands. [4]

During the 1950's, the major oil companies began to acquire leases in the oil sands region and as the Alberta government devised new regulations, the stage was set for the development of the Great Canadian Oil Sands (GCOS)¹ project of the 1960's and the Syncrude syndicate of the 1970's. [23]

¹GCOS amalgamated with Sun Oil Company in August 1979, after the writing of this report was completed, to become Suncor, Inc.

3. CHRONOLOGY OF HISTORICAL EVENTS

This section outlines selected events which portray the era of the fur trade and missionaries, technological advances, transportation developments and government and private enterprise.

- 1715 William Stewart travelled overland from Churchill to Mackenzie River Basin. First description of oil sands.
- 1769 to 1772 Samuel Hearne's overland journey with the Northern (Chipewyan) Indians.
- 1778 Peter Pond established first fur trade post in Alberta on Athabasca River.
- 1788 Roderick Mackenzie founded Fort Chipewyan on Lake Athabasca. Fort of Forks established at confluence of Clearwater and Athabasca rivers.
- 1789 Alexander Mackenzie voyaged to Arctic Ocean via his "River of Disappointment" (Mackenzie River). He had hoped to find the route to the Western Sea.
- 1790 to 1792 North West Company established Fort of the Forks near Fort McMurray. Philip Turnor and Peter Fidler conducted first survey of Athabasca River, Lake Athabasca, Slave River.
- 1792 Alexander Mackenzie left Fort Chipewyan on voyage to Pacific Ocean via Peace River.
- 1798 Fort Chipewyan relocated on north shore of Lake Athabasca. XY Company enters Athabasca fur trade.
- 1802 Peter Fidler of Hudson's Bay Company endeavoured to establish fur trade at Nottingham House on English Island, Lake Athabasca. Pierre au Calumet established on Athabasca River as provisions post and for trade with Crees.
- 1804 XY Company absorbed by North West Company. First horse arrived in Fort Chipewyan from Peace River via bateaux.
- 1806 Hudson's Bay Company abandoned Athabasca fur trade to North West Company.

- 1815 Fort Wedderburn established Hudson's Bay Company opposite North West Company's Chipewyan on Coal Island (now Potato Island), Lake Athabasca.
- 1819 to 1822 John Franklin used Fort Chipewyan as a base for his Arctic explorations.
- 1821 Bitter rivalry for Athabasca fur trade ended with amalgamation of the North West Company in the Hudson's Bay Company.
- 1825 John Franklin's second voyage of exploration.
- 1826 Hudson's Bay Company withdrew liquor from the fur trade in the Athabasca district.
- 1833 George Back passed through on overland search for John Ross in missing ship, Victoria, in the Arctic.
- 1837 Thomas Simpson left Fort Chipewyan to conduct survey of Arctic coastline.
- 1843 J. Lefroy conducted magnetic survey at Fort Chipewyan. Domestic animals in use at the Fort.
- 1849 to 1851 Roman Catholic Nativity Mission established at Fort Chipewyan.
- 1869 Hudson's Bay Company monopoly of fur trade ended. First scows used from Lac la Biche to Fort Chipewyan.
- 1870 Fort McMurray established by H.J. Moberly.
- 1872 Roderick MacFarlane reconstructed Fort Chipewyan. Some of these buildings are still in the settlement.
- 1874 Church of England St. Paul's Mission established in Fort Chipewyan. Sisters of Charity (Grey Nuns) opened Holy Angels school at Fort Chipewyan.
- 1875 Botanist John Macoun of Geological Survey of Canada explored region. He took samples of grain from the R.C. Mission at Fort Chipewyan, and he collected a sample of the oil sands. Fort McMurray flooded during spring run-off.
- 1880 St. Paul's Anglican Church opened in Fort Chipewyan. It is still in use.

- 1882 to 1883 S.S. Grahame constructed at Fort Chipewyan for the Hudson's Bay Company. Steam navigation began.
- 1884 Athabasca Landing established as a transportation terminus. Fort Chipewyan declined in importance.
- 1892 North-West Mounted Police opened post at Athabasca Landing.
- 1894 to 1897 Geological Survey of Canada conducted drilling program in the oil sands.
- 1898 Klondikers arrived in Fort McMurray.
- 1899 Treaty No. 8 signed by Beaver, Slavey, Cree, and Chipewyan Indians. Half-breed Scrip Commission. North-West Mounted Police opened post at Fort Chipewyan.
- 1904 Telegraph reached Athabasca Landing.
- 1907 Alfred von Hammerstein drilled first oil well in Fort McMurray district.
- 1907 to 1912 Fort McMurray boom period (oil sands speculation, land development).
- 1913 Fort McMurray and Fort Chipewyan settlements surveyed.
- 1913 to 1915 Federal Department of Mines conducted survey of oil sands (S.C. Ellis).
- 1915 Telegraph reached Fort McMurray.
- 1919 Ryan Brothers began transport system. Fort McMurray Board of Trade established.
- 1921 Alberta Great Waterways Railway constructed to Waterways (now Draper siding).
- 1921 to 1930 Athabasca Oil Sands speculation and pioneer mining developments. Salt plant established at Fort McMurray.
- 1925 Alberta and Great Waterways extended to present Waterways station.
- 1926 Commercial fishing began on Lake Athabasca.
- 1929 to 1930 Research Council of Alberta built and operated experimental oil sands separation plant at Waterways.
- 1929 Air service began along Mackenzie River Basin.

- 1930 to 1940 Abasand and Bitumount oil sands plants began operations.
- 1933 Royal Canadian Signal Services wireless radio established in Fort McMurray.
- 1934 Gold discovered on Lake Athabasca.
- 1942 Fort McMurray houses 3000 American troops for Canol Project.
- 1943 Airport opened at Fort McMurray.
- 1944 Bitumount closed.
- 1945 Abasand plant destroyed by fire.
- 1947 Fort McMurray and Waterways amalgamated and became village.
- 1948 to 1950 Research Council of Alberta opened experimental plant at Bitumount.
- 1949 Fort McMurray became town.
- 1953 Mining operations began at Uranium City.
- 1956 Fort McMurray population 1110.
- 1958 Hudson's Bay Company ended Mackenzie River Transport service.
- 1961 Northland School Division created.
- 1963 Fort McMurray became New Town. Completion of the Great Slave Lake Railway to Hay River marked end of Fort McMurray's predominant role as transportation terminus for the Mackenzie River Basin.
- 1964 Great Canadian Oil Sands began plant construction.
- 1964 to 1965 Highway 63 constructed to Fort McMurray.
- 1970 Commercial fishing closed on Lake Athabasca.
- 1971 Syncrude began planning and development of plant.

4. A HISTORY OF SOCIO-ECONOMIC DEVELOPMENTS IN THE ATHABASCA
OIL SANDS REGION, 1890 TO 1960's

4.1 INTRODUCTION

Five specific research topics have been selected to illustrate the issues identified in Section I of this report. As the Athabasca region became accessible through new transportation routes centered upon Edmonton, both government and private industry began developments destined to create impacts upon the region. Because natural resources in Alberta were the responsibility of the federal government until 1930, its role was significant as its agencies established the presence of the Crown in the region. The Geological Survey of Canada and the Mines Branch initiated surveys and exploration designed to make the region more attractive to developers. The Northwest Mounted Police introduced Canadian concepts of law and order, but in establishing these controls, it also acted as a catalyst of change in a society which consisted of a socio-economic alliance between the fur traders and the Indian peoples. The federal Forestry Branch also had a great impact upon this society because, in addition to its regulatory function, the Branch undertook the active management of natural resources, a course which affected attitudes toward, and policy for, the employment of native peoples. Finally, there was the entry of private developers of the oil sands. Obviously, their endeavours were concentrated on resolving the problems of distance, transportation, capital, and markets. Following the Second World War, the time appeared propitious for government to formulate policies and programs designed to ameliorate these problems. The withdrawal of federal government support for these projects after 1945 led to a commitment by the provincial government to prove the commercial feasibility of the oil sands. These developments were based on the profit motive, but, apart from speculative ventures, success depended on government policies and regulations designed to encourage private investment. All of the early entrepreneurs sought

favours from government; however, it was not possible for all to receive the same degree of support. To illustrate this distinction, which is a critical issue in understanding early attempts to develop the oil sands, Section 4.4 details the history of two unique entrepreneurs who, without government financing, eventually failed in attempts to develop their leases. Two other companies are discussed in relation to government (Section 4.2.2) because they illustrate the alliance of government and corporation to develop the oil sands. Although these companies also failed, they made better progress because of government assistance. In this respect, they illustrate the need for government support as discussed in Section 4.5, support which encouraged developments on a larger scale in the 1950's and 1960's.

4.1.1 Methodology

4.1.1.1 Principal sources consulted. The principal primary sources consulted consist of the following Record Groups in the Public Records Division, Public Archives of Canada, Ottawa:

1. Records of the NWMP and RNWMP (RG 18).
2. Records of the Department of Indian and Northern Affairs (RG 22).
3. Records of the Forestry Branch (RG 39).
4. Records of the Geological Survey of Canada (RG 45).
5. Records of the Northern Administration Branch (RG 85).
6. Records of the Mines Branch (RG 86).
7. Records of the Surveys and Mapping Branch (RG 88).
8. Records of the Mineral Resources Division (RG 87).
9. Records of Parks Canada (RG 84).
10. S.C. Ellis' Papers [MG (Manuscript Group) 30].

These record groups and manuscript group were consulted during the months of November 1978, and January, March, and periods of April to May, 1979. Due to time constraints, these numerous files could not be entirely covered, and RG 10 was omitted from the research.

These records were chosen as the means by which the history of the study area was approached for two reasons:

1. The Athabasca District was administered by the federal government as an unorganized district of the North West Territories for many years, and the federal presence was the most important in shaping the administrative structures of the area. In many ways, this government presence was ultimately more significant than either the fur companies or the church during the period under consideration. This deduction forms one of the major assumptions of the report, and will be borne out by the discussions of government involvement in the study area.
2. The Province of Alberta did not receive jurisdiction over its natural resources until 1930 and, consequently much material dealing with resource development in the AOSERP study area between 1890 and 1930 (i.e., over one half of the study period) is covered by the material in several of the pertinent Record Groups described above.

The following is a short descriptive account of the records of federal departments which cover the AOSERP study area between 1890 and the 1960's. Many of these have been consulted, as outlined above, and other Record Groups have been included for their possible value to other researchers.

4.1.1.2 Sources on the Athabasca region in the Public Archives of Canada. The records of the Department of Indian and Northern Affairs (RG 10) contain information on treaty negotiations, reserves, surveys, right-of-way, enfranchisement, membership, schools, etc. The most useful sources are in:

1. Black series files (RG 10 inventory, p. 15).
2. Deputy Superintendent's private letterbooks (RG 10 Inventory, p. 15).

3. Departmental letterbooks (RG 10 Inventory, p. 16).
4. Central Registry files (RG 10 Inventory, pp. 16, 17).

Interior Department records (RG 15) contain extensive documentation on all aspects of land and resource development in western Canada including scattered references to the Athabasca region. Some particular areas of interest are:

1. Letters patent covering the area can be located by using the land description index available in the Public Records Division.
2. The index for Letters Patent issued at Lac la Biche Settlement is in one block of aperture cards.
3. Applications for scrip made by Half Breeds in the Athabasca District in 1899. These are arranged alphabetically by name of applicant with other applications made in 1900 in the N.W.T.
4. Certificates for scrip issued by Half Breed Commissions between 1885 and 1906 including those for the Athabasca District.
5. Scrip and receipts to Half Breeds arranged numerically.
6. Alphabetical index to North West Half Breed Supplementary claims, Athabasca Commission, authorized by 49 Vic., Chap. 54, Sec. 90, sub-sec. f and P.C. 918, 6 May 1899. Each entry gives the name of applicant, name of parents, date of birth, application number, scrip certificate number (Book 68, 63 pp.).
7. Register of North West Half Breed Supplementary claims, Athabasca Commission, authorized by 49 Vic., Chap. 54, Sec. 90, sub-sec. f and P.C. 918, 6 May 1899. Each entry gives the declaration of claim number, name and address of applicant, precis of declaration, date of declaration, decision and date of birth. Claims 1 to 601 (Book 69, 58 pp.).
8. Index to Athabasca claims taken by H.A. Conroy in 1903, 1905, 1907, and 1908. Each entry gives application

- number, claimant's name, parents, date of birth, residence, scrip number, file number, and remarks (Book 95, 25 pp.).
9. Alphabetical index of Half Breed Athabasca Claims investigated by J.A. Macrae 1900. Each entry gives the claim number, name of claimant, parents, date of birth, money scrip number, land scrip number, when delivered, where delivered, to whom delivered, and remarks (Book 96, 23 pp.).
 10. Alphabetical index to Half Breed applicants for scrip in Territory covered by Indian Treaty 8, Athabasca Claims before Commissioner J.A. Macrae, 1900. Each entry gives date of birth, claim number, name of claimant, parents, kind of scrip, remarks (Similar to Book 96; Book 97, 21 pp.).
 11. Alphabetical index of Athabasca claims 1903 and 1905 investigated by H.A. Conroy. Each entry gives name of claimant, parents, date of birth, and remarks (Book 111, 21 pp.).
 12. Alphabetical index of Half Breeds who received scrip in 1899 Athabasca Commission, District Treaty 8. Each entry gives name and place of birth of applicant and parents' names (Book 112, 85 pp.).
 13. Dominion Lands Branch files (1873 to 1945, 730 feet) contain information on land claims investigated by William Pearce and others at Lac La Biche and Lac St. Anne (RG 15, Vol. 634, file 240462, 1890 to 1893, 1903, 1905 to 1917, and 1930, 2 in.) and land disputes at Athabasca Landing (RG 15, Vol. 734, file 416355, parts 1 and 2, 1897 to 1921, and 1945, 3 in.).
 14. Agriculture Department records (RG 17) may contain scattered correspondence from residences of the area but these cannot be isolated by volume or series numbers.

15. Mines and Technical Surveys Department records (RG 21) contain the general correspondence files of the Deputy Minister relating to prospecting and mineral development including reports on the McMurray Field (RG 21, Vol. 43, 1913 to 1945).
16. Northern Affairs and National Resources Department records (RG 22) contain the files of the Legal Division and the Deputy Minister's office including correspondence on Abasands Oils (RG 22, Vol. 75, Docket 462, 1943 to 1954) and the Mackenzie River transportation system of the Mackenzie, Athabasca, and Clear Water rivers (RG 22, Vol. 136, file 40-5-2, part 1, 1937 to 1949; Vol. 248, file 40-5-2, part 2, 1950 to 1958; Vol. 322, file 40-5-2, part 3, 1959 to 1960).
17. Fisheries Department records (RG 23) contain a central registry series with several references to fishing on the Athabasca River and lake. In addition, subject files relating to fresh water fishing would contain additional material.
18. Forestry Branch records (RG 39) contain central registry files on fire fighting, forest rangers, and forest culture in the McMurray area.
19. Geological Survey of Canada records (RG 45) contain files on oil, metals, and minerals in the Athabasca area including material on tar sands development (RG 45, Vols. 33, 34, file 6420, parts 4 to 6, 1923 to 1936). Departmental files (Vol. 18073), letter-books and registers (Vol. 74 to 122), and field notebooks (Vol. 123 to 242) contain material on surveyors in the Athabasca country.
20. Dominion Coal Board records (RG 81) contain material on Alberta coal production, transport, markets, and legislation which may or may not be relevant to the area.

21. National Parks records (RG 84) contain numerous registry files on the Wood Buffalo National Park and its area.
22. Records of the Northern Administration Branch (RG 85) contain numerous references to Lake Athabasca and its area.
23. Mines Branch records (RG 86) contain several files on mining roads in Alberta, S.C. Ellis' reports on the bituminous sands of northern Alberta and experiments and developments of the tar sands (RG 86, Vols. 30 and 31).
24. Mineral Resources Division records (RG 87) contain numerous files on Abasands Oils, Imperial Oil, tar sand development, natural gas and petroleum, pipelines, bituminous coal production, and mining legislation.
25. Surveys and Mapping Branch records (RG 88) contain numerous references to such surveyors as J.K. McLean and W. Reilly who worked in this area. In addition, information on F.G.D. Durnford's study paper on unsurveyed land and resources from the west coast of Hudson's Bay to the western boundary of Alberta in 1907 may contain references to the Athabasca area (RG 88, Vol. 178, file 3042).
26. Records of the RCMP. The following items are selected from R.G. 18 Inventory, Public Archives of Canada:
 - a) General office records. Outbreak of Spanish Influenza in far north, 1919.
 - b) Commissioner's Office. A2. Correspondence - Northern Patrols, 1912 to 1919; A3. Letterbooks, 1873 to 1904, esp. district officers.
 - c) Division and detachment records, 1874 to 1965.
 13. Athabasca, N. Division, 1904 to 1906 (RG 18, Vol. 3029).

4.1.1.3 Some difficulties encountered during the research. Several problems were encountered during this piece of research. In the first case, the "thirty year rule" restricted access to most of the pertinent Record Groups, and necessitated a thorough search of Public Records Division Finding Aids and Inventories before any materials could be ordered. This was due to an insistence on the complete listing by volume and file numbers for each Record Group to be consulted. All must be checked for restricted status and ordered at the same time to avoid too much time consumption in numerous consultations with archivists and requests to the various departments for access. As such requests could be extremely time consuming, the above approach was undoubtedly best. However, it delayed the initial approach to the documents themselves. With Northern Affairs' RG 22, this procedure involved nearly two weeks from commencement with the archivist at Public Records Division, to actual retrieval of the requested files, due to the necessity of the department sending personnel to the public Archives for preliminary reading and evaluation of the material and the several trips to Hull required before acquisition of the final release form. With RG 10, the form, when acquired, proved sufficiently general as to be virtually useless for the materials which were most pertinent to the research, and a subsequent request had to be initiated. Virtually all the Record Groups to be consulted fell within the "thirty year rule", and most files for the previous period also were restricted for various reasons. This caused a substantial delay in the commencement of intensive research, and restricted significantly the relatively short time available for research.

Secondly, most of the pertinent Record Groups have been moved to Hull. Therefore, when these volumes are ordered, there can be substantial delays. As there is often no way to predetermine the size of the ordered volumes, when they arrive it becomes necessary to acquire extra lockers for the 24-hour period. This also caused innumerable delays.

Finally, the actual availability of source material has influenced the direction of the research, as noted, sometimes necessitating the abandonment of certain avenues of discussion, or demanding emphasis on other aspects of the study.

4.2 THE FEDERAL INITIATIVE: THE GEOLOGICAL SURVEY AND THE MINES BRANCH, 1875 TO 1947

In response to enquiries from prospective developers for land north of Edmonton, the federal government initiated a series of surveys which explored the oil sands of the Athabasca district. These surveys were first carried out by the Geological Survey of Canada (GSC). Following unsuccessful attempts to tap the pools of oil believed to lie beneath the oil sands, the work of development was assumed by Sidney C. Ellis of the federal Mines Branch in 1913.

4.2.1 Geological Survey of Canada, 1875 to 1897

Authorities had been aware of what were generally termed tar sands for many years. As early as 1715, William Stewart observed and reported outcroppings bituminous sands on his trek from Churchill to the Mackenzie River. Further such references were made by Peter Pond and Alexander Mackenzie.

In 1875 John Macoun surveyed the region for the GSC. On 7 September 1875, the expedition camped near Pointe-aux-Trembles, in the centre of the most obvious outcroppings of bituminous sand. Macoun reacted to this potential wealth with what he termed "a prophetic vision" of their future development.

On account of the rain, our camp was formed in the woods, and was both wild and picturesque. Three rousing fires were built, (one for each boat), and around these in the darkness flitted dusky figures, some cooking, others smoking, and all talking or laughing, without thought of rain or any other matter than present enjoyment. Long after the noise ceased I lay and thought of the not

far-distant future when other sounds than those would wake up the silent forest; when the white man would be busy, with his ready instrument, steam, raising the untold wealth which lies buried beneath the surface and converting the present desolation into a bustling mart of trade. [24]

Earlier that day, where the expedition had breakfasted, Macoun observed a bed of tar conglomerate about 30 feet above the river:

... and the ooze along shore both at this point and many places below, looked like the ooze from petroleum springs The tar conglomerate was frequently observed, sometimes forming a bed two feet thick. Early in the afternoon we camp upon the shale beds which produce the tar, and sailed past them all the afternoon. [24]

Under the direction of Alfred Selwyn, the GSC initiated a series of important northern surveys led by men such as John Macoun, Robert Bell, G.M. Dawson, R.G. McConnell, and J.B. Tyrrell. In 1879 George M. Dawson made a seven-month reconnaissance up the Skeena River, through the Rocky Mountains via Pine River Pass, and on to Edmonton through the study area. This expedition was to determine the value of the area when the Canadian Pacific Railway was still considering a northern route to the west coast. Dawson was accompanied by Richard George McConnell, who was to return to conduct further research in the area from 1889 to 1891. [25]

Early in the 1880's the GSC began its most intensive surveys of the region, as part of a generally increased interest in the North-West Territories (NWT).¹ Robert Bell, in 1882 and 1883, was the first person to traverse systematically the region of the Athabasca River basin. His report stressed the widespread presence of oil sands and their economic potential. [26] R.G. McConnell

¹ Between 1875 and 1906 the name was North-West Territories. In 1906 the name was changed to Northwest Territories.

suggested in his report of 1888 that the oil fields in Pennsylvania and Baku:

... already show signs of exhaustion, and as they decline the oil field of northern Canada [Athabasca-Peace River and Mackenzie fields] will have a corresponding rise in value. [27]

It was McConnell's enthusiasm for northern oil development which was to a large extent responsible for the establishment of the Senate Select Committee which sat in 1888 to appraise the economic potential of the study area, which at the time was considered as an adjunct of the even more wealthy Mackenzie Basin.¹ The Senate Committee gave as its opinion in 1888 that:

The evidence ... points to the existence in the Athabasca and Mackenzie Valleys of the most extensive petroleum field in America, if not in the World. The uses of petroleum and consequently the demand for it by all Nations are increasing at such a rapid ratio, that it is probable this great petroleum field will assume an enormous value in the near future and will rank among the chief assets comprised in the Crown Domain of the Dominion. [18]

This official view gave rise to widespread public enthusiasm for mineral development in the region. The federal government began to lay the groundwork for such development in the early 1890's. When McConnell's full report appeared in 1893, and proclaimed that the region was rich in oil sands (his estimate was 4.7 billion tons), interest in the economic promise of the oil bearing sands became intense. [25]

The first major exploration involving experimental borings began shortly after the public debate on the resources of the north. The federal government passed a bill in 1893 as the direct result of the reports by McConnell and Dawson, and a program for the drilling

¹ Senator John C. Schultz, a keen observer of GSC activities, was instrumental in the formation of this Committee.

of three wells was given to the GSC. Under the supervision of W.A. Fraser, a driller from Petrolia, Ontario, the first well was sunk two miles upstream from Athabasca Landing. This well was sunk over 300 metres where it struck quicksand, which halted further operations. In 1895, after further drilling, the hole was abandoned, and a second effort made at Pelican Portage. In 1897 the well struck a large gas reserve which could not be controlled. It blew wild until capped 21 years later. A third unsuccessful well was sunk near Pagan in 1897. [21] This initial federal experiment cast some doubt upon the government's handling of the region's resources, and its apparent waste was symbolized by the free-flowing well at Pelican Portage. [20]

These first attempts at penetrating the oil sands were abandoned by the GSC as it turned its priorities to the development of coal fields in western Canada. Although the results of the drillings were inconclusive, it was still assumed that vast pools of oil lay undiscovered below the beds of tarry sand.

4.2.2 The Mines Branch, 1913 to 1947

The federal Mines Branch was the first significant government department to give evidence of a sustained interest in oil sands development in the study area. Federal involvement at this time was important in a potentially lucrative extractive industry since the matter of resource ownership, as delimited by the British North America Act, was once more becoming a heated issue. Provincial and federal authorities were beginning to compete seriously for certain significant areas. Initially, the setting aside of reserves such as, in 1913, the Horse River Reserve which was established for the exclusive use of the Dominion Parks Service, enabled the federal government to retain control of valuable resources in the study area for some time after the resource transfer in 1930.

Acting on the advice of Sidney Clark Ellis, the Mines Branch carried out a broad range of field work and laboratory experiments which established the priorities of the search for a

means to open the oil sands, and during the 1920's co-operated with the Research Council of Alberta toward that end. Between 1913 and 1935, these activities included detailed geological and topographical mapping of a region which extended over a vast area presenting numerous physical barriers, and which had been assessed only in a cursory manner by the GSC. A systematic core sampling program was begun, and the important bituminous outcrops were analyzed. Research was conducted in Edmonton and Ottawa which laid the groundwork for the separation techniques utilized by private industry in the 1930's. Mining techniques were devised through years of difficult experimentation, and practical lessons learned during these decades were subsequently used to advantage by later developments. Paving plants were built, and demonstration pavements laid throughout the province, giving hope for a major market for the sands, although emphasis on the importance of gasoline and other petrochemical products later supplanted Ells' program to make tar sand pavements common throughout the west. A practical system for core drilling oil sands was developed, and a large asphalt testing laboratory was built. Total expenditures for this comprehensive and significant project were \$120,000 by the late 1930's. [27]

Early in 1913, J.L. Coté of Edmonton sent an inquiry to the Mines Branch requesting technical data regarding the nature and extent of the Alberta bituminous sands, which were undergoing an upsurge of popular interest at the time. Sidney Clark Ells was assigned to handle this letter, and these investigations led to a lifelong interest. [28]

Ells had experience in a diverse range of field work, surveying and mining. In 1908 he was employed by the GSC to produce topographical maps of oil shale regions in New Brunswick, and in 1909 he sampled and assessed similar deposits in Nova Scotia. In 1911 Ells was approached by the Chief Engineer of the Temiskaming and Northern Ontario Railway to survey the southern shores of James Bay and recommend a suitable tidewater terminus for that railway. [28]

In 1912 Ellis returned to Ottawa as a Mining Engineer for the Mines Branch. In his new position he edited departmental publications and handled technical correspondence for the Director. In a study of the available literature on the oil sands he discovered that:

... meagre references to the deposit as contained in papers published by the Geological Survey, brought to light nothing of value and were at times definitely misleading. As an example, a senior member of the Survey while returning from the north about 1880 by way of Athabasca River, had picked up samples of float along the shore, and a subsequent analysis indicated a bitumen content of 12.5%. With the above as a sole basis, wholly unwarranted assumptions were made as to the extent, thickness and quality of the deposit, and wholly erroneous conclusions were reached. Advantage was, however, taken of the above official statement, and unscrupulous promoters took many thousands of dollars from credulous investors. Even as early as 1905, illustrations in the prospectus issued by one of the promoters depicted McMurray as a metropolis with a network of rail lines, with steamships furrowing adjacent waters, and with tall plume stacks of plants. [28]

Eager to return to field work, Ellis suggested that he be given responsibility for the survey which was necessary to rectify this lack of information. In May 1913, he was assigned to conduct a field investigation of the Athabasca oil sands. [28] These surveys proved very important because they renewed interest in methods to utilize this newly rediscovered resource.

The Athabasca country was beginning to be opened up through major new transportation systems. E.C.W. Lamarque, a long time friend of Ellis, and trader in the region, later recalled that the year the First World War began saw the last of the large scow brigades on the northern rivers:

I last went down that river [the Athabasca] in 1914 and then the Chief [of the Wabasca Crees], Joe Bird and Joe Cardinal were probably the best [steersmen], for [John] McDonald was then in his sixties. That was the last year of the big brigades; there were 50 scows in the one I was in last. But a certain amount of freight continued to go down till the railway reached McMurray, though in 1915 the H.B. sent their northern freight via the railway to Peace River until the McMurray line was completed. Old John McDonald and I once took a pleasure scamper from Fort McKay, of which I had charge (McMurray being my outpost), to Lac la Biche and back just to visit our old friend James Spencer who had charge there. Heigho, I'm afraid those days have gone forever. [28]

Ells made his first trip into the oil sands region by scow. Early in June 1913, he obtained a crew of four men and floated downstream to Fort McMurray:

Near the head of Boiler Rapids (thirty-seven miles southwest from McMurray) the investigation of the bituminous sands began. At this point the first exposure emerges above water, with the rapid fall of the river and the southerly dip of the sands the exposures soon reach a thickness of 155 feet. Much of the material along this section of the river is, however, banded and apparently of relatively low grade, while two sections, levelled across the precipitous valley, indicated the thickness of overburden to vary from 150 to 300 feet. It was clear that difficulties presented by transportation, the absence of disposal and plant sites, and the character of the sand itself, would definitely discourage commercial development along the Athabasca River south of McMurray. [29]

During the summer of 1913, Ellis conducted a survey along the Athabasca for 100 miles below McMurray, and along the Firebag, Clearwater and Christina rivers. He also selected an area of oil sands to be used for paving in the western national parks. This became the Horse River Reserve, which was placed under the jurisdiction of the National Parks Branch. Located near McMurray, and covering 580 acres, it represented a major federal holding:¹

This area subsequently proved to contain the only large workable deposit of sand within a reasonable distance of rail transportation. Consequently, during the period 1920-45, it became the scene of important activities and the principal focal point of attempts to develop a method for the recovery of Bitumen in a commercial scale. [29]

An arduous summer was spent in the region by Ellis and his crew, and in September, nine tons of equipment and samples had to be tracked upstream to Athabasca Landing.² Ellis noted that:

Scow tracking south of McMurray was anything but child's play. Harnessed to the heavy tracking line, men fought their way grimly along the rough boulder-strewn beaches or through a tangle of overhanging brush often ankle deep in mud or waist deep in water. The ceaseless torture of myriads of flies from daylight until dark and the heavy work which only the strongest could long endure made tracking one of the most brutal forms of labour. Between McMurray and Grand Rapids, a distance of 82 miles, there is a strong and steady current that at the many rapids aggregating upwards of

¹ By Order-in-Council P.C. 600, the Horse River Reserve was expanded to include 2068.2 acres on April 29, 1926.

² Native labourers, by established custom, were paid \$45.00 for the trip regardless of time occupied, and had to provide their own transportation back to McMurray, which might explain the numerous desertions. They were also given moccassins and tobacco, which Ellis paid for, and for which the Mines Branch subsequently refused to remunerate him.

twenty miles in length increases at times to ten or twelve miles per hour. Breakfast was eaten by firelight; we pulled on the line until dark and then, lacking tents, slept under the dripping trees. Nevertheless, it required seven long days to reach Grand Rapids and during this period three men were incapacitated either by hernia, appendicitis, or pneumonia and placed in the sick bay on the bottom of the leaky scow. Thereafter I took a place on the tracking line. [29]

This backbreaking endeavor brought out of the Athabasca country the first samples of oil sands which were collected from numerous locations throughout the area to obtain suitably graded specimens.

In November 1913, at the conclusion of his field work, Ellis drew four major conclusions, which were to direct Mines Branch activities in the region for many years. Superficial inspection of bituminous outcrops were felt to be misleading, and Ellis suggested an extensive, detailed survey of the area through systematic core-drilling techniques as the only means in which the value of the deposits could be determined. He believed that the only commercially viable uses for oil sands involved the construction of pavement. Paving demonstrations were to occupy Ellis' subsequent research, especially in 1927 and 1928. Ellis cast doubts on the few techniques advocated at the time to separate the bitumen from the sands. He advised an intensive investigation of the properties of the sands, and the need to apply new techniques to these properties to solve the problem of obtaining petrochemical products in commercial quantities. Finally, he noted that the development of the oil sands would necessarily await the arrival of adequate transportation systems to connect regional production to national markets. These concerns influenced Mines Branch activities in the oil sands region for the next three decades. [30] After 1913, Ellis took a proprietorial attitude toward this area, and felt that the technical work should be conducted by the federal government; presumably the Mines Branch would remain above suspicion of pecuniary interest.

The reason for the lack of knowledge regarding the oil sands in 1913 was attributed to lack of interdepartmental co-ordination:

... in considering the numerous references that have from time to time appeared in various departmental publications, it becomes apparent that our knowledge of the real value of these admittedly extensive deposits, is practically what it was twenty years ago. And the reason for this is quite obvious. Parties, which have examined these bituminous deposits, have done so quite independently of each other, and no organized sequence has marked their successive efforts. [28]

Such an attitude led Ells to promote Mines Branch monopoly of oil sands experiments, until the creation of the Asphalt Road Committee led to federal-provincial co-operation in the late 1920's.¹

Following the first summer's work, Ells discovered that the techniques and equipment were not available to assess the samples acquired at such pains. He therefore began the first of numerous trips to the United States and Europe to use the equipment available there. Early in 1914, Ells spent some time at the Municipal Testing Laboratory in New York, and was introduced to experimental techniques. At the conclusion of this rather hasty introduction, he purchased some equipment and shipped it to Ottawa where a laboratory was assembled to carry out numerous tests on the McMurray samples. [29] In April 1914, the preliminary laboratory analyses were already complete. Eugene Haanel, the Director of Mines, reported in the spring that the major emphasis of the tests had been bent toward solving the preliminary problems attendant upon developing a paving industry at McMurray:

From information now available, it appears possible that the material from some of these deposits of bituminous sands may prove of value in the construction of certain types of urban and interurban

¹ This topic is discussed in 4.5.

highways. If such should prove to be the case, the economic value of the deposits would be very considerable. [27]

The Mines Branch developed the conviction, which proved relatively long lasting (1913 to 1930), that due to the great difficulties involved in separation, the oil sands' greatest usefulness lay in their asphalts. This was seen as especially attractive in the prairies where roads often were either dusty or muddy, and where markets would be close.

The value of such an industry was anticipated eagerly by provincial businessmen, especially in Edmonton. The Edmonton Board of Trade requested experimental demonstration paving utilizing Athabasca oil sands. The Board opined that such a development would be of great value to the public as it would promote popular awareness of the oil sands, and could speed their exploitation. The time was particularly appropriate because it had been disclosed that:

... a contract has been entered into with the government of Alberta under which the Alberta & Great Waterways Railway, covering a route from Edmonton to Fort McMurray, in the heart of the best known of these asphaltic deposits, is to be completed by the close of 1915; and work on the construction of this line has actually been commenced. The completion of this road will render these deposits immediately available. [27]

Edmonton's City Commissioner, noted that if the experimental paving programs were successful:

... it will be of greater value to the City of Edmonton and Alberta generally, than the bringing in of half a dozen industries ... At the present time we are absolutely suffering for the lack of cheap pavement, and for the lack of good road material whereby the farmers may haul their products to the City on well built roads. The solution of this problem will be worth millions of dollars [27]

The role of the Mines Branch in this development is best summarized by the Edmonton Board of Trade in the following suggestion:

In order that such a test should be authoritative and prove of the greatest possible value to the public, it is considered essential that the work should be under the direct control and supervision of the Department of Mines, from the selection of the material to the completion of the paving. [27]

Ells was enthusiastic about the remarkable potentialities of this project, claiming that such paving material:

... would find its chief market in the prairie provinces, where materials for permanent road construction are difficult to obtain. Modern civilization and every aspect of community life are so intimately dependent on the condition of our highways, that almost any method devised to measure the benefits of good roads is incomplete. [27]

Following Ells' 1914 report [30] interest had grown internationally. The American Geological Survey cited this report and growing markets as evidence of a revival of interest in unexploited oil sands. [31] In the spring of 1915, the Edmonton Journal published a long, colourful account of the hardships suffered by Ells in getting the asphalt to Edmonton for the paving experiments to be conducted that summer. [32]

In August 1915, experimental pavements were begun under Ells' supervision. However, F.C. Field, city chemist with the Calgary Municipal Testing Laboratory, pointed out the principal shortcoming of the paving scheme was the inaccessibility of the tar sands. As Field saw it the project could never succeed:

The demands for pavement in the immediate future are to be largely for the construction of trunk highways throughout the Province,

and their connection to the City pavements through radial roadways to the City limits. Such construction must of necessity be accomplished at low cost. [27]

Frank Oliver, however, praised the Edmonton experiments in the House of Commons later that year, during a discussion of the benefits bituminous sands research would soon bring to Canada. The Ottawa Journal also featured these developments, praising Ellis' role in initiating the widespread postwar interest in oil sands. [33] Subsequent accounts of the 1915 experiment kept interest high.

After completion of the paving project, Ellis spent two years at the Mellon Industrial Research Institute in Pittsburg where he continued to work on the problem of separating bitumen from the sand. In 1917, he produced the first substantial report on the problems of development in the oil sands. [34]

During the Liberal government regime in Alberta, emphasis was placed upon railway building in northern Alberta. In April 1916, the Edmonton Dunvegan, and British Columbia Railway (EDBC) reached Grande Prairie. This transportation link gave the Peace River country a decided advantage over the Athabasca Oil Sands region which had been anticipating the construction of the Alberta and Great Waterways railway to Fort McMurray for several years. [1] In 1914 the line had reached Lac la Biche but construction was not resumed until 1916. Between 1916 and 1921 freight for the Mackenzie River basin was routed through Peace River Crossing. These were temporary setbacks, however, because the Alberta government was determined to continue opening its northern lands to settlement and mineral development. [35]

The issue of natural resources was raised in 1919 when the Alberta government passed a unanimous resolution that the federal government refrain from further grants of oil-bearing lands in northern Alberta until negotiations for transfer of the natural resources were completed. The Alberta position was accentuated by the formation of its Scientific and Industrial Research Council

which published a survey report on Alberta's mineral resources in 1920. [36]

The transfer of the Mines Branch office from Calgary to Edmonton in 1918 was indicative of the federal government's interest in developing "the prospective oil fields of the Mackenzie and Athabaska valleys ..." [37] The discovery of oil at Norman Wells in the Northwest Territories in 1920 brought the hope that the Plains region of Canada might produce new petroleum discoveries which would alleviate Canada's large imports of oil from the United States. [37]

With these national considerations in mind the federal government launched, under the direction of S.C. Ellis, a number of investigations in the 1920's designed to determine the value of the oil sands. These investigations centered on the Horse River reserve. The selection of this reserve had been made initially on the basis of surface outcrops. Consequently, an important part of Ellis' work during 1920 was a detailed examination of the reserve for the Parks Branch:

This report was based on shafting through overburden at twenty-one points followed by core drilling through the underlying bituminous sand from the bottom of each shaft. In sinking pits, light pole derricks equipped with double blocks, a primitive handmade winding drum and cumbersome buckets were used. Seepage water was removed by a hand pump and caving prevented by the use of light dimension timber, light poles and rough boards. Timber and lumber were brought to the mouth of Horse River by scow, nails driven into the ends of each piece, and the pieces connected up by bits of hay wire. With a tump line connected to the leading piece, strings of lumber three to four hundred feet in length were then hauled to points required by men wading up the middle of the river [Horse River]. This method proved entirely satisfactory. At

the same time a survey was made of river bottom areas and precipitous valley slopes, and a map was drawn ... [28]

The 1920 survey indicated that there were five million tons of commercial grade oil sands on the Reserve, and that some three million tons of overburden would have to be removed during mining operations. It had become clear during the preceding decade that the federal reserve was:

... the only area within reasonable distance of McMurray where bituminous sand could be mined at moderate cost. Consequently during many years it was here that much of the semi-commercial and commercial separation was attempted. [28]

Ells returned in 1922 and 1923 to conduct topographical surveys and run surface profiles of the oil sands deposits along Horse River. These studies were to determine the ratio of overburden to underlying sand, the major factor in selection of commercially viable leases. The results of these surveys, along with Ells' other work, were published by the Mines Branch in 1926. [38] His investigations included studies of the type of deposits, topographical surveys, shipment of oil sands for paving demonstrations and studies of methods to recover hydrocarbons from the oil sands. [38] The problem of separating oil from the sands led Ells to conclude:

As in the case of oil-shales, commercial development will be possible when ... the cost of well petroleum and its derivatives reaches a point approximating the cost of production of hydrocarbons from bituminous sand. Such development implies adequate financial resources, and should not be undertaken by men of small capital or by those who desire quick returns on their investment. Meanwhile it appears that much duplication of effort

exists, and that greater co-operation is desirable between Government and private investigators, and between the private investigators themselves. [38]

Following the discovery of oil at Norman Wells, the federal government introduced stricter regulations governing oil leases. Earlier regulations dating back to 1901 had permitted applicants to acquire both surface and under rights, but most of these holdings lapsed through failure to comply with the regulations. [27] Only two developers, Northern Exploration Company and A. von Hammerstein (see Section 4.4 below), were granted patent rights under the earlier regulations. [27] The 1920 regulations were designed to discourage speculative ventures in the oil sands. An applicant could file for 1920 acres to be selected in four blocks of not less than 40 acres each. The term of a lease was 21 years, renewable; the rental being 25 cents per acre for the first year and 50 cents an acre thereafter. However, evidence was to be given within six months from the date of the lease that over \$10,000 had been spent to build a separation plant, and \$30,000 had to be expended within the following 18 months. [27]

Although these regulations served to deter speculators, interest in the oil sands remained at a high peak during the 1920's. Much of this interest was motivated by the expanded role given to the Mines Branch by its new Deputy Minister, Charles Camsell who believed:

... the Mines Branch was in the best position to render the greatest service, given the present need to develop efficient mining, refining, and manufacturing technology capable of competing on the world stage. [37]

In September 1922, and October 1923, Charles Camsell toured Major General W.G. Lindsay's plant in Swansea, South Wales. This plant tried to use superheated steam to separate the sand from bitumen and to separate the bitumen into its various fractions. However, the quality of the distillates obtained was uneven and the pipes in the plant were often unable to withstand the pressure and temperature

of the steam. [38] Lindsay nevertheless took out four parcels of leases in Townships 92 and 93 in 1924. [39] In 1924, Camsell pursued his investigations by touring laboratories in the British Isles, the oil shale retorts in Edinburgh, and British Fuel Research Board experiments in oil shales. [39] He observed the mining techniques developed in the Pechelbrunn field in Germany, in production since the early nineteenth century. Here mine shaft techniques began replacing wells in the depleted bituminous sand region.

There were by 1924 five major categories of physical and chemical processes under serious investigation. These involved separation by use of heated water, refining by liquation, separation by liquation, extraction by the use of petroleum distillate, and extraction by means of carbon bisulphide. [39] Ellis conducted investigations of 61 different groups attempting separation, of which 28 had applied for, or received, Canadian patents. [38] Caution was advised in responding to the numerous requests for leases. The Director, John MacLeish, wrote to Camsell in 1924 that:

... as a result of Mr. Ellis' investigations of the bituminous sand areas of Northern Alberta, and of the conclusion he has come to with respect to the comparatively limited area that can be considered available for commercial exploitation for a considerable period of time, he is of the opinion that leases should be restricted to one square mile in place of three square miles [39]

Ellis had warned MacLeish after his 1923-24 survey that if the leases were granted as in the past applications would exhaust all commercially profitable lands. [39] He also pointed out that none of the separation processes had been demonstrated to be commercially feasible. The Mines Branch thereupon accepted Ellis recommendation:

If properly demonstrated and introduced there is today a market for Alberta bituminous sand. Whether or not this market will be developed and held, will depend largely on initial results that will be achieved during the next two years. It appears that in such demonstration work a disinterested

organization such as a Federal Department, may be of really practical value and assistance. [27]

To carry out this program, the Branch was able to utilize the services of McMurray Asphaltum and Oil Limited, a firm which had succeeded in obtaining a lease in 1922, but which had failed to demonstrate a successful separation technique. This company had been formed by Thomas Draper of Petrolia, Ontario, who first visited the oil sands region in 1920. He then returned to Petrolia to build a small demonstration plant. On this basis Draper was granted a lease in October 1922. By April 1923, however, his company was experiencing difficulty in fulfilling its obligation to expend \$30,000 within the required time period. Ellis, ever zealous in pursuing Mines Branch interests, requested permission to make a report on Draper's progress. [27] He expressed his doubts before going to inspect the plant. [27] Draper swore out two affidavits regarding expenditures, but these were very general and failed to satisfy the Mines Branch.

In vain, Draper attempted to convince the Mines Branch that his separation process was successful:

We are still continuing our experiments on separation and yesterday in trying out a new machine, we were successful in extracting 22% of hydrocarbons from what we did not consider a rich sand. If we had some of our richest sand from our cliff on Deep Creek, we are confident we could extract 30%. However, as we are adding further improvements to this latter machine, we do not care to describe it until we are protected by patents.

For your information, I might state that our plant at Waterways is the only plant in the Athabaska district that has been in successful operation and tried out under actual working conditions. It has been inspected under operation by hundreds of persons going in and out of the Athabaska district. [27]

Draper requested that Ellis observe the demonstration of the plant in Petrolia. This occurred 28 November 1924, and Ellis proved quite enthusiastic about the machine designed by Draper to mix quantities of McMurray asphalt with the object of making large-scale paving possible. [27] Such a machine would aid Ellis in his paving experiments, and this might explain his enthusiasm. However, Draper's company failed to fulfill its obligations, due partly to a fire in 1924 which burned the first plant. Although Draper claimed to have processed 423 tons of oil sands in his second plant, these were subsequently shown to have been shipped to the Research Council of Alberta, and processed there. [40] Therefore the Mines Branch considered cancelling the lease, but Draper finally was allowed to operate his holdings and supply raw oil sands to various experimental projects. This proved to be the major role his lease filled thereafter.

Draper blamed this turn of events upon the Mines Branch, and the role Ellis played:

Ellis is always before the public parading the fact that he is the only expert in Alberta tar sands and as representing the Dominion Government it has considerable weight with the general public ... in almost every deal that we have made, he has interfered in some way or other and has prevented us from doing considerable work [27]

Although the Mines Branch correspondence lends credence to this accusation, any interference resulted from the failure of Draper to develop a separation technique. The significance of his company lay in the fact that it was:

... the only company that resulted from the early interest in using the bituminous sands in paving programs ... the plant was not a speculative venture but was based on hopes that the recently constructed Alberta and Great Waterways Railway would make the idea feasible. [40]

High freight rates, increasing use of automobiles, and alternate sources of oil for asphalt, were factors which shifted the emphasis from using the oil sands in paving programs to techniques devoted to the recovery of liquid and semi-liquid carbons.

One of the first serious attempts to establish a commercial separation plant was made by Max W. Ball in the 1930's and 1940's. Although his company, Abasand Oils Limited (AOL), was privately funded, its establishment and operation would have been impossible without the involvement of the federal government, an involvement which eventually resulted in the government assuming control of Abasand Oils Limited. The story of AOL reveals the continuation of attempts by the Mines Branch to achieve success in exploiting the oil sands.

Widespread interest in the oil sands attracted James M. McClave of Denver, Colorado, who began conducting separation tests in 1919. [41] In 1925, S.C. Ellis paid a visit to McClave's laboratories and was impressed with the process. According to McClave, Ellis returned to Canada where he continued to promote support from the private sector. [41] McClave's work interested Max Ball, a geologist and lawyer, whose career spanned the exploration and development of the oil industry in Wyoming and Colorado. [42]

Ball decided to accept the challenge of extracting oil from the sands, and after considerable correspondence, made application for a lease in the region. Canadian Northern Oil Sands Products Limited was incorporated under federal charter on September 2, 1930.¹ J.M. McClave, named chief engineer, was representative of the American technological skills introduced into the region.

Between 1930 and 1935, AOL concentrated on testing and improving McClave's hot water separation process in experimental plants constructed in Denver and Toronto. Ball's activities centred

¹ The name was changed to Abasand Oils Limited on April 25, 1935.

on raising the necessary finances, and in acquiring the pilot plant of the Research Council of Alberta, built by Karl A. Clark in 1929. [43]

During this time, AOL's original agreement of 1930 was extended several times, but in 1935, a new and similar agreement was reached with both the federal and the provincial governments. The duplication of agreements was necessitated by the incomplete negotiations for transfer of control over natural resources to Alberta from Ottawa, and by the fact that AOL selected the Horse River federal reserve as its plant site. The agreements specified that AOL had to have a 250 ton per day plant ready for operation by September 1, 1936. In 1937 the plant was to handle 50,000 tons of oil sand and 100,000 tons for each of the years 1938 and 1939. Royalties were to be paid and products of the plant were to be shared with the Crown "for the benefit of the National Parks." [44] The only difference in the Alberta-AOL agreement was that AOL had an option to select additional lease acreage from Alberta Crown lands provided that the above conditions for development were met.

These agreements are significant because they reflect the continuing involvement of the Mines Branch in the region. Furthermore, they must be interpreted as favouring the federal government. Ball probably accepted the conditions because he had invested everything he had in the venture. On the other hand, the Mines Branch, appreciative of this fact and Ball's sincerity, continued to extend the agreements until 1943, when the federal government agreed to take over the plant.

AOL encountered difficulties immediately on beginning operations on Horse River. Although the separation plant worked reasonably well, mining the oil sands proved to be a major obstacle:

The oil sand in the neighborhood of McMurray contains an oil which is at the viscous extreme of variation of the oil sand. It holds the sand together very firmly. At first, Abasand Oils Ltd. tried mining by use of a shale planer. Excessive abrasion of cutter teeth was

experienced. Also the teeth were broken off on the marcasite nodules. The best mining method tried was to shake up the oil sand beds by light blasting after which a 3/4 yd. power shovel picked up the sand readily. No satisfactory way for feeding the oil sand into the separation plant was found. [43]

This problem, along with minor adjustments in the separation process, brought further delays. To counter these problems AOL decided to expand the plant's capacity to handle 400 tons a day. [44]

The Mines Branch decided to conduct an investigation of the plant to determine whether or not AOL was meeting the terms of the agreement. The inspection report concluded:

... there is evidence of good intention on the part of the company. Taking into consideration all that has been done on the lease ... it appears that a genuine effort has been made to meet the terms of the agreement on the date specified. [44]

Although camp facilities, including residences for personnel and a road to Fort McMurray were completed in 1937, other events frustrated plant progress:

The general rearmament program and the activity in Turner Valley denuded Alberta of materials on which we had counted and forced us to go farther afield for them. Rearmament strikes, and the sudden spurt in industrial activity created a seller's market in steel products, making it impossible to get prompt deliveries. Delayed deliveries plug the earliest spring thaw in twenty-five years forced us to haul through the mud the heavy equipment we had expected to take in on sleds, and also forced us to improve our road into a permanent, substantial gravelled road, which we had not intended to do this year. A forest fire burned

out seven bridges on the railway, delaying shipment by about three weeks. [44]

Of these difficulties, the most formidable one was the discovery of a major oil pool in the Turner Valley field in 1936. It was reported by September, 1937:

... there was so much oil being produced that existing pipelines from Turner Valley to Calgary were inadequate to carry the product, and it was a problem to market the gasoline when refined. [45]

Alberta's oil production from conventional sources rose from 1 320 442 barrels in 1936 to 7 594 411 barrels in 1939. [45]

Max Ball's hopes for an Alberta market for AOL products were frustrated and turned in consequence to markets being developed by the new mining industries on Lake Athabasca and in the Northwest Territories.

On 15 June 1939, Ball wrote to the federal Minister of Mines, T.A. Crerar, requesting that the clause on royalties be waived for five years. His request was supported by 12 reasons, of which the last six were indicative of the difficulties AOL now encountered:

6. In order to finance the completion of the plant it is necessary that we have an adequate market for its products.
7. Production and marketing costs will be relatively high. For this reason, and because of the high freight rates from Waterways to Edmonton, the gasoline, diesel oils, and fuel oils from this plant cannot be profitably marketed to the south in competition with the products from Turner Valley crude. These products must therefore be marketed mainly in the mining regions to the north.
8. The consumption of such products at Goldfields and elsewhere south of Smith Portage is not adequate to support the operation of the plant. Profitable operation of the plant therefore depends on marketing a

considerable part of its products in the Yellowknife district.

9. In the Yellowknife district our products will compete with those from Norman, which have the advantage of a continuous water haul, whereas our products must be transhipped at Smith Portage.

10. We have felt that we could successfully compete with Norman products for a substantial portion of the Yellowknife business, though with a very small margin. Now, however, we are informed that Imperial Oil Limited, in the consideration of the expenditure of \$150,000 at Norman, has been granted a five year waiver of its royalties, which will correspondingly reduce its costs and the prices at which it can lay down products in the Yellowknife area.

11. In order that we may have a competitive chance in the Yellowknife district, it is therefore necessary that we be given the same consideration that has been given to Imperial with respect to royalties.

12. If we are given an equal competitive chance in the Yellowknife district we can help to supply fuels at reasonable cost not only in the area tributary to Great Slave Lake, but also in the entire area south thereof, including Goldfields. [44]

Ball concluded his request with the premise that reasonable prices in northern mining districts could be assured by competition between Norman and oil sands producers. Although AOL had expended \$491,000 on its development to 1939 [44], the plant was still not in production, a factor which placed Ball in a weak bargaining position.

The response from the Mines Branch must have been upsetting to Ball:

In regard to the tar sands you are no doubt aware that these were reserved for the Dominion at the time of the transfer of the Natural

Resources to the Provinces, the intention being that the Department would arrange whereby at least a portion of the products resulting from the mining operations on these deposits would be available for use in the development of the National Parks. If the Parks are not to benefit in this way then the original reason for the reservation of these tar sands areas in the Dominion would disappear. [44]

The correspondence reveals that, to obtain additional financing from his backers, Ball needed the waiver on royalties and a reduction in the quantities of oil sand which was supposed to be mined each year. [44] The Mines Branch position remained firm, however, and the only consideration which AOL received was further extensions to its lease until 1942. These extensions were granted because of the need for oil supplies to aid the war effort.

The outbreak of war caused the federal government to review its relationship with AOL. G.R. Cottrelle reported:

Within one month after I was appointed Oil Controller (1940), I had a meeting with the management and financially interested parties of the ... Abasand company for the purpose of ascertaining what products could be made available from the tar sands. The operations of the Abasand company were continually under observation from that time forward until the fall of 1942. [46]

Max Ball astutely endeavoured to use the wartime situation to his company's advantage by announcing that AOL could make a substantial contribution to the war effort:

Based on our extended experience and using the processes we have developed, we would erect for about \$4,500,000 a plant capable of producing 10,000 barrels per day ... This plant would be located about 30 miles down the Athabaska from Waterways on

deposits we control. To bring the oil to the railhead would require a pipe line which should not cost more than \$350,000 ... [44]

These proposals were made public in Montreal in the spring of 1941.

Throughout these years AOL failed to get into sustained production because of the lack of suitable equipment to mine the oil sands which were saturated with abrasive marcasite nodules that wore out excavating equipment. Furthermore the outbreak of war brought shortages of skilled labour, a situation which was eased when the federal government permitted AOL to bring in American personnel. [44]

Then, on November 21, 1941, fire destroyed the plant. Plans were immediately launched for reconstruction and the lease agreement was extended to 1943. [44] The new plant was ready in June 1942, but new obstacles were facing Max Ball. He gloomily reported to the federal Director of Lands, Parks, and Forests in July, 1942:

... worse than the delay in getting the materials was the wrecking of the Abasand staff by the Canol Project which had taken the superintendent, chief chemist, senior stillman, head mechanic, shovel operator and all cat drivers. Abasand had lost altogether 38 men out of a crew of 55. It is hoped to be in operation again in three weeks. [44]

The Mines Branch began to consider cancelling the lease, but the United States' need of asphalt and diesel fuel for the Canol Project caused the federal authorities to conduct a thorough examination of AOL. This examination made them aware that although the AOL plant's capacity was too small, it could assist in the war effort and it could serve as a training ground for personnel required in larger scale operations. [44] It was decided to continue the operations (estimated at \$300,000) by directly assuming control of AOL.

On April 1, 1943 the federal Department of Mines and Resources signed an agreement with AOL to assume control of its

property, plant, and operations for the sum of one dollar. In return AOL was to receive not more than \$300,000 to expand its operations until the end of the war. However the federal government controlled appointments to the board and executive of AOL and had an option to purchase the plant for expenditures incurred. If the option to purchase was not exercised within a specified time, AOL could resume control by paying for expenditures incurred by the government. [44] This agreement marked the end of Ball's efforts to extract oil from the sands.¹

General Engineering Company was appointed managers of the AOL operations, but:

It took over a dismantled plant and never got it back together in a way that worked at all as well as it did for Ball and his men. In the end, General Engineering abandoned hot water separation and turned to the use of mineral flotation cells. At every turn it ran into oil emulsion problems. A large quantity of distillate for diluent was brought in to get the separation plant going. According to accounts leaking out of the plant, the longer it ran the less diluent it had on hand. The plant caught fire from a welder's torch in 1945 and was destroyed. Everything of value left was sold. Nothing of the plant and townsite that was built to accommodate a large crew of workers now remains - just the quarry filled with water. [43]

Due to an extensive drilling survey program, launched in 1942, federal government involvement in the Athabasca Oil Sands region continued until early 1947. For several years Consolidated Mining and Smelting Company of Canada (CMS) had been interested in developing oil supplies for its northern mining operations. [47] In 1942, CMS agreed to conduct exploratory surveys for the Mines

¹ Ball returned to the United States where he was appointed special assistant to the Deputy Petroleum Administrator for War.

Branch, "as a war project, investigations concerning use of tar sands and to search for large uniform deposits." [48] Authorities on the oil sands, including Karl Clark and S.C. Ellis, were agreed that large reserves existed, but there was a need to determine specific areas in the region which could be utilized for large scale plants. [48] The federal government justified its role in development on the basis of a need to find new supplies of oil for post-war developments:

The great need is to reconstitute the picture of bitumen deposition in northern Alberta and if the Dominion Government should discontinue its efforts at this time it would be a very definite discouragement to private enterprise This program would appear to have a definite place in Reconversion plans; needs for oil in western Canada, with Turner Valley production steadily declining, may well point to the necessity in the not distant future, of obtaining petroleum from the bituminous sands. [49]

Some impetus to the proposed drilling program was undoubtedly afforded by the discovery that the Horse River reserve lacked sufficient quantities of oil sands for a large plant. [44] Between 1943 and 1947 Boyles Brothers Drilling Company, under federal government contract, drilled 291 holes in the region. This company introduced diamond drills and gel-mud drilling fluid, techniques which made accurate sampling and assays possible. [50]

Although the reasons cited above kept the federal government closely involved in attempts to develop the oil sands, the destruction of the AOL plant by fire in 1945, the growing involvement of the provincial government in oil sands development (see Section 4.5) led federal authorities to conclude:

There is considerable doubt in this Department as to whether the Dominion Government should continue this exploration of purely Provincial resources. [49]

The discovery of the Leduc oilfield in February, 1947 sealed the decision of the federal government to withdraw from direct involvement in the Athabasca Oil Sands region. The 1940's marked the climax of over three decades of federal endeavours to develop the oil sands. The costs for the 1942 to 1947 period totalled \$2,217,295.37. [50]

Notwithstanding later developments, the Mines Branch initiated widespread interest in oil sands development, and acted to control the direction and rate of that development. Men like S.C. Ellis facilitated federal involvement in a potentially important energy industry at a time when the question of resource ownership was becoming an increasingly contentious issue between Ottawa and Alberta. The increasing involvement of the provincial government will be examined in Section 4.5.

4.3 CATALYSTS OF CHANGE: FEDERAL CONTROL AGENCIES, 1893 TO 1924

4.3.1 The North-West Mounted Police, 1892 to 1917

The initial move of the North-West Mounted Police (NWMP)¹ Athabasca Oil Sands region was dictated by a need to establish law and order in an area being promoted for its potential mineral riches and settlement possibilities. Concerned primarily with problems of development in the prairie region, the NWMP had developed concepts and practices of dealing with immigrants and prairie native peoples. Its system of patrols and tactful intervention had been effective in bringing the prairies under Canadian law. In 1892, when the first patrol penetrated the Athabasca Oil Sands region, the prairie system was imposed upon an entirely different region, with mixed success.

During the first 35 years of its activities in the region the NWMP and the RNWMP established the presence of the Crown; for the native peoples its arrival was:

... a new phenomenon to them, and therefore confusing. It must have seemed to the Indians that the Police had no sensible reason for being in their country. Unlike the missionaries they were not there specifically for the Indians' good; unlike the traders, they were not there for their own good. [51]

As enforcers of laws being introduced from the outside, the police were cast into a role which ultimately would be viewed with suspicion and alarm. As justices of the peace, the police were often forced to introduce, to explain, and to interpret the laws. As agents adept at observation and reporting, they played an important role in preventing conflict among the newcomers and the indigenous peoples. Their chief functions lay in controlling illegal use of liquor, regulating the rush of Klondikers, assisting in the establishment of Treaty 8, enforcing and undoubtedly ameliorating game laws, and reporting on the need to control natural resource development.

With the change in transportation routes from Portage La Loche to Athabasca Landing in the 1880's, the region became more

¹ The name change from North-West Mounted Police to Royal Northwest Mounted Police occurred in 1904.

accessible to settlement. An immediate concern of the government was the control of liquor which had been prohibited by law in the North-West Territories since 1875. In 1891 the legislation was amended to permit liquor in the districts of Saskatchewan, Assiniboia, and Alberta, but the Athabasca District continued under prohibition. [1] Under this system, the Lieutenant-Governor of the NWT personally signed permits for individuals and organizations to take liquor north of Athabasca Landing. This permit system was often abused, and the difficulty of its enforcement was to become a recurrent grievance of the police.

In 1892 the first summer detachment of the NWMP began operating at Athabasca Landing, and in 1893, Inspector D.M. Howard, with eight constables, established a permanent outpost at Athabasca Landing to regulate the rapidly increasing northward traffic. Subsidiary detachments were begun at Lesser Slave Lake and Grand Rapids.

In 1896 Commissioner L.W. Herchmer reported:

A considerable quantity [of liquor] goes in under permit, and some is admittedly smuggled. It is also stated that some is used for trading purposes with the Indians, and that, in addition, a considerable quantity of all sorts of extracts, which are well known to be intoxicating, are given to the Indians contrary to law, if not actually traded for furs ... [52]

In 1901, illegal traffic in liquor was reportedly confined to intoxicants contained in pain killers, ginger extracts, and perfume. [53] However, between 1901 and 1905, there were disturbing reports about the problem. One visitor complained of the "moral plague" of alcoholism. [54] The response of the NWMP Comptroller to this type of complaint was:

I do not think it would be desirable to go into a thorough investigation of these complaints. They are simply a repetition of what you and I know has occurred in connection with the development of the N.W. Territories from the Red River westward during the last thirty years. I have as much faith in

the future of our country West and North of Edmonton as I had in the old Assiniboine and Qu'Appelle valleys, but it's difficult to convince the goody goody people that in the development and settlement of a new country allowances must be made for the excesses of human nature ... [55]

However, increasing concern for the welfare of the native peoples, expressed in police reports emanating from the region, led to a decision to increase police patrols. [55]

By 1903 Superintendent Charles Constantine reported to the Commissioner that:

... the Permits are usually in the hand of free traders, and many of the names used in applications for permits are fictitious. In some instances where bone fida [sic] names are used, the persons do not get the permit, under the pretense that they cannot pay for them, thus a large quantity of liquor gets into the hands of a few persons, with a great deal of drunkenness, while the liquor lasts, which is not very long. Some also goes to Indian Hunters as a bribe or inducement to bring their furs to those having [some] to dispose of. For these reasons I strongly recommend that no permits for liquor be granted in the far north. [55]

At that time Sergeant R. Field was also conducting summer and winter patrols to Fort Smith and Resolution. From these rather cursory appraisals of the region he offered the opinion that illegal liquor was the major problem there:

Most of the misdemeanors committed in the North I undoubtedly believe are chiefly caused by the large quantities of liquor imported by the traders under permit. It seems to be the custom of using other people's names for the purpose of obtaining permits and importing liquor into the North and then keeping this liquor for their own use. [55]

Field noted that, despite his best efforts, a great quantity of such liquor was making its way to Fort Chipewyan, and recommended that the permit system be replaced by total prohibition. He also accused the Justice of the Peace there of selling permit liquor to Treaty Indians.

Some indication of the manner in which the permit system was abused may be gained from the following list of imported liquors, presumably for personal and medicinal usage in the area in 1903. (Table 2).

Table 2. List of liquor permits for Athabasca Region, 1903. [55]

Fort Smith

J. Huresell - trader	2 gallons whiskey
F. Vilbrum	2 gallons whiskey
.....	1 gallon wine
B. Anderson	4 gallons brandy
.....	1 gallon wine
G.A. Ball	5 gallons whiskey
	<hr/>
	15 gallons for J. Huresell

Fort Chipewyan

Colin Fraser - trader	5 gallons whiskey
James Fraser	5 gallons whiskey
Pierre Gladu	2 gallons whiskey
James Sanderson	2 gallons whiskey
Charles Christie	2 gallons whiskey
Pierre Torongeau	2 gallons whiskey
Jermie Mercredi	4 gallons whiskey
E. Williams	5 gallons whiskey
William Atkinson	3 gallons whiskey
	<hr/>
	30 gallons for Colin Fraser

Companies

Swiggard & Co.	23 gallons
Hislop & Nagle	53 gallons
J. Huresell	15 gallons
W. Connors	11 gallons
Colin Fraser	30 gallons
	<hr/>
	132 gallons

Continued...

Table 2. Concluded.

"With the exception of the Clergy, all Hudson Bay employees."

George Drever	2 gallons whiskey
.....	2 gallons brandy
.....	1 gallon wine
John Sutherland	4 gallons brandy
.....	1 gallon wine
B.F. Cooper	2 gallons wine
.....	1 gallon brandy
Louis Robillard	2 gallons wine
.....	0.5 gallon brandy
E. Greenwood	2 gallons whiskey
J. Mercredi	1 gallon brandy
.....	1 gallon wine
A. Brabont	2.5 gallons brandy
J. Howe	2 gallons wine
J. Hodgson	2 gallons whiskey
.....	1 gallon brandy
M. Maudville	2 gallons whiskey
F. Heron	2 gallons whiskey
William Johnson	1.5 gallons brandy
A. Maudville	2 gallons whiskey
.....	1 gallon brandy
.....	1 gallon wine
J.B. Campbell	2 gallons whiskey
Rev. S. Jones	1 gallon brandy
Rev. McDonald	2 gallons wine
.....	2 gallons whiskey
.....	1 gallon brandy

176.5 gallons

The free traders fought vigorously against tightened controls. Colin Fraser, free trader at Fort Chipewyan, complained to Frank Oliver, for example, that in:

... a country like the North, where there are no Doctors, this [restriction on patent medicines] is a great hardship, as in cases of sickness, it is only by the use of patent medicines, that any relief can be obtained. [55]

This protest proved futile, however, and by 1905 the enforcement of the regulations had its effect throughout the north. Sergeant W. Haslett reported liquor traffic completely under control throughout the Athabasca District by 1905. [55]

During the period of greatest interest in the natural resources of the Athabasca country the Department of the Interior had made every effort to avoid conflict by discouraging resource development through companies or individual miners. In 1893, the Superintendent of Mines had noted:

... it has been thought advisable to discourage as far as possible any immigration into the districts around the Peace and Mackenzie Rivers and northern country generally. The inducement seems to be the presence of Gold; but probabilities are that the search for it will not be paying; they [the prospectors] thereupon develop into hunters, traders and trappers and the result is already observable in the scarcity of game and if many more come in, the deplorable results will be even more evident in the starvation of the Indians. [56]

However, news of the discovery of gold in the Yukon reached the outside world in 1897 and the ensuing rush of prospectors forced the government to increase its presence in the region. [57]

Frank Oliver, publisher of the influential Edmonton Bulletin, typified business opinion in his statement:

It may be that the government disapproved of this northern country being opened up by the trader, the missionary and the prospector and

that they grudge to discharge the responsibilities which they have assumed. If that is the case they can certainly delay, but they cannot prevent development, as the trend of events for the past three or four years clearly shows. [58]

That same year Oliver warned Frederick White, the NWMP Comptroller, of possible violence:

Several hundred people have gone down the Athabasca this Fall, most of them are wintering at points this side of Ft. Simpson: they are strangers in the country, well armed, and likely to get into conflict with the natives at all times and the timely visit of a police patrol would no doubt remove the impression that they no doubt are under, viz. that they are out of the reach of the law. [59]

Oliver was also demanding that the NWMP serve the increasing population in the region by urging that the winter patrol carry mail as far north as Resolution. Although the Postmaster General balked at the cost of two mail runs, it was agreed that the NWMP act as the carriers of the mail. Consequently, two patrols carried mail into the district for the first time. One left Edmonton for Lesser Slave and the Peace River country 6 December 1897 and one for Fort Simpson 12 December 1897. Numerous such mail runs were initiated thereafter. [59]

In the summer of 1898, Sergeant Field and Constable Phillips patrolled from Fort Saskatchewan to Peace River and Lesser Slave Lake, Routledge patrolled the same route over the newly completed trail to Lesser Slave Lake, and Inspector Howard patrolled the canoe route from Prince Albert to Fort McMurray, which was becoming much more popular with the influx of Klondikers. In the winter of 1898 to 1899, Routledge took the mail patrol from Fort Saskatchewan to Fort Resolution, Fort Vermilion and Peace River, an exhausting four-month endeavor; and Sergeant Anderson patrolled through Athabasca Landing, Lesser Slave Lake and Peace River twice, once with dogs and once with pony-drawn sleighs. [60]

After 1898, Inspector Routledge noted large numbers of Klondikers between Athabasca Landing and Grand Rapids, living in shacks and preparing to head downriver in the spring. [61] Routledge noted the influence upon the native people of the area:

At Grand Rapids all the freight for the north is transhipped, and this season owing to the number of miners going down, there will be a very considerable increase over previous years. A large number of half-breeds and Indians will be employed at this work as guides and steersmen. The Grand Rapids is the principal rapid of the river, and has a fall of about 85 feet from the police shack to the eddy; the river at this point is full of boulders. The head of the rapid is divided into two channels by a small island, the channel to the right going down stream being the one used for the lowering of scows. Strangers, without guides, are very apt to take the left channel, as up to the head of the rapids it is comparatively free from boulders, especially in high water. The Hudson's Bay Company freight brought down by the steamer Athabasca, is unloaded at the steamboat landing, a short distance above the rapids, and taken down in scows to the head of the island, where it is unloaded and taken across to the lower end on a tramway. The scows are then lowered down the right channel with ropes and receive their cargoes at the end of the island. [61]

Native shrewdness in the demands of a competitive labour market brought on by the influx of Klondikers requiring boatmen and guides, was reported by Inspector Routledge:

Many of the men whom I met in the North complained of the excessive charges made by the half-breeds and Indians, especially at the Grand Rapids, who act as guides and steersmen down the rapids. These men evidently look upon the Grand and Smith Rapids as their "Klondyke", and it seems to me that some action should be taken to regulate such charges. [61]

The increased transportation along the Athabasca River also led to the establishment of a terminus at Fort McMurray. Although Fort McMurray consisted only of a few Hudson's Bay Company buildings designed to handle transshipment of goods and furs between scows and the SS Grahame, the Klondike gold rush also brought the first immigrants drawn from outside the fur trade. Some of these disappointed gold seekers remained to search for oil. [62] Despite this influx of outsiders, the Hudson's Bay Company closed its post at Fort McMurray in 1898 and focussed its trading activities in Fort MacKay. (Fort McMurray was not re-opened until 1913, when increasing settlement, oil speculation, and the expectations of a railroad combined to ensure the permanence of the community.)

The pressures put on the area were not all as positive as those mentioned above. Charles Mair, member of the Half-Breed Commission, described the gold seekers as exhibiting:

... a congenital contempt for the Indian's rights. At various places his horses were killed, his dogs shot, his bear traps broken up. An outcry arose in consequence, which inevitably would have led to reprisals and bloodshed had not the government stepped in and forestalled further trouble by a prompt recognition of the natives' rights. [63]

This trend intensified throughout 1898. Superintendent A.H. Griesbach reported in June that about 800 men were at Athabasca Landing. Patrols were increased; Inspector Routledge, Constable Barrie, and Special Constable Martin patrolled Athabasca Landing from Fort Saskatchewan by team in July. [57]

There was continued concern felt for the possibility of violence. In March, Hudson's Bay Company men at Athabasca Landing reported the case of a man described as "the brother of the one who was killed at Trout Lake two winters ago by Indians on account of his being insane." [64] C.C. Chipman, the Hudson's Bay Company Commissioner, reported to the NWMP Comptroller that there was concern in the region that the brother's murderers had not been arrested and punished:

... those who know the Indian character can foresee that trouble from such inaction may arise It is felt that if quiet is to be maintained in the North, especially now that such considerable changes are going on there; that every crime, no matter how small, should if possible be punished; if not the Indians are apt to think the Government officials are afraid to interfere, and that they are at liberty to do what they choose. [64]

The police attitudes were quite similar to those expressed by Chipman in 1898.

Undoubtedly the greatest single impact the gold rush had on the native people of the region was the rapid changes initiated by the signing of Treaty 8 in 1899. The Klondike rush finally precipitated the hurried efforts to bring the area north of Treaty 6 under federal jurisdiction. The Ottawa Citizen noted in 1899:

... with the march of civilization northward, necessity has arisen for negotiating treaties with the scattered inhabitants of this territory. Mining operations are being carried on as far north as Great Slave Lake, and the Indians and half-breeds have objected to the white man's invasion. [65]

Attitudes toward this region and the native people who lived there are perhaps best expressed by Cecil Denny, who wrote:

... north of Edmonton lay a vast country, which, while partially surveyed south of the Peace River, was to the north of it practically all unsurveyed and uninhabited, except by Indians ... a primitive people, with few wants that the country they inhabited did not supply, and in their own way they were honest. The traffic [in furs] for two hundred years had been confined to the Hudson's Bay Company. It was not so much to preserve order as to protect them from the whites who, now that the country south was fast settling, would surely encroach on their domain, that this treaty was made. [66]

As the chief negotiator of Treaty 8 later noted:

The scope of the Commissioner's instructions was to obtain the relinquishment of the Indian and Halfbreed title in that tract of territory north of Treaty 6 to which Government authority had to some extent been extended by sending Northwest Mounted Police there to protect and control whites who were going into the country as traders, travellers to the Klondike, explorers and miners. [67]

The role of the NWMP here is clear. As Rene Fumoleau noted, "the police patrol [served] to secure Canadian Sovereignty over the vast land." [19] The patrol of 1896 to 1899 can be seen in this light. After 1899, the NWMP conducted yearly treaty escorts and were for some time the primary means through which the provisions of the treaty were administered. As Fumoleau observed:

The support of the missionaries and the presence of the North West Mounted Police encouraged the Indians to put faith in the government representatives. The Treaty was seen by the Indians as a friendship pact, which would permit peaceful settlement of the country: land surrender or relinquishment of title were not issues for them. [19]

What is equally important, however, is documentation by the NWMP of native reaction to the influx of white society and the treaty. The following report by Corporal Trotter of the Fort Smith detachment provides a succinct assessment of native feelings:

The Indians in this locality are very jealous of white men, trappers, and miners coming in their country and wanted them forbidden to do so. Another thing they are very much troubled about is that they should be compelled to take treaty and live on reserves. They do not seem to understand the nature of the treaty at all, and from what I can learn the Government will have a great deal of trouble before they will get them to accept of it. Whitemen and Halfbreed Traders are I

believe importuning them not to do so, by telling them that they will be put on a reserve and kept there, and not be allowed to go off it, nor to hunt, and that if they have to depend on the amount of provisions that they get from the Government that they will die from hunger. One incident I remember when the Priest here gave an Indian one of the notices to take home, but as soon as he learned what it contained, and that it had something to do with the treaty, immediately returned it again, telling him that he did not want to take treaty. After making some inquiries as to his reasons for not accepting of the notice, [the Priest] learned that he was of the opinion that if he took the paper he would have to take treaty On several occasions I attended some of their meetings by special request, and tried to explain and point out to them the nature of the treaty and the benefits which they would derive by accepting of it and particularly cautioned them not to pay any attention or take any notice of what they hear from others in this section of the country, for that they were trying to do them an injury in every sense of the word I also informed them that they would not be compelled to take treaty, and that their freedom would in no wise be interfered with so long as they obeyed the laws. At the windup of the meetings they thanked me for the information which I gave them, and they seem to be quite satisfied to accept of the Government's intentions with them on those conditions. They also told me that that was the first time they ever had the matter explained to them in the same light, and specially requested any provisions the Government will give them, that the Police have the handling of it and not the H.B. Co. [68]

During 1898 to 1899, 4132 natives accepted treaty in the Athabasca District. [68]

In 1899 Treaty Indians were distributed throughout the study area as indicated in Table 3.

Table 3. "Census of Indians and Half-breeds, Athabasca District, Winter of 1898-1899." [68]

<u>"Half-breeds"</u>	<u>Male</u>	<u>Female</u>	<u>Children</u>	<u>Total</u>
Fort McMurray	3	3	11	17
Chipewyan	31	37	140	208
Fond du Lac	9	12	15	36
Vermilion	27	27	103	157
Fort Smith and Smith's Landing	21	23	48	92
Peace River Landing and vicinity	23	25	79	127
Buffalo Lake	4	4	22	30
Dunvegan	10	10	39	59
Fort St. John	1	1	1	3
Trout Lake	6	6	22	34
Lesser Slave Lake	139	144	380	663
	<u>274</u>	<u>292</u>	<u>860</u>	<u>1426</u>
 <u>Indians</u>				
Fort McMurray	6	5	19	30
Athabasca River	8	13	38	59
Chipewyan	106	133	298	537
Fond du Lac	76	87	119	282
Fort Smith and Smith's Landing	46	44	99	189
Red River Post	29	23	86	138
Vermilion (Cree)	21	20	58	99
(Slave)	66	47	146	259
(Beaver)	37	37	83	157
Wolverine Point	19	14	42	75
Buffalo Lake	2	2	-	4
Grande Prairie	10	10	25	45
Dunvegan	12	19	18	49

Continued...

Table 3. Concluded.

	<u>Male</u>	<u>Female</u>	<u>Children</u>	<u>Total</u>
Fort St. John (Cree)	5	3	9	17
(Beaver)	46	48	90	184
Hudson's Hope	20	19	36	75
Trout Lake	12	13	27	52
Lesser Slave Lake	20	28	73	121
Sturgeon Lake	43	53	111	207
White Fish Lake	23	23	30	76
	<u>607</u>	<u>641</u>	<u>1407</u>	<u>2655</u>

The signing of Treaty 8 at Lesser Slave Lake was considered by the government to be the major event in the summer negotiations. Subsequent agreements throughout the region were made as adhesions to this document, but minimal effort seems to have been made to explain the finer points of the treaty; it was assumed that those who later signed were familiar with the previous agreement. During 1899 there were nine additional adhesions to Treaty 8, and in 1900 four more meetings took place. The Commission was behind schedule after the Lesser Slave Lake meeting, and consequently was forced to rush its subsequent negotiations, dividing into two parties to cover the territory. [69] Years later, in 1937, James Cornwall, who was present at the Lesser Slave Lake negotiations, wrote that the treaty:

... was apparently prepared elsewhere, as it did not contain many things that they held to be of vital importance to their future existence as hunters and trappers and fishermen When the elders refused to sign the treaty, long negotiations ensued, during which the Commissioners irritated the native leaders by their lack of knowledge of the bush Indians' mode of life [and] quoting Indian conditions on the Prairie. [19]

Another problem arising immediately out of the establishment of Treaty 8 involved scrip speculation. The NWMP was responsible for the delivery and distribution of such scrip, largely to Métis in the region. For example, Corporal Trotter, in charge of the Fort Chipewyan detachment, reported delivering scrip to 13 Métis at Fort Smith in March 1900. [70] Patrols distributed this fairly widely throughout the area, making control of speculation difficult. W.W. Cory, Deputy Minister of the Interior, reported to the NWMP Comptroller in 1910 that the department took:

... every possible precaution against Half-breeds being personated in these cases [of scrip fraud], but it is quite possible that personation has been practiced in the location of scrip. [71]

This problem was obviously of long duration and provided a means of exploiting the frequently inexperienced natives. In 1910, Superintendent G.E. Sanders, commanding N Division, reported as follows:

It appears that scrip speculators have been amongst them, and persuaded them to take scrip. One hears on all sides stories of how half-breeds have had scrip issued in their names and located without any knowledge of it themselves. [71]

In reply to this report of a practice common throughout the area for a decade, Commissioner Perry asked that Sanders investigate. Sanders expressed some surprise at Perry's concern and replied:

Scandalous stories of the manner in which scrip has been handled have been rife in this country for some time; you hear them everywhere, from Missionaries, Hudson's Bay men, and others. I consider that the Police should have reported that such stories were in existence long ago I have purposely refrained from appearing to make inquiries or investigate, contenting myself with listening to what was said. I am perfectly satisfied there is a great deal of truth in what I have heard, and that my statement is a mild one I would strongly recommend that no inquiries be made by ... unless requested to do so; the Department concerned have their officials throughout the country, and I am confident it would lead us into all sorts of complications. [71]

This attitude toward the native people is unusual for the police, and perhaps reflects Sanders' own personality. It was Superintendent Sanders who reported in 1910 that:

A large number of Niggers are taking up land in this vicinity much to the disgust of white settlers From reports of a meeting of the Edmonton Board of Trade I would gather a great number of these people are coming into the country and they are certainly not desirable. [72]

In this respect, the general question of NWMP attitudes toward the native people should be discussed. The force at this time did exhibit some institutional bias toward native employees, and insight into this generally unspoken bias may be derived from a case which arose in 1903. In that year the Imperial German Consul to Canada wrote to Sir Clifford Sifton, Minister of the Interior, asking on behalf of the German Colonization Society whether German colonists would be subjected to the authority of natives employed by the police. In reply to this query, the NWMP Comptroller, Fred White, replied that a few Indians were employed by the NWMP in the North-West as Special Constables, Interpreters, and Scouts, but gave assurances that while employed they were subject to the rules and regulations of the force. "They do not wear uniform, nor live in the same quarters as the white men of the Force." [73] This response did not allay the Consul's fears. He asked whether these natives had:

... exactly the same rights as the white men of the force or are they restricted in some respects? Are the Indian constables or scouts allowed to arrest white men? [73]

White replied that the Indian employees did not have the same powers as regular constables, adding that when an arrest was made, a white constable had to execute the warrant:

In my previous communication I stated that Indians were subject to the rules and regulations of the Force as regards discipline. This has been found necessary, and at the same time beneficial to the Indian, who quickly realizes that if he is careless or intentionally neglectful in the performance of his duties he is liable to be fined so many days, or to be detained in the Police guardroom as punishment. [73]

The examples cited above reflect the prevailing attitudes of white Canadian society toward native people and must be interpreted in this context.

Much effort was expended by the NWMP during the following years to persuade the remainder of the natives to accept treaty. At

times this was difficult, and they had to struggle against misunderstanding and mistrust of the government. In 1901, near the conclusion of the South African War, Sergeant K.S. Anderson was informed by the Reverend White at White Fish Lake, that there were widespread rumours among the natives there that accepting treaty would lead to conscription. Anderson addressed the following proclamation to the leaders there:

To the Head Man and Indians at White Fish Lake As I have been informed that reports have been circulated amongst you, to the effect that anyone accepting the Treaty offered to you by Her Most Gracious Majesty the Queen, lately deceased, would be sent to the war, killed or otherwise disposed of, I wish to say are untrue; that all Indians who have already accepted the offer of "THE GREAT MOTHER" are and will be protected against unjust claims, That you hunt and fish the same as before; that your houses remain your houses as before the Treaty, and that you are and will not be required for war purposes, but will be protected against your enemies by the Government as long as the Sun shines and the water runs I advise all you Indians who have not already taken Treaty to go to Wabison [Wabasca] in August and obtain your money, this year being the last when back pay can be obtained or that it will be held out to you. [74]

Whether the treaty was made for the purposes of protecting the natives of the region or whether it was essentially made for the purposes of securing the land for development in a shrewd legal manoeuvre to alienate land ownership from the native people and gain federal jurisdiction is still a contentious issue, which will not be discussed in this report. However, the crucial role played by the NWMP in facilitating the treaty negotiations is clear, as is its usefulness to a distant government in providing virtually the only reliable reports from the country itself before its native inhabitants came under federal control after 1899.

These years were very harsh ones for the native peoples of the region. Little was done to soften the impact of converging developments which overtook the natives at this crucial period. The attitude of the police force appeared to be that the natives should refrain from indulging in vices common among the immigrants to the region, give up their shiftless ways of living, and accept the work ethic of white society. In this perspective, little was done to alleviate the conditions brought on by the increasingly unbalanced economy of the region.

For the RNWMP, the natives were inaccessible in the Athabasca country, due to the seasonal nature of their life style of dispersing to bush camps and traplines. By remaining outside the world of their native charges, the RNWMP in the region seem to have overlooked several important realities, such as the demanding routine of trapping furs. The feeling that poor fur markets and severe winters would at least turn the hand of the natives to more productive labour seems representative of this attitude. [75]

The year 1904 was the first of several poor trapping seasons which caused the first severe crisis to the natives of the area following Treaty 8. This crisis, at its height between 1907 and 1909, tested the government's ability to alleviate the distress of its newly acquired charges.

In December 1906, fur prices had declined by 50% and it was noted by the NWMP Superintendent that hardship was quite evident; however, he reflected a common attitude in his comment that

... their naturally improvident nature leaves them from year to year in much the same position and they don't get appreciably better off. [76]

His solution was that

... many will be obliged to work hard on the boats and scows this coming summer ... a thing which they have not been doing much at the last year or two. [75]

The loss in fur income and changes in transportation requirements brought destitution and privation to native households.

The number [of scows] building this spring will be 20 per cent less than last year, about 45 in all to be built. This decrease is accounted for by the trading companies and independent traders being well stocked, the usual winter sales having been very light owing to the poor fur year. [77]

The trading companies would give credit to the best hunters only. Fur prices remained low. By the spring of 1909 there was mass starvation, despite granting of permission to kill beaver in the closed season. In March, Jennings reported the following examples of extreme hardship among the native people:

There are some cases of destitution in each locality, but the Indians are making out better than was expected. The permission to kill Beaver has been of immense help. I have just learned from Mr. Colin Fraser of Chipewyan that the Indians living between Chipewyan and Resolution did not learn of the authority to kill Beaver until the end of December and at that time many were sick from actual starvation. Mr. Fraser stated that up to the time of his leaving to come out 67 Indians had died from weakness and disease owing to lack of food. [77]

The following month Jennings reported that over one hundred such deaths had been reported between Fort McMurray and Resolution. [77]

The killing of beaver for food rather than for fur value is indicative of the conflicting concern of government for conservation and of its responsibility for the native peoples in the region. Although the police acted impartially in enforcing game laws, the effect of these actions was, from the point of view of the native people, an interference in their traditional ways of hunting for food. As an example of this, Inspector Routledge cited a case in which a Chipewyan was convicted of killing two bison near Lying Wood Mountain in 1897:

The man pleaded guilty to the charge and gave his reason that he was

starving. If he had contented himself with killing one, which would have satisfied his wants sufficiently long to have enabled him to kill other game, I probably would have believed his story, but having killed two, all that were in sight at the time, I came to the conclusion that it was the spirit of mischief that prompted his action. [61]

The regulations against killing wood bison were contained in "An Act for the Preservation of Game in the Unorganized Portions of the Northwest Territories of Canada." [78] Although the Act, which came into force in 1896, dealt with game animals, fur-bearing species and birds, its chief purpose was to prohibit the killing of buffalo until 1900.

In 1898 Inspector Routledge made a long patrol to Fort Resolution through the bison ranges, where he noted that the bison herds were increasing. This was attributed to the new closed season on bison, which was to end in January 1900. Routledge recommended a two-year extension, when permits would be issued to natives once again. [79] Thus Section 4 of "An Act to Amend The Unorganized Territories Game Preservation Act, 1894" extended the closed season to 1902. [80] Males could be killed, but females were to remain protected after this date. Also, in 1902 one bison bull could be taken for scientific or breeding purposes. [80]

Although efforts were made to inform the natives of the extension of the closed season, these were not entirely successful. Copies of the new law were distributed to all parties heading north. [79] Nevertheless, Corporal J.R. Trotter reported that on one of his patrols he discovered that some buffalo were killed in ignorance of the game regulations. The Edmonton Bulletin described this misunderstanding in more detail:

Some years ago a law was passed prohibiting the slaughter of wood buffalo for a term of years. The term had about expired when the scrip commission was in the north last summer and the commissioners so informed the Indians. In the meantime without the

knowledge of the commissioners the term during which killing had been prohibited was extended. Of this the Indians were not notified in time. [81]

As a result of this, wood bison were killed west of Fort Smith during the winter of 1899 to 1900. Corporal Trotter noted the great need in the Fort Smith area for a properly designated game official. He recommended Joseph Hursell of Fort Smith, former bookkeeper for Ross Brothers Company, as Justice of the Peace, to handle the increasingly confusing regulations. [79]

In 1901 the Comptroller of the force reported:

We started a few years ago by having occasional patrols, but our general jurisdiction is now extended Northwest as far as Peace River Landing, about 300 miles, and North as far as Fort Resolution on Great Slave Lake, about 845 miles. [82]

Measures taken to enforce game regulations were not considered adequate and in 1901 the Minister of the Interior, Sir Clifford Sifton, who took a keen interest in the protection of wood bison, introduced further amendments to the game act in which the period for the protection of buffalo was extended to the 1st January, 1907. The responsibility for enforcement of the regulations was assigned to the Fort Smith and Fort Chipewyan detachments. [79]

For the average constable the regulations were complex and frustrating to enforce. Furthermore, interpretation was frequently left up to his own discretion. In 1904, J.A. McKanna, the Assistant Indian Commissioner, was notified by the NWMP that the North-West Game Ordinance was not to apply to the unorganized territory. McKanna had earlier outlined the problem of enforcement facing the NWMP:

When the time comes for bringing up the question of applying the Game Ordinances to these Indians the Department [of the Interior] will have to take into consideration the local circumstances, to what extent the application of the ordinances

will interfere with the livelihood of the Indians, and in what degree provision would have to be made accordingly. [83]

After 1905 natives in the area came under a broad and ultimately confusing range of provincial regulations.

The question of jurisdiction in northern Alberta further hindered the understaffed RNWMP. In response to a request from Fort McMurray for police protection, F.W. White informed J.B. Harkin that the force had only one constable at Athabasca Landing and three at Fort Chipewyan. He claimed that another constable could not be spared for Fort McMurray:

Much will depend upon what arrangements we are able to make with the new Government of Alberta respecting the expenses connected with the administration of justice in that Province. [84]

As Frank Oliver noted, the fact that no detachments were located nearer the bison ranges than Fort Chipewyan rendered the game regulations for bison ineffective. Through Oliver's efforts, as Minister of the Interior, four permanent detachments were sent into the country. They were primarily to control bison predation and were located at Athabasca Landing, Fort Chipewyan, Fort Resolution, and Smith's Landing. [79] By 1910 several patrols had ascertained the summer and winter ranges of the bison, and the herd was estimated at 625. [79]

On the whole, despite numerous reports of buffalo patrols, and frequent reports of suspected poachers, few successful confictions were obtained. Indeed, Inspector A.M. Jarvis reported of his patrol into the bison ranges in 1908 that the regulations protecting this animal were not generally known until 1897, although this could well have been a not altogether accurate explanation of the widespread hunting he found in his patrol that year:

The buffalo have been in this country from time immemorial. In the winter of 1896-7 I was selected by the last Commissioner to go into this country

[beyond Fort Smith] and report on the wild buffalo and other matters. I found on reaching that part that neither the Hudson's Bay officials, traders or anybody else knew that the buffalo were to be protected, and they were killing them. The guide whom I took with me last year was just finishing his long hunting snow shoes, preparatory to going in after the buffalo. I pointed out to the Commissioner at that time that if they wished to preserve these animals resident guardians would have to be placed on the grounds. I believe on the strength of my report a N.C. Officer was sent down, and remained a few years during which period several convictions were obtained for buffalo killing. Just how many I don't know, but I believe on one occasion there were four and the heads and hides were confiscated, and other convictions were made if I am not mistaken, but I have no record of them. This N.C. Officer was withdrawn and no one was ever sent to replace him. Now we have had evidence that buffalo were being killed in there, these Indians are in every year hunting and trapping in a region where Police or white man never go, and over 100 miles from any Police detachment. When these people are hungry and their children crying out for food and moose and caribou not being obtainable, what is to prevent them killing all they want? It has been said that the Indians would not kill the buffalo, as the heads and hides are very valuable, and they could not dispose of them. This would look probable to an outsider, but those of us who know the Indian and his habits, and mode of living; (They all being meat eaters), know that it would be a matter of small moment if they were in actual want. Personally, if placed in similar straits, I have no doubt as to what I would do. [85]

The wide responsibilities of the RNWMP constable perhaps impaired his ability and motivation to devote as much time to game

law enforcement as the Department of the Interior might have wished. [86] Despite daily patrols of the different trading posts in the area, such conditions would have made observation and control of native hunters and trappers almost impossible. Recognition of the natives' obvious reliance upon game and wildfowl would perhaps have combined with the unenforceability of regulations to discourage active prosecution of hunters. The combination of physical barriers to adequate patrols and empathy with the plight of the native people frequently led police to ignore game laws almost entirely. When Inspector Jarvis met Sergeant Field at Fort Chipewyan in 1907, Field advised Jarvis that it was impossible to patrol the buffalo ranges in June. When Jarvis asked if Field had ever attempted a buffalo patrol he replied that he had not. [85]

When Superintendent G.E. Sanders toured Fort Chipewyan in 1910, the natives claimed that few had seen the bison. Apparently satisfied by this account, Sanders attempted to hire Pierre Gladu as a Game Guardian, but was unsuccessful. Furthermore, Sanders noted that, under Section 6d of the Indian Act, natives were in no way subject to the game laws of Alberta unless declared to be so by the Superintendent General of Indian Affairs, and a notice was posted to that effect:

In the absence of such public notice
the Indians can therefore legally hunt
beaver or any other animal at any time
and any fur thus legally obtained could
be ... legally traded. [72]

Despite problems involved in control of native hunting of bison, buffalo guardians continued their patrols; for example Sergeant Mellor conducted such a patrol 2 July to 20 August 1910. [87]

On the basis of Mellor's report, Superintendent G.E. Sanders recommended the boundaries of a proposed Dominion reserve. Also, a Mr. Crean, employed by the Department of the Interior, was making arrangements at Fort Chipewyan to survey a proposed buffalo reserve in the winter of 1910. [87] By 1912, Dr. Maxwell Graham of the

Dominion Parks Branch Animal Division was advocating that the natives be encouraged to vacate the area proposed for the park.¹

The NWMP buffalo patrols were replaced by the warden service in 1911. At that time A.J. Bell's Demonstration and Experimental Farm was established at Fort Smith, "to hold up to the Northern Indians the manner of life lived by men in civilized communities." [79] One of the duties Bell assumed was protection of the wood bison herds north of Fort Smith. G.A. Mulloy, of Toronto, was appointed to act as Assistant Superintendent of the Buffalo:

Mr. Bell will also have the direction of the fire rangers of the country in charge as well as the forestry work. Besides the establishment of a Demonstration Farm, an Indian agency and Mining Recorder's Office will be opened up at Fort Smith. [79]

Regulations were difficult to enforce due to language barriers which existed between the native and the immigrant whites delegated to enforce them. Virtually none of the natives were capable of reading the English language at that time, nor could whites write in native languages. As late as 1911 it was noted that no one in the Indian Affairs Department was competent to speak native languages fluently. [88]

Men like Peter McCallum replaced the RNWMP patrols as Buffalo Guardians under the new regime, and Inspector R. Field was pleased to be relieved of the buffalo patrols. This attitude was common among many police officers. Commissioner Cortlandt Starnes, as late as 1923, shared the view that such duties were unnecessarily burdensome:

Good Lord! he would exclaim to his departmental secretary, 'Must I send out a constable every time a duck quacks?' But the Force's duties included helping the Department of the Interior enforce the Migratory Birds Acts. So if possible he would order his men to investigate. [89]

¹ Wood Buffalo Park was established on November 18, 1922.

While much of the preceding discussion of game regulation enforcement has dealt with the practical, legal, and ethical problems involved in enforcing such laws against the native people of the study area, it should be noted that there were also legitimate conservationist concerns, part of a broader North American movement, which were being considered at the time. In 1893, Commissioner L.W. Herchmer had warned of the danger the extermination of the wood buffalo in the triangle described by Fort Vermilion, Fort Resolution, and Fort Chipewyan. This problem was blamed on the natives:

Last winter the snow in that region was particularly deep, and the Indians were thus enabled to slaughter a larger number; from the best authorities I gather that over two hundred were thus killed. [79]

Prices offered by traders for bison heads were \$20.00, and for robes \$25.00.

In 1907 Ernest Thompson Seton accompanied Inspector Jarvis on his patrol. Seton's newspaper reports of widespread killing of wood bison caused an uproar which led to an increase in patrols. These were hampered by several natives hired to aid in the patrols who were suspected poachers, and, as Jarvis complained, "... they are all related, and the traders very reluctant to say anything for fear of losing their trade." [85] However, Jarvis made several additional observations which indicated that the killing of bison by natives was not as serious as it might be perceived by some. There were not many natives who hunted in the buffalo ranges because they had their own districts which had been handed down from generation to generation; also, northern natives, he felt, and this view was shared by most police observers, were improvident. [85]

In 1893 Commissioner L.W. Herchmer had warned of the rapid decrease in the number of beaver all over the unceded portions of the North West. He reported observing traders purchasing beaver kitten skins in May and June, and recommended a closed season from 1 May to 1 October each year, with no beaver below one year to be trapped. Through heavy fines, the Indians would be deterred from

killing them. Constable Ball at Athabasca Landing reported that by 1902 the beaver was practically extinct for a distance of 250 miles north of that point. [79] However, the federal and later, the provincial, authorities would abrogate game regulations to alleviate want. Thus in 1909, due to widespread destitution and a poor fur season, the closed season on beaver was lifted:

From what I could gather the Indians kill the beaver anyway whether there is a closed season or not but they are less likely to kill when the fur is not prime if there is a regular open season and the trader can buy the fur. The best chance therefore to preserve the beaver in the Northern part of Alberta is to have an open season every year. [72]

Native grievances against these regulations became an outcry in 1911 when the provincial government closed the season on beaver. In 1912 Superintendent T.A. Wroughton reported that:

Mr. Coté M.P.P. spoke to the Indians [at Smith Landing] and stated that he was all for opening up the country and would also try to get the Beaver season opened up for that section. The Indians say that Beaver are plentiful and they cannot understand why Beaver pelts can be sold at Fort Smith but not at the Landing. [90]

In 1912, Sergeant Mellor had had to lay a charge against Alexandre Laviolette, chief of the Chipewyan band as a test case:

I may say that the Indians are very angry about the whole business, as they claim that at the time they took treaty they were distinctly informed by the Treaty Commissioners that they would not be interfered with in any way regarding their killing food or fur animals, and the beaver of course is used for both. The chief in particular was very defiant in his attitude, and for a long time declined to pay a fine, which would have left me in a somewhat awkward quandry, as the Justice had informed me that he would in no case inflict imprisonment. [91]

Mellor placed blame for some of the misunderstanding with Commissioner H.A. Conroy, who informed the native people at treaty payments that they could kill any game if they were destitute; this destitute provision was of course interpreted broadly at the time. [91]

In 1913 the beaver season was opened and Sergeant Bossange reported that most of the natives were going on a beaver hunt. [92] In light of such confusion on the part of the authorities, it is little wonder that the native people themselves were frequently bewildered by the new order of things.

During these years, the issue of game regulation enforcement became a contentious issue between the federal and provincial governments because the British North America Act did not mention migratory birds. [93] In 1909 the Commission of Conservation had been established to make inventories of Canadian natural resources and promote their conservation and use. It was at this time that migratory bird protection became an important federal question. By 1911, the Parks Branch, through the efforts of James Harkin who was the Dominion Parks Commissioner, became interested in this issue. In 1912, the Branch's Animal Division, under Dr. Maxwell Graham began to promote the protection of pronghorn antelope and wood bison. Coupled with these developments James Macoun in 1913 observed to Graham that, "from my own experience throughout Canada, practically no attempt is made to enforce [provincial] regulations." [93] Into this perceived vacuum and concurrent with the strong conservationist movement in the United States, the federal government moved to establish the means of protecting a variety of game and migratory birds:

Harkin realized the implications of federal action in the matter and warned the Deputy Minister [W.W. Cory, Deputy Minister of the Interior] that it was imperative the provincial governments be contacted and their approval secured before any action was taken between the two governments. [93]

This process was very time consuming, and was delayed further by the First World War. In 1915 an Order-in-Council agreed to the principle of migratory bird protection and, in 1916, the Treaty for International Protection of Migratory Birds was signed in Washington. In 1917, Bill 92 was passed by Parliament. Under this Act the Governor-General-in-Council was given the right to make regulations governing migratory bird protection, and the Minister of the Interior was given authority to appoint game officers to enforce these. [93] As early as 1916, the Advisory Board on Wildlife Protection was responsible for framing such policies and proposed regulations and, in 1917, the new North West Game Act¹ reflected the increased pressures upon the northern and western wildlife. Janet Green concluded that:

New areas of responsibility were opened up and clearly defined and new administrative machinery and policies were designed to handle what was for the Canadian Government a totally new role in wildlife conservation. [93]

The transition from equal to subordinate status for native Canadians was complete. [94] Arrangements negotiated under Treaty 8 were quickly forgotten or abrogated, and the attitudes of the police constable in the north, becoming increasingly negative and complicated by his confusing multiplicity of responsibilities, led to limited success in dealing with the natives of the region. W.R. Morrison stated that the natives were dissatisfied with the police because:

The Police took an unsentimental view of the Indian; they saw him in his squalor and hunger and disease, and they usually judged him lazy and inferior. They sometimes ascribed other causes to the Indians' misery, such as the bad influence of the traders, but they never tried to do much for the Indians except to give them periodic hand-outs. And, after all, why should they have? They were not the Department of Indian Affairs. Although they did the work of that

¹ This Act stated that restricted game could only be killed when starvation was imminent.

department ... they did so not by choice, or because they were trained to do so, but for the usual reason - because they were on the scene and would do the work for nothing. They were not social workers and never pretended to be humanitarians; they therefore reacted to the Indians just as might have been expected. The sins of commission and omission in regard to the Indians were ... not the fault of the Police, but of the government. [51]

Conflicting jurisdictions, unclear and rapidly changing laws and regulations, increasing commercial and settlement activities in the Athabasca country, all made the complex duties of the NWMP and RNWMP more difficult. With some exceptions, the force fulfilled those duties well but, ultimately, due to conditions beyond its immediate control or understanding, it was unable to soften the impact of increasing social and economic change upon the native people. Between 1905, when the detachments in the Mackenzie and Athabasca districts were organized as a separate division, and 1917, when relieved of their duties with regard to natives, the police in northern Alberta were caught up in economic and developmental changes sufficiently widespread to leave their indelible mark upon native culture.

4.3.2 The Forestry Branch, 1912 to 1924

This chapter describes the administrative and conservationist powers exercised by the federal Forestry Branch in the Athabasca Oil Sands region. Between 1912, when the first major tour of inspection was conducted, and the transfer of natural resources to provincial jurisdiction in 1930, this agency filled an important role. Its activities had a direct impact upon the development of the region, and upon its inhabitants. These activities will be discussed in detail as they related to the native population in particular.

The first recorded tour of inspection initiated by the Forestry Branch into the Athabasca country near Fort McMurray occurred in the summer of 1913. In that year, D.F. Finnie, Director of the Forestry Branch, toured the area and later reported as follows:

Attention is called to the fact that [the] Hudson Bay Company are taking large spruce timber for cordwood down Athabaska and Mackenzie Rivers when they could get a sufficient supply of fuel from small, burned over timber. [95]

Several years later Finnie recalled this trip and indicated that conditions had not materially improved despite the establishment of a fire-ranging district. In 1922 he reported to B.L. York, Controller, Timber and Grazing Branch, Department of the Interior:

The steamboats in the north country are operated mainly from wood fuel. The Steamboat Companies pick out the largest and finest stands of timber along the rivers, and put men to work cutting it into cordwood for fuel for the boats. The consequence is that the biggest and finest timber is being cut and used for this purpose I particularly remember one camp on the Athabasca river not more than ten or twelve miles below McMurray, where beautiful clear spruce 26" in diameter, and 80 to 100 ft. high, was being cut for this purpose. Mr. Rafton-Canning, the Chief Forest Ranger in the McMurray district, will, I am sure, bear me out in these statements In the years to come, when logs and lumber

are required, there will be no trees of reasonable size remaining ... There is nothing in our Regulations, either those applicable to the Prairie Provinces or those of the N.W.T.¹ limiting or restricting purpose. It seems to me that if timber is over say a foot in diameter, we should not allow its use for fuel purposes. [95]

It can be seen that well over three decades followed the introduction of steamboat navigation on the Athabasca River system before any action was taken to alleviate the problems observed in 1913.

In 1912, the federal Forestry Branch began to consider conservation in the Athabasca district. Until this time the Forestry Branch had concentrated on the southern forest reserves such as Cypress Hills, Bow River, Crowsnest, and Brazeau; the provincial headquarters were located in Calgary at this time. In 1912 H.R. MacMillan proposed the following measures:

We have not considered the Athabasca Forest very seriously. The intention is to assign the man who may be given charge of it to the perfecting of the Fire Patrol and to put in good condition a trail which now exists from Prairie Creek north of the forest, and to build another trail northward through the forest along Stoney River and a tributary of the Smokey River. [96]

Shortly thereafter Campbell replied that, with regard to the Athabasca Division, "I did not expect that very much would be accomplished this year but if we can have the main trails looked after it will be satisfactory." [96]

These tentative approaches to the upper Athabasca River initiated the rather slow response of the government to safeguarding timber reserves in the area. Concern with transportation companies depletion of the river valley timber stands and the increasing pressure of northward settlement caused an increase in the number of personnel in the Branch, and pressure to create several forest reserves in the area after this time. These reserves often

¹ Northwest Territories

interfered with traditional Métis settlement, and bush camps, as will be discussed later.

From 1913 until 1922, the high turnover of native assistant rangers was constant. It appears that both whites and natives used the seasonal work of ranging to supplement their income from other jobs, and the difficulty of hiring such personnel reflected the conditions of the fur trade. The complementary nature of this employment seems to have been a natural adjunct of the native trapping cycle. When, in 1922, native assistant rangers were replaced by in-migrant white personnel unfamiliar with the country, the loss of employment was certainly a financial blow to the several dozen families affected.

In 1913, J.M. Hill, Chief Fire Ranger in the area, noted the major threat to the conservation of the area's timber:

I would suggest that as McLennan does not want a man, that one be placed on the House River trail as in all there will be about 150 boats coming down river this summer. The majority of these boat men coming as far as McMurray are returning by the House River trail. The Hudson Bay Company have men building and are going to put up 100 tons of hay between here and House River so really I think it is essential that there should be a permanent ranger on this trail. [97]

These men earned \$3.00 per day, a relatively important monetary infusion into the local economy.

Pressure to create forest reserves increased substantially during this period. One major reason for this is indicated by R.F. Rance in one report of his Cold Lake Survey in 1914, in which he made the following comments with regard to fire protection in the general area:

I was unable, during the four month's inspection to locate a fire ranger, although I was informed that a ranger had visited Beaver Crossing twice during the summer. The present system is very inadequate for such a large district and the patrols are not undertaken early enough or often enough in the season.

The fires are mostly started in the spring after the snow is gone and are the result of the wilful intention of some half-breeds and Indians who believe that by burning off the forest cover they make a feeding ground for the moose and it is for this purpose only that the fires are started. [98]

In 1909 and 1910 fires had been especially heavy in the Pelican Mountains, and A.B. Connell called for the establishment of a reserve there as well. [98]

By 1914 the following area was being patrolled: along the Peace River Trail 45 miles north of Athabasca Landing to the Fish Camp, from there into the Calling Lake district, from Calling Lake to Island Lake, also to Wabasca and Calling River Settlement, from there to Athabasca, various canoe routes between Athabasca and Pelican, and between Pelican and Wabasca. In that year, Connell made the following recommendation:

For purposes of extensive exploration in northern Alberta, I would suggest that a Forester be attached to the base line survey parties, if such an arrangement could be made with the Surveyor General. The base lines are being extended farther north every year and access to a large amount of unexplored country can be had in this manner at a very small expense. As the survey parties move only six miles per week a large extent of the surrounding country can be looked over. [99]

Exploration and creation of forest reserves continued apace, bringing the federal government, through its Forestry Branch, into conflict with settlers and Métis who already were using the land. For example, when the Pelican Mountain Forest Reserve was created it had been reported that the soil was too sandy, stoney, or wet for agriculture, that hay meadows were too low and wet generally for grazing, that the timber should be protected for the more numerous settlers south and west of the area, and that most local settlers favoured establishment of the reserve. [98]

The policy of creating new forest reserves in the region brought the Forestry Branch into competition with settlers who were

anxious to acquire homestead lands. For example the establishment of the Kehewin Forest Reserve was protested on the grounds that it impeded settlement. [100] Numerous petitions against forest reserves continued to be submitted to the Department of the Interior. [100] As settlement and railways progressed northward, there was increasing pressure on the government to relinquish forest reserve lands, and as a result, large tracts of land were opened for settlement. [100] Notwithstanding these developments, the Forestry Branch managed to establish regulations for the management of timber resources in the region.

The second major component of Forestry Branch involvement in the region was the direct and significant effect on the traditional patterns of land usage by native peoples. One example is the effort made by the Forestry Branch to control traditional hunting techniques. Under the Migratory Birds Convention of 1921, Forestry personnel became game wardens in the Athabasca country where necessary, and could thereby swear out complaints to be dealt with before magistrates. [101] After 1922, Fire Rangers were Honorary Game Officers under the Migratory Birds Conservation Act, and, under Chief Fire Ranger A. Rafton-Canning, became another federal agency enforcing a wide range of game laws with mixed success. Despite the difficulty of enforcement, the federal presence was felt by the native population, but was either ignored or resented.

The Branch was also involved directly in the growing conservationist concern for the wildlife of the area in an observational capacity. In 1922, the District Forest Inspector in Calgary wrote to his Director of Forestry, regarding migratory birds in the Athabasca region:

In my opinion the most important nesting areas are those north of the general line passing east and west through Edmonton. In that country there are numerous marshy lakes providing excellent breeding areas. I would particularly refer to the marshy ground at the mouth of the Athabasca River Last April I wrote to the District Rangers at Edmonton and Fort

McMurray asking them to make careful observations of any such nesting areas and be prepared for a report at a later date. [101]

The difficulty of enforcing the game regulations is reflected by the fact that several additional personnel were given migratory bird officer status by 1927. [101]

Serious efforts were made by the Forestry Branch to eliminate the native practice of controlled burning as a means to renew sources of food supply. This burning was usually carried out in the spring time to enhance the environment for certain species of mammals and wildfowl upon which the natives depended. Controlled burning in northern Alberta has been the objective of studies conducted by Henry T. Lewis, Professor of Anthropology at the University of Alberta:

In North America, the most important resources of Indian hunter-gatherers are the early succession species commonly found in recently burned areas: bison, moose, deer, elk, grouse, grass seeds, legumes, berries, bulbs. However, natural fires are too irregular in occurrence and distribution to be completely relied upon and, because they are normally a phenomenon of summer months, they may be destructive in destroying the standing crop and, in some cases, seriously delaying plant recovery -- natural events that could adversely effect hunter-gatherer adaptations. [102]

These practices, based on the subsistence patterns of hunting and trapping, began to be curtailed after the 1890's by police and fire ranging patrols:

Good work was obtained by having the fire rangers patrolling around the Delta of the Athabasca River and the shores of Lake Athabasca. The Indians and breeds were stopped and warned against the practice of setting out fires in the early summer in the willows and rushes on the Delta so as to enable them to collect the wildfowl eggs. There is not much valuable timber around that part, but in the past it has been the

starting point of fires that have run into good timber. Aside from that it is bad policy to allow the Indians and breeds to think even that they can spread fires at any time or any place We have also warned them against the very bad habit of carrying smoke torches, whilst travelling during fly time on the trails. Fires having been caused in the past on account of the live coals dropping. [97]

Such burning facilitated settlement in northern Alberta and there also was some inconsistency in the fact that settlers often burned forest cover to clear land for agricultural purposes. [97]

From the beginning of the Fort McMurray Fire-Ranging District, J.M. Hill, the Chief Fire Ranger at Fort McMurray, carried on Forestry Branch policies established by his predecessors. These illustrate the prejudice felt toward the Indians and Métis in the area. First, as reflected in his correspondence, Hill established a policy of replacing native men with white personnel, a policy which was completed in 1922 under Chief Fire Ranger A. Rafton-Canning.

In 1913, there had been some effort to hire local men. R.H. Campbell was advised by an officer of the Department of the Interior to appoint a specific individual as a Fire Guardian. In response to this request Hill replied to Campbell:

I regret to say that at present I have no vacancy for this man. Personally, I know this man to be lazy and good for nothing, having known him for three years, and in that time he has not done one day's work, moreover he cannot speak good English nor can he read and write. [97]

This letter indicates the type of general comments directed at Métis employees by Hill and his successors: laziness and illiteracy were often cited as reasons for not employing such men.

A further instance of this attitude was evident in 1913, when Hill complained:

Fire Ranger ... is not at all satisfactory as a Fire Ranger. In his diary of May he states that he was on duty from the first of the month, which I found out later is not true as the ice did not leave the lake

till the 15th of the month. I was also informed by Corporal Miller [Mellor] of Chipewyan, that he is not covering the territory allotted to him but spends a great portion of his time on the islands shooting game. When I visited Chipewyan in August I found the Forestry canoe in an old shed, the canoe being half full of water and the bow split. I asked for an explanation but his excuse seemed to me in the least very flimsy ... [97]

Invariably the reports concerning Métis assistant rangers were negative, those concerning white rangers were complementary. This reflected the attitudes of the men as well. Ranger John McDonald was unusual in this respect.

[McDonald] has had two assistants during the season, Auger having left him in September, Decone taken [sic] his place. I allow Ranger McDonald to choose his own assistant as he prefers a native. McDonald when on duty is an exceptionally good man, being an expert canoe and bushman. I consider he has the worst patrol in this district. [97]

The second trend initiated by Hill, and which continued until 1922 when Métis were no longer employed by the Branch, was the institution of a differential pay scale for white and Métis workers. In June 1912, McDonald hired two Métis as his assistants. These men received \$80 and \$60 per month, substantially lower than the \$90 to \$110 per month paid to white assistants. [97]

In 1915, the prevailing attitude toward Métis' wages was expressed most clearly by Simon Nelson, writing for Finlayson, to Campbell:

When Mr. Hill was here [Calgary] he discussed the matter with me and I stated that it would be permissible to hire two half-breeds at very low wages to assist Mr. McDonald in this way [i.e. patrol work]. The Athabasca River is a very difficult proposition to canoe particularly that part over which Mr. McDonald has charge and in tracking up the river from Fort McMurray

to Grand Rapids some very difficult and trying work is encountered. In view of these conditions I consider it advisable to allow this extra man at a much reduced wage. [97]

That is, the Métis could be hired to perform the most difficult labour, but at reduced wages. The level of wages for Métis personnel was determined through individual negotiations. Although white rangers during this period received \$100 per month, Métis assistants received an average of \$80. This discrepancy may have been based on factors of illiteracy and reliability. In one instance, it was necessary to increase the salary of a Métis in order to keep him from returning to his trapline. [97]

By 1916, the pressures of railway building in the southern sections of the Fire Ranging District caused the District Inspector of Forest Reserves to grant J.M. Hill's request for an additional man to patrol the area. [97] Hill had requested this increase in 1915 noting that:

... the area encompassed in the district is approximately 12,500 square miles, and the total length of patrol is approximately 300 lineal miles which is commanded by rangers in their various routes and sectional districts. Some of these I am proposing to re-arrange Patrol No. 4 [i.e. along Clearwater River from Fort McMurray to Portage la Loche] takes [in] some hundred miles from McMurray including forty miles beyond the Cascade on the Clearwater route which [is] patrolled by two men, I suggest that an additional ranger take the latter section, for it is along this route that the better spruce is located. The district hereabouts is being rapidly taken up by settlers who invariably proceed to burn off the dry grass in early spring without giving thought of the consequences and danger. [97]

By 1916, there were nine patrols organized, with personnel falling into the categories mentioned in Table 4.

Table 4. Patrols for 1916. [97]

Patrol No. 1

Kenneth McDonald Fort McMurray to
 Assistant: A. Powder Grand Rapids

Patrol No. 2

John McDonald Fort McMurray to
 Assistant: L. Brown Calumet River

Patrol No. 3

C. Eymundson Calumet River to
 Assistant: D. Paterson 27th Base Line

Patrol No. 4

E. Robillard 27th Base Line to
 Assistant: D. Cardinal Mouth of Lake
 Athabasca

Patrol No. 5

Thomas Lessard McMurray to House
 River via Trail

Patrol No. 6

W. Biggs Lac la Biche Trail
 to Cache 19

Patrol No. 7

R. Armit Cache 19 to Cache 15
 via A. & G.W. R.R.
 and Lac la Biche
 Trail

Continued...

Table 4. Concluded.

Patrol No. 8

H. Malcolm Clearwater River
Assistant: H. Parent to Cascades

Patrol No. 9

T. Neis Cascades on
Clearwater River to
Portage la Loche

In 1916, the District came under severe criticism and re-organization began which led to the removal of native personnel. J.A. Doucet, who replaced Hill as Chief Fire Ranger at Fort McMurray in 1916, made the following criticism with regard to efficiency:

It appeared that the rangers of that district had never been given very elaborate instructions, in fact their instructions have always been very meagre. You know what can be expected from the majority of men you would put at some work without telling them the details. There is no work where time can be wasted so easily than at fire ranging, particularly during the wet season when there is no danger of fire. None of the rangers I met throughout McMurray District had ever seen the rules and regulations governing the Dominion Fire Rangers. Their most detailed instruction have been their Letters of Appointment, which only assign them a certain tract of land or a stretch of river and ask them to devote their time to the patrol of their district so that in every district improvement work, whether along streams or inland, has been entirely neglected The rangers are not altogether to be blamed for that. During the term of supervision of Mr. Hill the rangers were left almost to their own initiative and often with bad examples set before them Up to the present year rangers never thought that they had anything to do but make the patrol of their district, which patrol was confined to the main route. They were told to patrol and they believed firmly that their duties consisted in that only. Improvements of any kind, on trail or elsewhere, or investigations in their district were left entirely aside. Lack of instructions or supervision is the main reason why so little improvement on trails has been carried on. [97]

Later, Doucet reported the following account of the manner in which the Branch personnel performed its function aboard the S.S. Rey, a patrol vessel:

I met the S.S. Rey at Chipewyan, she had been instructed by Mr. Card to meet me at

that point, she had been waiting for me for two days. I arrived at Chipewyan at 9:30 a.m. When crossing the lake I noticed [a] fire burning on the south shore near the old fort at a distance of about 15 miles from Chipewyan. We could see the smoke plainly from the Rey. There was no wind whatever. I thought this would be a good chance to see what interest the crew took in their work and that I would let them take the initiative but no mention whatever was made to me of the fire. I visited the Rey and found no fire fighting equipment and only wood enough on board for about one hour's run, then I went on shore to try to get some information about the fire. I learned from an Indian coming from that direction that this fire had been started by Indians, in the driftwood. It got headway and was then burning in the green forest. I thought something should be done right away. I went back to the Rey and asked the ranger if he had seen the fire. He answered me in the affirmative. I then asked him if he was not going to do something to stop it. He told me that I should see Mr. McLennan, the man in charge. I looked for McLennan and only found him an hour later. I was at first indifferently told by him that the fire in question had been burning for months, and that it was away back in the interior. I told him that I had been informed to the contrary. Then I was told that the Rey had not any instructions to patrol the Lake Athabasca and that this fire was outside her patrol district. I answered that there was no material line separating districts in case of fire. [97]

In June, 1917 a replacement for J.A. Doucet was being sought. Doucet wrote to E.H. Finlayson as follows:

Mr. ... would be pleased to accept the Chief Rangership of the District, at the initial salary of \$1,200.00 per annum, although he is fearing a little the opposition that he may meet from the McMurray group. He was also expecting the District

Manager of the N.T.C.¹ He had not been officially informed that he could be relieved from his contract with them [he] has a very good reputation all over the district, he is energetic and intelligent. However, he has Indian blood, and, on that account his appointment to the Chief Rangership of the District might raise a little jealousy in some quarter[s]. I wish to expose the situation in its full light. Notwithstanding that, I sincerely believe that [he] would do good There are still other men in the district who would be competent to fill the position. They are Henry Parent and Don Paterson, both are fine rangers, young and intelligent. Henry Parent is a married man. Both have a good education. In any case, it is better not to be too much in a hurry to make a choice or a definite recommendation. [97]

Finlayson immediately reconsidered, and replied to Doucet as follows:

I do not think there is any doubt that the appointment ... might cause some little feeling at Fort McMurray and whether it would be worthwhile to make the appointment would depend entirely upon whether [he] could overcome this feeling and handle the situation. I was unaware that Parent and Paterson were such likely prospects although you reported very favourably with regard to them as rangers as a result of your inspection last year. If, either Parent or Paterson could fill the bill pretty nearly ... I do not know but what it would be a wise move to consider the better one of these two men for the position. [97]

In 1918, A. Rafton-Canning became Chief Fire Ranger for the district, and instituted the general policy of hiring returned veterans as instructed. [97] At this time there was a severe labour shortage, and he noted that:

... a number of the applicants [for ranger] are over the age limit, but it cannot be helped as good men² are very scarce in the

¹ Northern Transportation Company.

² Emphasis by Rafton-Canning.

district ... all kinds of wages and inducements are offered to men Women even are getting \$5.00 a day and their board tracking scows up the river. [97]

This substitution of white veterans for Métis did nothing to popularize the Branch with the natives and when the Forestry Branch aided the pursuit of draft resisters during that fall, this only worsened the situation. Rafton-Canning reported:

[A local half-breed] has taken to the woods on account of conscription. The authorities are now after him and his six brothers. [97]

He later reported to R.H. Campbell that in addition to fire patrols, the Branch was assisting the Dominion and Military Police in their duties. [97]

In 1920, the acute shortage of personnel led Rafton-Canning to report:

White men cannot be obtained as fire rangers here this year, as the different Trading and Transportation Companies are offering superior inducements - some as high as \$145.00 per month and board, for the season. Half-breeds and Indians can get \$100.00 per month and board Men of all kinds are very independent just now. Money never was more plentiful. Some of our half-breed fire rangers have made already \$2,000.00 this winter in trapping, and are still at it. One Indian is reported to have made \$3,000.00 with his hay alone I need three or four intelligent white men badly. The Indians and half-breeds make fairly good fire rangers, excepting when it comes to enforcing the laws or a knowledge of the rules and regulations. The latter they don't bother about. [97]

The fact that local natives regarded the trapping of furs as their major source of income and employment was acknowledged in the spring of 1920 when he observed that:

Altho' but few fire rangers will start their duties on the 1st of May, - as they are all stampeded by the high prices

of rat skins and other furs in general - still most of them promised to watch out for fires, and to attend to them From Present appearances, I think I will be able to get all the men I need for this season after the 15th of May. Trapping will be about over by that time. [97]

In 1920, Colonel Palmer, the Chief Fire Ranger of the Edmonton District, referred two Americans to Rafton-Canning "as he knew that I was in need of white men." Their chief advantages appear to have been their willingness "to fire range during the summer, and trap during the winter. That class of man I find makes the best kind of fire ranger." However, this was precisely the pattern adopted by the natives. Reluctant to hire Americans, he continues that he would not do so, "if I could get returned soldiers, or even other white men ..." [97] In 1921 the patrol system was expanded although there was some problem in recruiting men:

Even at Fort Chipewyan and McMurray advertising is ineffective. One has simply to grab the first man available and give him the position. This is especially the case this¹ year with an oil rush down the river. [97]

T.W. Dwight reported that year that:

... there is at present a large influx of transitory population on their way to the oil fields, and the District Fire Ranger in realizing the increased fire hazard is selecting the most suitable men that he can get to do the work for us ... [97]

In response to this a "velocipede patrol" was started on the Alberta and Great Waterways Railroad, and frequent patrols were sent along the trails and through the camps towards End-of-Steel:

The country was dry in spots about the middle of April and small fire occurred. We soon felt the effect of strangers being in the country. [97]

However, these positions were filled and Rafton-Canning could note that:

¹ The oil rush was at Norman Wells.

The fact that the rule was strictly followed of giving the Returned man the preference in position in this district, gave great satisfaction. I think the majority of the men will do good work in the prevention of fires in this country. Talks have been given the men at intervals, of how and what to do in cases of emergency. They are urged to read, and digest thoroughly "The Regulations for the Information and Government of Dominion Fire Rangers." Men are placed on the different patrols according to their abilities. [97]

There were several trends working to exclude native personnel from Forestry Branch employment by the early 1920's. Under A. Rafton-Canning, it became obvious that Métis personnel were deliberately being excluded from responsible positions in the Branch. The policy of hiring veterans, very popular in the patriotic postwar period, and undoubtedly difficult to criticize, led to this situation. The displacement of native personnel may also have been based on the attitude that a higher degree of literacy was required to enforce fire ranging regulations. This viewpoint was contained in Rafton-Canning's statement that:

For the first time, we have had all white fire rangers. Our work has been more efficient, as a white man is more impressive, understands the Fire Laws, and can carry them out better. [97]

Furthermore, improved economic conditions made local men less eager to work at fire ranging, which would normally supplement traditional trapping and hunting patterns. By 1921 wages were increased to \$115 per month north of the 27th Base Line, lower wages not being practical as "natives and breeds get four and five dollars per day." [97] These factors combined to create a situation whereby natives were no longer employed in a federal agency whose function was protection and conservation of the renewable resources of the region. Undoubtedly this state of affairs could only lead to

misunderstanding and mistrust, the effects of which were felt for several decades.

There is evidence that these employment policies remained essentially the same, despite some efforts at change, for some time after the transfer of natural resources in 1930, and the consequent reduction of federal activity in the area. One case in particular is illustrative of this policy. In 1937 R.A. Gibson, the Deputy Commissioner of the Lands, Parks and Forests Branch, raised the possibility of native employment with the Superintendent of Wood Buffalo Park, M. Meikle, who immediately discouraged such overtures. He elaborated upon his reasons for rejecting the idea of native employment at some length:

Today I discussed with Father Mansoz of the Roman Catholic Mission here [Fort Smith], the possibilities of using natives from the Mission school. He gave me his opinion gained from years of experience in the north, of the natives habits and manner of living of the Indians and he does not think an Indian would be dependable, or would remain any length of time on a steady job. They have no bright suitable Indian at present but occasionally they get one who might do work in the Wood Buffalo Park. However, such a one would not be content to remain long under such restrictions as would be necessary if he were to be a park warden. His natural desire to kill and trap and wander about would be too strong an influence and he would likely depart quickly without any warning. Father Mansoz has a very extensive knowledge of the natives and I think his opinions are very good. I do not think that Indians can be used satisfactorily in positions of responsibility such as that of janitor or park warden. An experiment might be made in using one as an apprentice under a good park warden, but more probably, after a years service he would quit and go to live in his natural manner. If such an experiment were made it could only result in him becoming an assistant, as he could not be trusted to enforce the

Game Laws and to attend to the duties that a warden has to do. In this connection I would like to say that our wardens who are white men are much superior in the enforcement of the regulations than our half-breed wardens, and for that reason we should keep a fair percentage of white wardens. The half-breeds are good dog team drivers, boat men and bush men but lack the strength of mind that a white man normally would have. [103]

Gibson replied that Meikle's remarks had been duly noted "and will be useful in the study of this question." [101] However, nothing came of this initiative.

Few projects benefitted the local native population. For example, during the Second World War, when the Committee on Reconstruction sponsored projects in Alberta, they were concentrated in the more visible, and politically useful, southern areas. While 101 875 man days of work were created in the Crowsnest-Bow River Forest in 1943 building roads and cabins, marking forest boundaries, clearing trails, and stringing telephone lines, no such involvement occurred in the study area. [104]

After 1945, veterans once more began to fill positions in the study area. In 1946, R.F. Thompson, Director of Training with the Labour Department's newly created Canadian Vocational Training program, notified the Dominion Forest Service that:

... our Regional Director in Calgary, Mr. J.H. Ross, has had discussions with the Provincial and Dominion Forestry officials about organizing a short course for prospective Forest Rangers, the same to be financed by this department under our Veterans' Rehabilitation Training Programme in Alberta, and with the enrollment restricted to veterans [105]

Opportunities for native employment in the study area were further curtailed as social welfare in many areas became predominant. However, by the 1960's numerous natives were employed on fire-fighting crews in northern Alberta. By this time, more extensive programs were

considered to offset the years of unemployment, which had in many cases become the normal lifestyle through years of limited employment. For example, in 1966 the Agricultural and Rural Development Program began to study the possibilities of establishing additional inland commercial fisheries, and increased sports fishing, in northern Alberta:

The direct beneficiaries of resultant developments would be some 20,000 Métis and Indian residents of the area north of the 21st baseline whose average annual income at present is only \$250. The only hope of improving the economy of this northern Alberta region seems to lie in fisheries development ... [106]

This revival of interest in fisheries was a continuation of attempts to exploit the regional lakes begun in the 1920's with mixed success by large-scale operations such as McInnes and Dominion Fisheries.

In 1969, the Mid-Canada Development Corridor Conference met to consider once more the future development of an area encompassing the entire boreal belt of Canada. Professor Leonard Warshaw, of the University of Montreal, noted that:

The development of our new regions should take into account our native population and that this would necessitate a much better appreciation than in the past on the part of non-natives with respect to the cultural aspects and goal of the native groups. [107]

Warshaw suggested better planning of educational and training programs. Dr. L. Barber agreed and further suggested "that past policies had contributed to the unnecessary destruction of the pride, spirit and will of Indian ... Canadians." Barber felt that greater attention should be given to developing technical skills among young native people, "and that the natives must be involved in any area development." [107]

These attitudes were a radical departure from those expressed by individuals and government agencies in the pre-Second

World War period. It symbolized a new sense of responsibility to the natives and initiated at least the beginnings of a new approach.

The preceding discussion has shown briefly, through reference to Forestry Branch correspondence between 1912 and 1924, the way in which a federal agency used its administrative, conservationist and economic or employment powers in the study area. During this time, and particularly in the postwar years, the north was stimulated by railway building, settlement, oil sands speculation, a buoyant fur market, and other factors. This increased pressures upon the area, and necessitated the creation of fire ranging patrols, forest reserves, and a proliferating bureaucracy which signalled an increased federal presence. In its relationships with the native population, the Forestry Branch reflected prevalent attitudes of white Canadian society toward native cultures.

4.4 INDEPENDENT PRIVATE ENTERPRISE, 1901 TO 1946

Following the unsuccessful attempts of the GSC to exploit the oil sands during the 1890's, a number of private individuals became interested in the potential of the region. The majority of them were speculators, but a small number made determined efforts to develop successful techniques. Two of these individuals were described in Section 4.2.2 because they received vital support from the federal government. Others were not so fortunate and it is the intent of this section to relate other developments which occurred in the region. Apart from a brief discussion about the establishment of a salt industry in the region, this chapter focuses on the work of two entrepreneurs, Alfred von Hammerstein and Robert C. Fitzsimmons. Their activities typify methods and means utilized in times when lack of technology, transportation, capital and world markets were factors mitigating against successful development of the sands.

Interest in the region's potential was motivated by the federal government's decision to open the land for exploration in 1901. [37] Following completion of a successful well, the regulations permitted purchase of surface and under-rights of 640 acres at \$1.00 an acre. [37] It was anticipated that the discovery of an oil field in northern Alberta would greatly enhance its possibilities for settlement. Between 1905 and 1907 Edmonton was the center of business speculation as it became part of the transcontinental railway system. [1] Men like J.K. Cornwall were promoting the extension of railway lines into Alberta's north. [108]

One of the most ostentatious of these businessmen was Alfred von Hammerstein, an ex-Klondiker, who had decided to seek his fortune in the Athabasca oil sands. In 1906, von Hammerstein transported the first drilling equipment to Fort McMurray and set it up on Tar Island about 20 miles below the settlement. He returned to Edmonton with glowing reports of his work, proudly displaying a bottle of pure petroleum from his well. In his testimony, given before a select committee of the Canadian Senate, which was established in 1907 to enquire into the value of lands lying north

of the North Saskatchewan River, von Hammerstein described the area's vast petroleum deposits:

Tar oil springs are found all over. You find them in one place, and then proceed further, and you will find them again petroleum seems to have broken through the surface and soaked the ground for miles around. [20]

Von Hammerstein's eloquent testimony enabled him to acquire the first patented leases in the region. [109] The manner in which these leases were acquired is indicative of the methods employed by speculators in the pre-World War I oil sands boom.

In 1909, von Hammerstein and two companions, R. Vollkoffsky and L. Bonneau were travelling between Athabasca and Fort McMurray by canoe when it capsized, and both Vollkoffsky and Bonneau were drowned. The RNWMP constable investigating the incident discovered letters written by von Hammerstein about his methods:

Kindly do as asked before, and if somebody asks about success, just spread the rumour that you struck a couple of good wells of petroleum That fellow in the telegraph office is the correspondent for several papers and when you come in send me a telegraph so I know you be there [sic], and please telegraph like that 'Old petroleum wells still flowing, struck another well That will make him jump, and if he asks if he is allowed to give it to the papers, say you don't care as far as you are concerned; but you don't know whether Hammerstein wants it I DO WANT IT TO APPEAR, and the only way to do it is to play them. You will understand, I cannot develop an enterprise of such magnitude and difficulties without all kinds of maneuvers ... [110]

A later report indicated that bitumen was being poured in the wells:

In the course of his enquiries Mr. Crane [of the Topographical Survey] obtained a signed statement from one Walter Hungerberger ... to the effect that he had worked for

Hammerstein for two summers and that no oil had been found, and that upon one occasion when Hammerstein expected some one down to examine the wells, he got Hungerberger to empty a barrel of tar into one of them. [110]

Von Hammerstein did not have sufficient technical knowledge to conduct operations and he admonished his men not to waste time on theoretical aspects of the business:

... You learn everything practical what the production concerns, and if you want to know some more theoretically, any good Encyclopedia will give you enough to read ... [110]

This attitude and dependence on itinerant workers brought him financial grief. [110]

Nevertheless, von Hammerstein, who had been reduced to pawning his diamond pin, was able, in 1910, to preside at the formation of the Athabaska Oil and Asphalt Company at the Royal Alexandra Hotel in Winnipeg. The Company's capital assets were declared to be over \$5,000,000. [111]

During this time, von Hammerstein was able to prove up his rights to patented land under the regulations of 1901. [112] Although he held these lands until his death in 1941, his dream of discovering conventional oil below the sands vanished in the 1920's. The holdings were eventually acquired by Chevron Oil Company Limited.

A number of other promoters announced drilling ventures in the region and Fort McMurray was being touted as the centre of "the richest oil field the world has ever known." [108] This time of promise was enhanced by the Alberta government's commitment to construct a railway to the hamlet. These developments led to a real estate boom in Fort McMurray. [113] A townsite survey was completed in 1913, and the economic future of its residents appeared assured.

Much of this interest and speculation was halted when Calgary Petroleum Products struck crude oil in Turner Valley on October 7, 1913. [37] These southern developments turned potential investors away from the Athabasca Oil Sands region. The outbreak of

the First World War was the final blow to any immediate hopes for a northern oil field.

The 1906 to 1914 oil boom was the result of several years of government interest in the area. This awareness was especially pronounced in the decade following 1888, and was intensified by the numerous railway charters which were granted between 1900 and 1914. Although over 40 wells were drilled in the region between 1897 and 1925, none of them became successful producers. [38] However, these drilling ventures did indicate extensive salt deposits which were exploited in the 1920's.

The first salt deposits were accidentally discovered at the mouth of Horse River when Northern Alberta Exploration Company sank two exploratory wells in the search for the elusive oil. [114] Although salt was discovered between 1907 and 1912, it was not until 1919 that the Alberta government drilled a well near the lower townsite of Fort McMurray; and only when the Alberta and Great Waterways Railway reached the Clearwater River in 1923 that a salt industry appeared profitable. A second government well confirmed the existence of salt deposits and in 1925 the Alberta Salt Company constructed a plant at the mouth of Horse River. This enterprise, which employed about 15 men, [115] lasted only until 1926. Prohibitive transportation costs forced its closure. [115]

Although railway construction to Waterways was completed by 1925, difficulties in financing had resulted in an incomplete, unstable grade. [115] In fact, it was not until 1946 that any major improvements were initiated. [115] More importantly, the Canadian oil shortage was corrected through importing oil from the United States. [115] By 1930, it was becoming obvious that future developments depended on technological development, inexpensive or subsidized transportation, and market demand.

One of the most interesting individuals who persevered in efforts to develop a successful operation was Robert C. Fitzsimmons who in 1921, had acquired leases in the region. [116] Fitzsimmons had been told that the leases harbored pure beds of bitumen,

assurances which turned out to be false. Nevertheless, Fitzsimmons committed his personal energies and fortune to make the oil sands commercially profitable. His efforts were unsuccessful, but his story is indicative of the role private enterprise played without government support.

Robert C. Fitzsimmons, as a young man, moved from his native province, Prince Edward Island, to Seattle where he became involved in real estate. Successful in this venture, his travels brought him in 1920 to Alberta, where he met George McKee, an investor in Athabasca Oil Limited which was drilling in the Fort McMurray area. McKee's accounts so interested Fitzsimmons that he decided to personally investigate the potential of the region. [16] In 1922 he travelled to Waterways and met members of the Alcan Oil Company of New York which had recently acquired leases for \$350,000 from Robert Tegler of Edmonton. [17] Fitzsimmons decided to purchase adjoining leases and to work for Alcan. He recalled later:

This was a speculation on my part. I had no intention of promoting a company, expecting to make a profit by selling the leases when the excitement started as a result of Alcan Company's operations ... as soon as they started shipping Bitumen. But the promoters of that company had other ideas and made their money out of the stock market. The last I heard of them - in 1924 - they were fugitives from justice. Their leases were either cancelled or in bad shape and their personal property tied up by the New York District Attorney. [16]

After enlisting the support of Senator John Murphy of Prince Edward Island, Fitzsimmons was able to gain federal approval to develop his leases. [16]

In the spring of 1925, he launched an exploratory drilling program near the future site of Bitumont. A small plant was erected and samples of oil were sent to a number of interested users. [16] Until 1927, the purpose of the program was to tap the

bitumen believed to lie in pools beneath the sand. The existence of these pools was supported by the fact that during drilling operations:

... the drill hole seems to accumulate free oil and drill tools come out of the hole dripping with the heavy oil. [43]

However, his attempts to drill down to large pools of oil proved to be no more successful than those of his predecessors. To remain in business, Fitzsimmons turned to other developments such as production of roofing materials. Cognizant of high freight rates, Fitzsimmons decided to build a separation plant at the Bitumount site where separation of the oil from the sand could take place. In 1927 he formed the International Bitumen Company (IBC) and after three years of experimentation his extraction plant shipped 207 barrels of bitumen to Edmonton in September, 1930. These were the first commercial shipments from the region. [16] Although the plant produced about 2000 barrels in 1931, the deepening depression militated against profitable operations:

The Bitumen was excellent for paving, roofing, roof coatings, paints and plastic gum but the public would not buy it until we could put it out as specification asphalt and without a refinery we could not do that, and as finances were hard to get we were not able to erect a refinery until 1937, at which time the extraction plant was enlarged to approximately 300 barrels per day. And in 1938 some 50,000 to 70,000 gallons of oil and 500 barrels of asphalt were produced in about 60 days operation. At this stage finances were exhausted, the company in debt with no working capital and we could not sell the asphalt so we were forced to shut down. However, this operation proved beyond a shadow of a doubt that the system of extraction was correct. Some improvements were indicated although it did a lot of good work as was. [16]

In the spring of 1942, IBC approached the provincial government to persuade it to invest \$50,000 in the plant. [116] This request was turned down on the advice of engineers because:

... the Fitzsimmons' plant was not suitable or adaptable to the process developed by the Research Council of Alberta through which process the government hoped to prove the feasibility of commercial extraction of oil from the sands. [118]

Fitzsimmons' desperate financial situation led him into negotiations with Lloyd R. Champion, a Montreal financier, who assumed control of the IBC operations under a new company, Oil Sands Limited.

Fitzsimmons was to continue as manager of operations of the new scheme. Misunderstandings arose between the two men, one a financier, the other an oil developer. Fitzsimmons interpreted the unwillingness of Champion to finance new equipment as part of a plan to sell out to the highest bidder. Excluded from participating in company decisions, Fitzsimmons claimed that the plant was not being permitted to conduct efficient operations, except on one notable occasion:

When a party - including some cabinet members of the Alberta Legislature - were expected in there, the plant was kept in readiness for several days but not started till the plane carrying them was in sight of the plant when it was started up and functioned beautifully during their brief visit there and was shut down a few minutes after they left. [116]

He also resented of federal authorities, who were backing Abasand Oils Limited, and large oil corporations which appeared to be delaying developments in the oil sands:

The major Oil companies did not want that deposit developed as long as Oil was plentiful in [the] U.S.A. and Mexico. They would exploit Canada by supplying Foreign Oil at a high price until those fields were exhausted then they would reverse the situation and the U.S.

would pay through the nose. And, now that Oil has been found in this immediate surrounding [area], they want it to lay there till all flowing Oil fields are exhausted. So, with all their ballyhoo they still do not intend to produce from the Tar Sands. [116]

In 1944, L.R. Champion had complete control of the operation and entered in negotiations with the Alberta government, which was becoming upset over the lack of progress by the federally controlled Abasand plant. [119] With provincial backing, Champion agreed to construct a new plant at Bitumount. [23] In 1948, however, Champion was forced to admit defeat. [23] The provincial government cancelled his leases, and the Research Council of Alberta assumed operation of the plant.¹

Fitzsimmons continued his efforts to obtain compensation from the provincial government for his work in the oil sands, but they were to no avail. He died in 1971; his hopes and vision for a successful conclusion to his life work had escaped him, as it had von Hammerstein. These two developers were representative of an intermediate group of entrepreneurs, who in their attempts to develop the oil sands, indicated that successful exploitation would depend upon extensive support by government in technical research and increasing demand from markets outside the region.

¹ Champion was granted permit number one which he sold to Great Canadian Oil Sands in 1955.

4.5 FEDERAL-PROVINCIAL INITIATIVES: THE FEDERAL MINES BRANCH AND THE PROVINCIAL RESEARCH COUNCIL, 1914 TO 1960

Resource ownership was a significant and contentious matter of concern between provincial and federal jurisdictions from the time the North-West Territories were originally established, until the final transfer to provincial ownership in 1930. From 1914 until 1925 the questions surrounding oil sands development in Alberta remained one focal point for such intergovernmental competition. In the years between 1925 and 1930, when the transfer of natural resources was effected, a more co-operative approach evolved through the efforts of the Bituminous Sands Administrative Committee (BSAC). The role of the federal Mines Branch, the early involvement of which is described in Section 4.2, and the newly formed Research Council of Alberta, was central to the development of the Athabasca oil sands within this political context. These groups, separately and in conjunction through the BSAC, directed the first large scale and systematic approaches to the nature and extent of oil sands development. Significant technical experimentation was supervised by Dr. Karl Clark after 1920 for the Research Council of Alberta. Federal and provincial initiatives in these areas provided the basis which led to commercial exploitation.

The exploratory surveys of S.C. Ells for the Mines Branch between 1913 and 1915 stimulated the interest of University of Alberta President, Henry Marshall Tory, who was actively promoting the University's involvement in provincial research projects. Some experiments on the oil sands had been conducted by A. Lehmann, Professor of Chemistry. [120] In addition, Dr. Tory recommended to his Board of Governors that the University should conduct research in road building materials since good roads were the concern of government and business alike. [121] In 1917, S.C. Ells prepared a report on his experiments and recommendations which was sent to the University. Although it was subjected to some severe criticism, it afforded the basis for further action. [34] J.L. Coté, who had been instrumental in promoting Ells' work in 1913, became Alberta's

Provincial Secretary in 1917. Alberta businessmen and civic leaders, having witnessed the successes of the newly formed federal Honorary Advisory Council for Scientific and Industrial Research in discovering solutions to technical problems, made representations to the provincial government for a provincial research organization which would assist in the economic development of Alberta's resources. In 1919, the Premier of Alberta sanctioned the formation of the Alberta Industrial Development Association, comprised of representatives from university, business, and the public. J.L. Coté was appointed chairman and commissioned a survey of Alberta's mineral resources, to be conducted by John A. Allan, Professor of Geology. Impressed by the results of the survey the provincial government decided upon a publicly funded scientific research organization. [5]

The result was an Order-In-Council passed on January 6, 1921 authorizing the establishment of the Scientific and Industrial Research Council of Alberta. Of the three research divisions, roads, fuels, geology, road construction assumed a predominant role under the leadership of Dr. Karl A. Clark who accepted the position of Road Materials Engineer. Like Sidney Ells, Karl Clark was to devote his entire career to the problem of discovering methods of successfully utilizing the oil sands.

By the 1920's both the federal and provincial governments were interested in the development of the oil sands. While the search for separation processes accelerated under the guidance of federal and provincial agencies, the immediate focus of oil sands development became the production of paving materials, as evidenced by the work of Ells in promoting endeavours to make better roads. S.C. Ells, a professional engineer, pointed out that,

... 10 acres of bituminous sand, 50 feet in thickness, would supply the paving requirements of the provinces of Alberta, Saskatchewan, and Manitoba for a period of approximately 24 years. [34]

On the other hand, K.A. Clark, a professional chemist, qualified the immediate practical needs in his statement that:

The development of a type of bitumized earth road which would adequately meet the requirement of our rural highway traffic would at once open up a large outlet for the asphaltic bitumen contained in the bituminous sand. On the other hand, it is not unprobable that the decreasing world supply of petroleum will eventually force industry to turn to such sources of bitumen as the bituminous sands for the manufacture of oils. [122]

Thus the activities of the Research Council were directed at finding a method to separate bitumen from the sand, and to find means of mixing road aggregates for commercial applications. [122] Separation plants, designed and perfected in Edmonton during the 1920's, were satisfactory on a small scale, but construction of a large scale plant at Fort McMurray was deemed necessary. [123]

Furthermore, Research Council experiments in paving roads brought Clark to the conclusion that the most essential research should be conducted in perfecting a process of separating the bitumen from the sands for future energy needs:

It has been shown that the supplying of the present gasoline demand in the northern part of Alberta from the bituminous sands would necessitate the mining of 4,500 tons of the material per day throughout the year. It has also been shown that for the economical operation of a bituminous sand industry, there should be sufficient business for it to allow of a scale of development of 1,000 tons per day for at least 200 days of the year. Unit costs of mining particularly, and also of operation cannot be reduced to a value approaching the minimum unless a large volume of material is handled. There is difficulty in visualizing how 1,000 tons per day of bituminous sand could be disposed of by the sale of road material. [124]

During the 1920's divergent views on just where the best possibilities for commercial development of the oil sands lay were

emerging from this research. During these years the differences between the methods advocated by Clark and Ellis became quite obvious.

In 1926 and 1927, Ellis supervised paving experiments in Jasper National Park and published a report promoting the possible application of paving technology. [125] He was of the opinion that, "... granted reasonable and assured freight rates, and markets which will justify capital expenditure ..." the oil sands were a cheap supply of paving materials. [125]

Earlier, in 1924, Ellis began a personal campaign to promote Mines Branch work in support of oil sands paving techniques. In that year he wrote a memorandum attacking Clark, and the University of Alberta's involvement in experimental paving programs. In great rhetoric¹ Ellis attacked the waste of money which was being,

... frittered away in trying to solve the Tar Sand question, duplicating methods which practical men have condemned ... the statement that a road can be constructed and surfaced with asphaltic materials at a cost of \$2,000 per mile is so absurd ... the efforts of the Research Department of the University of Alberta have ... been towards the postponement of the day when these sands can be developed and used successfully, instead of towards their immediate use for the profit of Alberta, [and] might also be made the subject of a public inquiry by means of a Royal Commission. [28]

These criticisms were published in a modified form in a national magazine in 1925, making public the issues between the two men. [29]

Ellis was devoted to the idea that the Mines Branch should lead in oil sands developments and that, due to its efforts, adequate paving technology already existed. The importance of cheap material was often described in glowing terms in speeches of Ellis, such as the following:

¹ Ellis established a reputation as an author of prose and poetry about his beloved north. Clark noted in his memoirs that the man was "an artist, writer, and poet of note." [43]

The provision of good modern sanitary highways is the greatest need of the present day. It solves many problems simultaneously. Good roads mean cheap transport of food, merchandise and labour, involving an all-round reduction in the costs of production. Good roads contribute to the decongestion of over-crowded industrial areas, for they permit the establishment of factories in the country even away from railway centres. Good roads are enabling people to live once more farther and farther in the country without the feeling of loneliness and dependence on time-tables which formerly discouraged such choice of residence. With this comes an improvement in the health, standard of living and capacity for enjoyment of the people, in terms of which we must measure all material progress. Good roads are a great moral tonic and stimulant to the nation, for they beget the ambition to enjoy their benefits. People are encouraged unto greater efforts wherewith to purchase the means of enjoyment. This extends its wonderful beneficial action to the motor industry and allied trades, and if there be someone who has the least doubt let him take a journey to the United States. Good roads mean healthy movement and this in turn means Life. Their absence means stagnation, filthy festering and Death! Oh, the lessons for the traveller and the contrasts to be found from Germany to Portugal, from Canada to Greece! [28]

Through these efforts Ells won many followers, such as A.W. Haddow, City Engineer for the City of Edmonton who had supported the Mines Branch by persuading the City Council to approve experimental paving along the Calgary Trail. [27]

Between 22 September and 3 October 1925, A.W. Haddow toured the oil sands region around McMurray with A.W.G. Wilson, Chief Engineer, Mineral Resources Division, Department of Mines, and A.S. Chapman, City Engineer, Calgary. These men were met at Waterways by S.C. Ells, and taken on a tour of the area. In his

report of this tour Haddow made the first reference to a multi-governmental partnership in this development:

The Dominion Government officials made a suggestion during the inspection, that there be an Engineering Committee, with a representative from the Dominion Government, the City of Edmonton and the Provincial Gov't. The services of this committee would be available to advise and supervise the laying of Tar Sands for different purposes. [27]

In December 1925, the first formal proposal for the organization which was to become the BSAC was made by Wilson of the Mines Branch. He noted a similarity between Alberta and Trinidad asphalt, and suggested that they could be used for similar purposes:

Many of these uses, however, require a pure material. Until suitable separation processes are developed the Alberta bitumens will not be available for these uses. [27]

Wilson therefore recommended the establishment of an Asphalt Roads Committee to supervise a program, and suggested C.A. Davidson, Alberta Highway Commissioner, act as chairman, with K.A. Clark, A.W. Haddow, and S.C. Ellis as members. He proposed that laboratory tests be conducted so that suitable mixtures could be demonstrated by the Committee. Furthermore:

The advisory committee would probably be called upon later to advise municipal authorities as to the best methods of using this material for sidewalks, crossings, floorings, or pavements, and this would not be the least important of its services. [27]

The Edmonton City Commissioners accepted the plan readily [27], but Dr. Tory and Dr. Clark were less pleased with it, and quite slow to respond. [27] Therefore, interest lapsed in the proposal between 1926 and 1929. [27] In 1929 the plan was resumed, this time initiated by Alberta, and the BSAC was formally established.

In March of 1929, Dr. A.E. Cameron, Secretary of Alberta's Research Council, travelled to Ottawa to discuss the possibility of

jointly investigating the costs of mining and separating the oil sands. An agreement was concluded and a technical committee, BSAC, was formed to supervise and co-ordinate joint efforts in the oil sands. [27] Camsell cabled Dr. Wallace, Director of Alberta's Research Council, noting that the province proposed to spend \$30,000 on development of a plant to be constructed near Waterways:

Our Minister is willing to cooperate with you in this by appropriating certain funds provided all contributions are under control Board consisting of yourself, Doctor Tory and myself. Board to be assisted by a technical committee containing representatives of interested parties. [27]

Premier Brownlee approved the tripartite Board on condition that each party would assume specific responsibilities. [27] The Research Council was given the responsibility of constructing a plant at Waterways to test hot water separation techniques on a commercial scale. [27] The Mines Branch was to develop mining techniques and establish cost factors in a quarry on the Clearwater River. [27]

In the Research Council's annual report for 1930, Clark reported that:

The completion of the two year program of development has resulted in notable advances in bituminous sand operation. A separation plant has been built and successfully operated in the north country at the deposits. This has had psychological as well as technical value and has probably done as much to direct public interest to Alberta's bituminous sand resources as all the previous studies at Edmonton ... The northern ... plant produced a bitumen which was comparatively free from these impurities and which was used as commercial asphalts. [126]

800 tons of oil sands had yielded 75 tons of bitumen.

This co-operative government enterprise marked the height of development to 1930. The transfer of natural resources to the province, and more significantly, the onset of the depression in

the 1930's, brought a temporary end to provincial government initiative in the region. Following the failure of the federal government (Section 4.2.2) to develop a successful operation at the Abasand plant in 1945, the provincial government reacted by announcing it would build a separation plant which would demonstrate, once and for all, that separation of oil from the sands was possible. Bitumount was selected because it contained a quarry, buildings, and preliminary facilities to begin the experiment. The Government of Alberta agreed to loan \$250,000 to L.R. Champion's Oil Sands Limited which was to conduct the experiment. Any additional funds were to be raised by Champion. Government interests were protected through formation of a Board of Trustees composed of two cabinet ministers and Champion. [127] However, Oil Sands Limited was unable to raise the necessary funds and the agreement was cancelled on September 26, 1947. [118] Champion was replaced on the Board by a third cabinet minister. The Research Council of Alberta, Born Engineering of Tulsa, Oklahoma, with W.E. Adkins as resident engineer, and K.A. Clark acting as advisor, completed a new 500 ton plant and refinery in 1949. Members of the Alberta Legislature visited the site and returned to Edmonton, satisfied with the development, but concerned with devising future directions.

At this critical time, Clark invited an old friend and colleague, Sidney M. Blair, consulting engineer, and Edward Nelson, vice-president of Universal Oil Products, to visit Bitumount. Blair was subsequently engaged to conduct an engineering and economic survey. It was concluded that Bitumount:

... had served its purpose which was to demonstrate, technically, there was no obstacle in the way of separating the oil from the oil sands. What was now needed was an estimate of the cost of a barrel of saleable oil sand, separating the oil, processing the oil to a marketable product and delivering this product to a large marketing area ... [43]

Blair's report, presented to the Board of Trustees in December 1950, contained a cost analysis of one cubic yard of oil sand yielding

one barrel of oil at a cost of \$3.10 in a 20 000 barrel-per-day plant. The market value in the Great Lakes area was appraised at \$3.50 per barrel. [128]

The Blair report generated so much interest in the potential of the oil sands that the Alberta government sponsored the first Athabasca Oil Sands Conference in 1951, which was attended by over 100 professional and technical personnel from multi-national oil and mining companies, and government. At this meeting the provincial government announced its policy on oil sands leases and royalties. [129] Prospecting permits could be obtained for 50 000 acres for a period of up to three years, at a modest fee and rental. An individual or company could also apply for a lease of any part of this area; the total acreage was dependent on the premise that it should be sufficient to sustain a plant for 30 years. These leases, available for \$1.00 an acre, were for a term of 21 years (renewable), and provided a 10% royalty on the raw product. The most significant part, however, lay in the clause that a plant had to be constructed within two years and operating within five years. [130] Furthermore, the government made it clear that no special support would be provided for development of schools and roads. [129] Mr. Tanner, Minister of Lands and Mines, also stated the government position to be:

... we feel that whatever company or companies are prepared to put their risk capital into this development are actually partners with the Government and the Government with them in that undertaking. [129]

During the early 1950's, a few exploration permits were taken out by companies, but no major developments occurred. After the government modified its regulations regarding requirements for construction of a plant in 1955 (it was made subject to ministerial directive), the Bitumont plant was sold to Can-Amera Oil Sands Development Company of Calgary. [43] The government also passed legislation in 1955 that production from the oil sands would

be excluded from any share in the market for oil under the pro-rating schedule established by the Petroleum Resources and Conservation Board. [130] Oil sands developers would have to find their own markets.

The government's attitude during the 1950's was conditioned by the fact that Alberta's conventional oil supplies were rapidly increasing. Between 1947 and 1951, 17 new oil fields had been discovered in the province, and during 1955, 5440 active oil wells accounted for 90% of Canadian production. [131] In 1956, total Canadian production was 22 times the 1946 output. [132]

Mr. Manning stated:

The fundamental problem in the development of the oil sands has always been one of economics, as whatever method of extraction is used it must be simple enough and cheap enough to allow for the oil to be sold in competition with oil extracted in the more normal manner. [118]

The time of approaching market demand was accelerated when, in 1956, Egypt blocked the Suez Canal thereby endangering the supply of oil from the Middle East to North America. [23] Companies began to take out exploration permits which in 1958 had reached 93. [43] Sun Oil Company Limited, short of oil supplies, contracted with Great Canadian Oil Sands Limited and Abasand Oils Limited to develop leases four and 14. [127] This event marked the beginnings of a new era of economic prosperity for the Athabasca oil sands region. Fort McMurray,¹ which in 1956 had only a population of 1110 [133] was on the threshold of developments which were to provide a momentum leading to an all-but-instant city in the heart of Alberta's energy eldorado.

¹ The total population of Improvement District 143, including Fort McMurray, was 1989.

4.6 CONCLUSION

The major developments which emerge in the foregoing study are those of increasing widespread and large scale organizational intrusions in a region which had been structured economically, and culturally by the fur trade. Although missionaries tended to introduce a measure of protection for the native people, the process of proselytization was a harbinger of a new society which brought new technologies, and improved transportation systems. The arrival of the railway, the establishment of air route connections, and the eventual construction of a highway, marked the increasing presence of industrial technology in the region. J.M.S. Careless has concluded that:

... the general process of urbanization may be expressed in terms of four great factors: the environment, the population that occupies it, the technology and organization that mediate the relations of the first two. [134]

Of these factors, technology assumed a significant role in economic development of the region. As has been pointed out elsewhere, however, the determining factor was the increasing role of governments which have influenced economic developments since 1890. [135] During the period under study, the Crown assumed a "developmental laissez-faire" policy in which economic development was left to free enterprise, and social services were left until they were able to be supported and demanded by population in the region. [135] This attitude, substantiated by statements of Alberta's Minister of Mines and Minerals, N.E. Tanner in 1951 [129], remained in effect until the massive economic developments of the 1960's.

The scale of these developments accentuated public awareness and increasing government concern for the provision of social services within the region. Provincial enactments, such as the New Towns Act (1955), Northland School Division (1961), Northern Development Council (1964), Community Development (1964), and Alberta

Newstart (1968), were indicative of changing policies toward socio-economic development. Through these measures the Crown assumed an increasingly active role in socio-economic developments in the region. Careless also pointed out that:

... the western natural environment had been occupied at certain nodal points on traffic routes by considerable concentrations of population homogeneous to the degree of still being largely English-speaking in language and culture. [134]

Between 1890 and 1960, Edmonton, with its proximity to the region by water and rail, played a key role in Alberta's efforts to develop the Athabasca Oil Sands region. By the 1960's, Fort McMurray, with its English-speaking homogeneous population and strategic location, had become the regional centre of a socio-economic regime which supplanted the old socio-economic order based largely on the fur trade. In this transition, however, there is a factor, more evident in the oral history field studies (see Vol. 2), that the indigenous population of surrounding communities and bush settlements relocated, either to Fort McMurray or to centers outside the region. This migration occurred at a time when there was a large influx of immigrant people into the region. The interaction of indigenous and immigrant groups deserves further research, especially in the topics of education and health, responsibilities which were once assumed by church organizations but now taken over by federal, provincial, and municipal institutions.

5. REFERENCES CITED

- [1] Zaslów, M. 1971. The opening of the Canadian north. McClelland and Stewart Limited. Toronto. p. 72.
- [2] McKenzie, N.M.W. 1921. The men of the Hudson's Bay Company, 1670-1920. N.M.W. McKenzie. Fort William. pp. 79-80.
- [1] Zaslów, p. 282.
- [3] Petition from Fort Chipewyan residents to Premier E.C. Manning. May 30, 1963.
- [4] Gillham, C.E. 1947. Raw north. A.S. Barnes and Company. New York. p. 8.
- [5] Chalmers, J.W., ed. 1974. The land of Peter Pond. Boreal Institute for Northern Studies Occasional Publication No. 12. University of Alberta, Edmonton. pp. 10-13.
- [6] Moberly, H.J. 1929. When fur was king. J.M. Dent & Sons Limited. London. p. 141.
- [7] Morton, A.S. n.d. A history of the Canadian west to 1870-1871. Thomas Nelson and Sons. London. p. 6.
- [8] Fisher, A.D. 1969. The Cree of Canada: some ecological and evolutionary considerations. Western Canadian Journal of Anthropology 1(1). p. 9.
- [9] Jenness, D. 1948. The Indian background of Canadian history. National Museum of Canada Bulletin No. 86. Ottawa. p. 36.
- [10] Parker, J.M. 1967. The fur trade of Fort Chipewyan on Lake Athabasca, 1778-1835. M.A. Thesis. University of Alberta, Edmonton. p. 123.
- [9] Jenness, p. 44.
- [11] Glover, R., ed. 1962. David Thompson's narrative. 1784-1812. The Champlain Society. Toronto. p. 105.
- [12] Petitot, E. 1883. On the Athabasca district of the Canadian North-West Territory. Proceedings of the Royal Geographical Society. London. p. 649.
- [7] Morton, pp. 331-333.

- [10] Parker, p. 43.
- [13] Glover, R., ed. 1958. A journey from Prince of Wales' Fort in Hudson's Bay to the northern ocean, 1769, 1770, 1771, 1772 by Samuel Hearne. MacMillan Company of Canada. Toronto. p. 52.
- [10] Parker, p. 123.
- [1] Zaslów, p. 97.
- [10] Parker, p. 5.
- [10] Parker, p. 6.
- [10] Parker, p. 7.
- [10] Parker, p. 9.
- [10] Parker, p. 9.
- [14] Chalmers, J.W., ed. 1971. On the edge of the shield: Fort Chipewyan and its hinterland. Boreal Institute for Northern Studies Occasional Publication No. 7. University of Alberta, Edmonton.
- [10] Parker, pp. 47-62.
- [1] Zaslów, p. 72.
- [1] Zaslów, p. 76.
- [1] Zaslów, p. 66.
- [1] Zaslów, p. 69.
- [1] Zaslów, p. 75.
- [15] Duchaussois, P. 1937. Mid snow and ice: the apostles of the north-west. Missionary Oblates of Mary Immaculate. Ottawa. pp. 66-71.
- [6] Moberly, p. 152.
- [16] Wuetherick, R.G. 1973. A history of Fort Chipewyan and the Peace-Athabasca delta region. The Peace-Athabasca Delta Project Group Technical Appendices Volume 3. p. 119.
- [17] Zaslów, M. 1948. A history of transportation and development of the Mackenzie River basin from 1871 to 1921. M.A. Thesis. University of Toronto, Toronto. p. 5.

- [1] Zaslou, pp. 94-95.
- [18] Chambers, E.J., ed. 1910. The great Mackenzie basin: reports of the select committees of the Senate, sessions 1887 and 1888. King's Printer. Ottawa. p. 9.
- [1] Zaslou, pp. 95-97.
- [1] Zaslou, pp. 93-94.
- [19] Fumoleau, R. 1976. As long as this land shall last. McClelland and Stewart Limited. Toronto. pp. 77-82. *pagett's?*
- [20] Chambers, E.J., ed. 1907. Canada's fertile northland. King's Printer. Ottawa. p. 3.
- [21] Court, T. 1973. A search for oil. Alberta Historical Review. 21(2). pp. 10-12.
- [4] Chalmers, pp. 111-112.
- [22] Riddell, M. 1977. Research Council of Alberta: an historical review. University of Alberta Archives, Edmonton. pp. 2-3.
- [4] Chalmers, pp. 116-118.
- [23] Fitzgerald, J. 1978. Black gold with grit. Gray's Publishing. Sidney. pp. 161-168.

REFERENCES CITED (Section 4.2.1)

- [24] Macoun, J. 1877. Geological and topographical notes on the lower Peace and Athabasca rivers. Geological Survey of Canada Report of Progress for 1875-76. Appendix I. p. 170.
- [24] Macoun, p. 169.
- [25] McConnell, R.G. 1893. Report on a portion of the District of Athabaska comprising the country between Peace River and the Athabaska River north of Lesser Slave Lake. Geological Survey of Canada Annual Report, Part D.
- [26] Bell, R. 1884. Report on part of the basin of the Athabasca River, 1882-1883. Geological Survey of Canada Annual Report. pp. 1-37.

- [19] Cited in Fumoleau, p. 40.
- [25] McConnell, p. 65.
- [21] Court, pp. 10-12.
- [20] Chambers, p. 40.
- [27] Public Archives of Canada (PAC). Record Group (RG) 86.
Vol. 30. File 462.2. S.C. Eills. n.d. [1945].
Memorandum on the McMurray field. pp. 56-70.
- [28] PAC. Manuscript Group (MG) 30. A 14. 1892 to 1971.
S.C. Eills Papers. n.d. Memoirs. Vol. 4. p. 29.
- [28] Eills, pp. 25-29.
- [28] Eills, p. 29.
- [28] Eills, p. 30.
- [28] Vol. 1. E.W. Larmarque to S.C. Eills. 15 January, 1959.
- [29] Eills, S.C. 1962. Recollections of the development of the
Athabasca oil sands. Department of Mines and
Technical Surveys, Mines Branch. Information
Circular 139. Ottawa. p. 8.
- [29] Eills, p. 10.
- [29] Eills, p. 11.
- [30] Eills, S.C. 1914. Preliminary report on the bituminous sands
of northern Alberta. Department of Mines, Mines
Branch. Report 281. Ottawa.
- [28] Eills, Memorandum on the tar sands (so called) of northern
Alberta. 27 November, 1912.
- [29] Eills, p. 14.
- [27] Possible experimental work in the utilization of Alberta
sands for road servicing, side-walks, floors for
warehouses, 1914-1928. E. Haanel to Secretary,
California State Highway Commission. 27 April,
1914.
- [27] F.T. Fisher, Secretary, Edmonton Board of Trade, to Minister
of Mines. 13 February, 1914.
- [27] A.G. Harrison to R.W. Brock, Director, GSC. 18 April, 1914.

- [27] F.T. Fisher to Minister of Mines. 13 February, 1914.
- [27] S.C. Eills to E. Haanel. 3 March, 1914.
- [30] Eills, 1914. Report 281.
- [31] U.S. Geological Survey. Bulletin, 1916. Asphalt, related bitumens and bituminous rock in 1915. Washington. p. 150.
- [32] Edmonton Journal. 28 June, 1915.
- [27] PAC. RG 86. Vol. 30. File 462.2 F.C. Field. Report of the construction of asphalt pavements from Alberta tar sands. 14 August, 1915.
- [33] Ottawa Journal. 21 April, 1915.
- [34] University of Alberta Archives (UAA). 69-76-1. Eills, S.C. n.d. [1917]. Notes on certain aspects of the proposed commercial development of the deposits of the bituminous sands in the Province of Alberta, Canada.
- [1] Zaslów, p. 211.
- [35] Alberta Legislative Journals. 1917. p. 105.
- [36] Allan, J.A. 1920. First annual report on the mineral resources of Alberta. King's Printer. Edmonton. 103 pp.
- [37] Zaslów, M. 1975. Reading the rocks: the story of the Geological Survey of Canada, 1842-1972. MacMillan Company of Canada Limited. Ottawa. p. 314.
- [37] Zaslów, p. 348.
- [28] Eills, Memoirs. p. 60.
- [28] Eills, Memoirs. p. 60.
- [38] Eills, S.C. 1926. Bituminous sands of northern Alberta: occurrence and economic possibilities, report on investigations to the end of 1924. Department of Mines, Mines Branch. Ottawa. 244 pp.
- [38] Eills, p. 15.
- [38] Eills, p. 236.

- [27] H.H. Rowatt to Deputy Minister, Department of the Interior.
25 October, 1921.
- [27] H. Rowatt, 25 October, 1921.
- [27] H. Rowatt, 25 October 1921.
- [27] H. Rowatt, 25 October, 1921.
- [37] Zaslów, p. 337.
- [38] E11s, p. 210.
- [39] PAC. RG 45. Vol. 33. File 642D. Vol. 4. N.G. Guthrie to
C. Stewart, Minister of the Interior. 26 February,
1924.
- [39] N. Guthrie, 26 February, 1924.
- [39] L.L. Bolton, Secretary, Department of Mines. Memorandum.
18 January, 1924.
- [38] E11s, pp. 173-236.
- [39] J.M. McLeish to C. Camsell. 27 February, 1924.
- [39] J. McLeish, 27 February, 1924.
- [27] S.C. E11s to A.W.G. Wilson. 31 March, 1925.
- [27] H.H. Rowatt to C. Stewart. 5 June, 1924.
- [27] J.M. McLeish to L.L. Bolton. 9 June, 1924.
- [27] T. Draper to A.W.G. Wilson. 9 February, 1924.
- [27] S.C. E11s to A.W.G. Wilson. 7 November, 1924.
- [40] Comfort, D.J. 1977. Tom Draper, oil sands pioneer. Alberta
Historical Review. 25(1). p. 28.
- [27] J.F. Draper to J.E. Armstrong. 21 June, 1926.
- [40] Comfort, p. 29.
- [41] Griffin, H.G. 1944. Alaska and the Canadian northwest: our
new frontier. W.W. Norton & Company. New York.
pp. 47-48.
- [41] Griffin, p. 49.

- [42] Pratt, W.E. 1955. Memorial. Bulletin of the American Association of Petroleum Geologists. 39(5). pp. 775-780.
- [43] Clark, K.A. 1957. Athabasca oil sands historical review and summary of technical data. Research Council of Alberta Contribution No. 69. Edmonton. p. 5.
- [44] PAC. RG 21. Vol. 43. File 161.387. Vol. 1. Memorandum of agreement. 18 February, 1935.
- [43] Clark, p. 8.
- [44] M. Ball to T. Crerar. 24 August, 1937.
- [44] W.P. Campbell. Report of Inspection of separation plant, Abasand Oils Limited, Horse River. 9 November, 1936.
- [44] M. Ball, 24 August, 1937.
- [45] Beach, F.K., and J.L. Irwin. 1940. The history of Alberta oil. Department of Lands and Mines. Edmonton. p. 24.
- [45] Beach, p. 28.
- [44] M. Ball to T.A. Crerar. 15 June, 1939.
- [44] M. Ball, 15 June, 1939.
- [44] F. Williamson to M. Ball. 5 July, 1939.
- [44] M. Ball, 15 June, 1939.
- [46] The Albertan. 3 October, 1944. Cottrelle reviews tar sand experiments.
- [44] M. Ball to C. Becker. 10 October, 1944.
- [44] F. Blair to C. Camsell. 3 October, 1941.
- [44] Order-in-Council. P.C. 3104. 21 April, 1942.
- [44] M. Ball to R. Gibson. 21 July, 1942.
- [44] E. Smith to G.R. Cottrelle. 23 February, 1943.
- [44] Memorandum of agreement between the Dominion of Canada and Abasand Oils Limited respecting expansion of plant for treatment of bituminous sands.

- [43] Clark, p. 10.
- [47] UAA. RG 46. File 73-49-316. K. Clark to J.W. Hamilton.
2 February, 1940.
- [48] PAC. RG 21. Vol. 43. File 161.3811. Vol. 2. W.B. Timm
to C. Camsell. 7 July, 1945.
- [48] Timm, 7 July, 1945.
- [49] PAC. RG 21. Vol. 43. File 161.3811. Vol. 12. W.B. Timm
to V.W. Scully. 25 June, 1946.
- [44] W.H. Norrish. Memorandum. 26 April, 1943.
- [50] PAC. RG 21. Vol. 43. File 161.3811. Vol. 13. W.B. Timm
to T.B. Williams. 14 February, 1947.
- [49] V.W. Scully to C.W. Jackson. 5 July, 1946.
- [50] Cost of bituminous sands investigations by special mineral
projects. 11 June, 1947.

REFERENCES CITED (Section 4.3.1)

- [51] Dempsey, H.A., ed. 1974. Men in scarlet. Historical Society
of Alberta. Calgary. p. 84.
- [1] Zaslów, p. 95.
- [52] Government of Canada. Sessional Papers (CSP). 1897. NWMP
Report. Appendix L. Police patrol, Athabasca
District, winter of 1896-1897. p. 156.
- [53] CSP. 1902. NWMP Report. Report of Inspector C.H. West,
commanding Peace River sub-district. p. 59.
- [54] Ottawa Morning Citizen. 6 October, 1903. Moral plague
ruining Peace River Indians.
- [55] PAC. RG 18. Vol. 288. File 731. F.H. White memorandum.
6 October, 1903.
- [55] C. Sifton to F.W. White. 12 February, 1904.
- [55] C. Constantine to A. Perry. 30 August, 1903.
- [55] R. Field. Report from Fort Chipewyan. 25 June, 1903.
- [55] R. Field, 25 June, 1903.

- [55] C. Fraser to F. Oliver. 19 March, 1904.
- [55] W. Haslett. Quarterly report, Peace River detachment.
31 March, 1905.
- [56] UAA. MG 9/2. 1878-1930. W. Pearce Papers. File 9/2/6/3-6.
W. Pearce memorandum. 19 March, 1893.
- [57] PAC. RG 18. Vol. 1417. File 126-1898. A.H. Griesbach
monthly report. 7 July, 1898.
- [58] Edmonton Bulletin. 15 July, 1898. Editorial. Northern
mails.
- [59] PAC. RG 18. Vol. 146. File 91-98. F. Oliver to F. White.
10 November, 1897.
- [59] F. White to R.M. Coulter. 3 December, 1897.
- [60] Steele, H. 1936. Policing the Arctic: the story of the
conquest of the Arctic by the Royal Canadian
(formerly North-West) Mounted Police. Jarrolds.
London. p. 92.
- [61] CSP. 1898. NWMP Report. Part II. W.H. Routledge patrol
report, Fort Saskatchewan to Fort Simpson.
4 April, 1898. p. 84.
- [61] W. Routledge, p. 84.
- [61] W. Routledge, pp. 96-97.
- [62] Comfort, D. 1974. Ribbon of water and steamboats north,
meeting place of many waters. Part two in a
history of Fort McMurray, 1870-1898. D. Comfort.
Fort McMurray. p. 291.
- [63] Mair, C. 1908. Through the Mackenzie basin, a narrative of
the Athabasca and Peace River treaty expedition of
1898. William Briggs. Toronto. pp. 23-24.
- [57] A. Griesbach, 7 July, 1898.
- [64] PAC. RG 18. Vol. 150. File 228-98. C.C. Chipman to
F. White. 22 March, 1898.
- [64] C. Chipman, 22 March, 1898.
- [65] Ottawa Citizen. 28 February, 1899.
- [66] Denny, C. 1939. The law marches west. Dent and sons.
Toronto. p. 299.

- [67] PAC. RG 10. Black Series. 241. 209-1. D. Laird to Secretary of Indian Affairs. 29 April, 1904.
- [19] Fumoleau, p. 100.
- [19] Fumoleau, p. 51.
- [68] PAC. RG 18. Vol. 160. File 73-79. Extract from report of Corporal Trotter, Fort Smith detachment. 31 October, 1898.
- [68] Census of Indians and Half-breeds, Athabasca District, winter of 1898-1899.
- [68] Census ... of 1898-1899.
- [69] Daniel, R. 1975. Spirit and terms of Treaty 8. Indian Association of Alberta position paper. p. 44.
- [19] Cornwall, J. 1937. Affidavit as cited by Fumoleau, pp. 74-75.
- [70] PAC. RG 18. Vol. 191. File 418-00. Department of the Interior, scrip for Half-breeds at Fort Smith delivered by NWMP. 31 March, 1900.
- [71] PAC. RG 18. Vol. 390. File 249-10. W. Cory to F. White. 26 May, 1910.
- [71] Extract from report submitted by Supt. G.E. Sanders, commanding N Division. 8 March, 1910.
- [71] G. Sanders to A. Perry. 17 March, 1910.
- [72] PAC. RG 18. Vol. 384. File 89-10. G. Sanders monthly report. 1 February, 1910.
- [73] PAC. RG 18. Vol. 261. File 888-03. F. White to F. Bopp. 22 December, 1903.
- [73] F. Bopp to F. White. 24 December, 1903.
- [73] F. White to F. Bopp. 28 December, 1903.
- [74] PAC. RG 18. Vol. 218. File 784-01. K. Anderson to the Head Man and Indians at White Fish Lake. 18 July, 1901.
- [75] PAC. RG 18. Vol. 334. File 189. C. Constantine monthly report. 1 March, 1907.

- [76] PAC. RG 18. Vol. 315. File 206. C. Constantine monthly report. 1 January, 1907.
- [75] C. Constantine, 1 March, 1907.
- [77] PAC. RG 18. Vol. 369. File 131. G. Jennings monthly report. 5 April, 1909.
- [77] G. Jennings monthly report. 9 March, 1909.
- [77] G. Jennings, 5 April, 1909.
- [61] W. Routledge, pp. 95-96.
- [78] Canada Statutes. 57-58 Victoria. 1894. Chapter 31.
- [79] PAC. RG 18. Vol. 489. File 381-1915. Part 2. L. Herchmer to F. White. 16 April, 1899.
- [80] Canada Statutes. 62-63 Victoria. Chapter 20.
- [80] Sections 4 and 21.
- [79] F. White to A. Griesbach. 28 December, 1899.
- [81] Edmonton Bulletin. 30 July, 1900.
- [79] J. Trotter to A. Griesbach. 21 February, 1900.
- [82] PAC. RG 18. Vol. 218. File 839-01. F. White memorandum for the Minister. 30 October, 1901.
- [79] Secretary, Department of Interior, to F. White. 16 November, 1901.
- [83] PAC. RG 18. Vol. 1548. File 149-1904. J. McKanna to A. Perry. 22 September, 1904.
- [84] PAC. RG 18. Vol. 302. File 742. F. White to J. Harkin. 17 October, 1905.
- [79] F. Oliver to F. White. 15 November, 1907.
- [79] Part 2. F. White to A. Perry. 11 January, 1910.
- [85] PAC. RG 18. Vol. 489. File 381. Part 2. A. Jarvis report on buffalo patrol. 22 September, 1908. pp. 8-9.
- [86] PAC. RG 18. Vol. 1559. File 125-1905. R. Field monthly report. 1 October, 1904.

- [85] A. Jarvis, 22 September, 1908. p. 5.
- [72] G. Sanders report. 6 August, 1910. p. 12.
- [87] PAC. RG 18. Vol. 1629. File 2-1910. Part 5. G. Sanders
monthly report. 2 November, 1910.
- [87] G. Sanders, 2 November, 1910.
- [79] Part 1. G. Sanders to A. Perry. 4 August, 1910.
- [79] Part 1. G. Sanders, 4 August, 1910.
- [88] PAC. RG 85. Vol. 665. Vol. 1. G. Mulloy to R. Campbell.
May 11, 1911.
- [89] Kelly, N., and W. Kelly. 1973. The Royal Canadian Mounted
Police, a century of history, 1873-1973. Hurtig.
Edmonton. p. 156.
- [79] Part 2. L. Herchmer to F. White. 3 October, 1893.
- [85] A. Jarvis, 22 September, 1908. p. 3.
- [85] A. Jarvis, 22 September, 1908. p. 7.
- [79] Part 2. Herchmer, 3 October, 1893.
- [72] G. Sanders, 6 August, 1910. p. 12.
- [90] PAC. RG 18. Vol. 1664. File 2-1912. T. Wroughton monthly
report. 9 September, 1912.
- [91] PAC. RG 18. Vol. 444. File 310-13. A. Mellor to
T. Wroughton. 31 December, 1912.
- [91] A. Mellor, 31 December, 1912.
- [92] PAC. RG 18. Vol. 1690. File 2-13. Part 4. G. Bossange
report. 15 March, 1913.
- [93] Green, J. 1977. The federal government and migratory birds:
the beginning of a protective policy. Historical
papers. Canadian Historical Association. Ottawa.
p. 212.
- [93] Cited in Green, p. 213.
- [93] Green, p. 214.
- [93] Green, p. 223.

- [93] Green, p. 225.
- [94] Morton, W.L. 1972. Canada and the Canadian Indians: what went wrong? Quarterly of Canadian Studies. 2. pp. 3-12.

[51] Dempsey, p. 86.

REFERENCES CITED (Section 4.3.2)

- [95] PAC. RG 39. Vol. 450. File 39144. D.F. Finnie memorandum. 29 September, 1913.
- [95] D.F. Finnie to B. York. 6 March, 1922.
- [96] PAC. RG 39. Vol. 105. File 36700-1. H. MacMillan to R. Campbell. 8 April, 1912.
- [96] R. Campbell to H. MacMillan. 16 April, 1912.
- [97] PAC. RG 39. Vol. 112. File 40308. J. Hill to R. Campbell. 9 June, 1913.
- [98] PAC. RG 39. Vol. 289. File 40978. R. Rance to R. Campbell. 7 December, 1914.
- [98] A. Connell to R. Campbell. Report for 1914. p. 25.
- [99] PAC. RG 39. Vol. 453. File 42376. R. Campbell memorandum. 16 December, 1915.
- [98] R. Campbell to W. Cory. 3 February, 1914.
- [100] PAC. RG 39. Vol. 451. File 41903. J. McLeod to Department of the Interior. 13 January, 1916.
- [100] Keeheewin reservation, Alberta inspection boundaries, 1914 to 1930.
- [100] G. Lonergan to F. Peters. 22 February, 1928.
- [101] PAC. RG 39. Vol. 75. File 45919. Order-in-Council P.C. 3164. 31 August, 1921.
- [101] C. Field to Director of Forestry. 18 October, 1922.
- [101] C. Field to Director of Forestry. 26 March, 1927.
- [102] Lewis, H. 1977. Maskatu: the ecology of Indian fire in northern Alberta. Western Canadian Journal of Anthropology. 7(1). p. 22.

- [97] A. Rafton-Canning to R. Campbell. 1 August, 1918.
- [97] J. Hill annual report. 1916.
- [97] J. Hill to R. Campbell. 13 December, 1913.
- [97] J. Hill, 13 December, 1913.
- [97] J. Hill, 13 December, 1913.
- [97] J. Hill to R. Campbell. 22 June, 1914.
- [97] S. Nelson to R. Campbell. 8 June, 1915.
- [97] J. Hill to R. Campbell. 1 February, 1916.
- [97] J. Hill annual report. 1916.
- [97] J. Hill annual report. 1916.
- [97] J. Doucet report of inspection. 1916.
- [97] J. Doucet, 1916.
- [97] J. Doucet, 1916.
- [97] J. Doucet to E. Finlayson. 11 June, 1917.
- [97] E. Finlayson to J. Doucet. 22 June, 1917.
- [97] R. Campbell to A. Rafton-Canning. 26 April, 1918.
- [97] A. Rafton-Canning to R. Campbell. 4 May, 1918.
- [97] A. Rafton-Canning progress report for May, 1918.
- [97] A. Rafton-Canning to R. Campbell. 1 August, 1918.
- [97] A. Rafton-Canning to R. Campbell. 26 March, 1920.
- [97] A. Rafton-Canning to R. Campbell. 26 April, 1920.
- [97] A. Rafton-Canning to R. Campbell. 6 May, 1920.
- [97] T. Dwight to W. Cory. 16 May, 1921.
- [97] T. Dwight, 16 May, 1921.
- [97] A. Rafton-Canning to C. Morse. 12 May, 1921.
- [97] A. Rafton-Canning, 12 May, 1921.

- [97] A. Rafton-Canning, 12 May, 1921.
- [97] A. Rafton-Canning to T. Dwight. 29 August, 1921.
- [103] PAC. RG 85. File 8988. M. Meikle to R. Gibson.
6 June, 1937.
- [101] R. Gibson to M. Meikle. 26 June, 1937.
- [104] PAC. RG 39. File 49955. H.O. supervision, sub-committee
on reconstruction, Alberta programme. 1943.
- [105] PAC. RG 39. File 48606. R. Thompson to D. Macdonald.
23 November, 1946.
- [106] PAC. RG 39. Vol. 508. File 602-12-4(1). Press releases.
1966.
- [107] Mid-Canada Development Conference. Minutes, August, 1969.
pp. 4-5.
- [107] Conference minutes, pp. 4-5.

REFERENCES CITED (Section 4.4)

- [37] Zaslów, p. 234.
- [37] Zaslów, p. 234.
- [1] Zaslów, pp. 203-204.
- [108] Hopkins, J.C. 1907. The Canadian annual review of public
affairs (CAR). Annual Review Publishing Company.
Toronto. p. 583.
- [20] Chambers, pp. 41-42.
- [109] Edmonton Bulletin. 23 February, 1911.
- [110] PAC. RG 18. Vol. 380. File 1. A. von Hammerstein to
R. Vollkoffsky. 29 October, 1908.
- [110] A. Schiirer to G. Sanders. 29 January, 1910.
- [110] A. von Hammerstein to R. Vollkoffsky. 27 January, 1909.
- [110] von Hammerstein, 27 January, 1909.
- [111] Winnipeg Free Press. 12 January, 1910.
- [112] Edmonton Bulletin. 19 December, 1911.

- [108] CAR, p. 583.
- [113] Edmonton Capital. 11 July, 1912. cited in Alberta Historical Review. 7(3):1959. p. 24.
- [37] Zaslow, p. 294.
- [38] Ellis, pp. 21-29.
- [114] Comfort, D. 1975. Pass the McMurray salt please!
D.J. Comfort. Fort McMurray. p. 6.
- [115] Zaslow, M. 1957. The development of the Mackenzie basin.
Ph.D. Thesis. University of Toronto. p. 38.
- [115] Zaslow, p. 358.
- [115] Zaslow, p. 60.
- [115] Zaslow, p. 60.
- [115] Zaslow, p. 354.
- [116] Provincial Archives of Alberta (PAA). 71. 356.
R.C. Fitzsimmons Papers. Box 19. Item 709.
n.d. Memoir. p. 1.
- [116] Fitzsimmons, p. 1.
- [117] Financial Times. 30 April, 1921. U.S. interests secure large oil properties.
- [116] Fitzsimmons, p. 2.
- [116] Fitzsimmons, p. 2.
- [116] Fitzsimmons, The history of development of the Alberta tar sands. p. 1.
- [43] Clark, p. 11.
- [116] Fitzsimmons, The history ..., p. 1.
- [116] Fitzsimmons, The history ..., pp. 1-2.
- [116] Fitzsimmons, The history ..., p. 2.
- [118] PAA. Premiers' Papers. 69-289. File 10.66. n.d. [1955].
Memorandum re Fitzsimmons' case.
- [116] Fitzsimmons, The history ..., p. 3.

- [116] Fitzsimmons, The history ..., p. 3.
- [119] Edmonton Journal. 14 March, 1944. p. 1.
- [23] Fitzgerald, p. 81.
- [23] Fitzgerald, p. 86.

REFERENCES CITED (Section 4.5)

- [120] UAA. RG 3. File 906-5a(A). A. Lehmann to W. Kerr.
30 January, 1919.
- [121] UAA. RG 4. File 71-164-1. Board of Governors' minutes.
4 April, 1914.
- [34] E11s, 1917 report.
- [5] Chalmers, p. 115.
- [34] E11s, 1917 report.
- [122] Scientific and Industrial Research Council of Alberta. 1922.
Second annual report. p. 56.
- [122] p. 56.
- [123] Clark, K.A. 1929. The separation of bitumen from Alberta
bituminous sands. Transactions of the Canadian
Institute of Mining and Metallurgy. 32. p. 349.
- [124] Clark, K.A., and S.M. Blair. 1927. The bituminous sands of
Alberta. Scientific and Industrial Research Council
of Alberta report 18, part 3. p. 31.
- [125] E11s, S.C. 1927. Use of Alberta bituminous sands for
surfacing of highways. Department of Mines, Mines
Branch bulletin 684. Ottawa.
- [125] E11s, p. 23.
- [28] E11s, Vol. 6. Time to call a halt, 1924.
- [29] E11s, S.C. 1925. Time to call a halt. Good roads.
25 March, 1925. pp. 12-15.
- [43] Clark, p. 4.
- [28] E11s, Vol. 6. n.d. Bituminous sands and our highway
programme.
- [27] A. Haddow memorandum. 23 November, 1925.

- [27] A. Haddow, 23 November, 1925.
- [27] A. Wilson to J. McLeish. 16 December, 1925.
- [27] A. Wilson, 16 December, 1925.
- [27] G. Mantle to C. Camsell. 3 February, 1926.
- [27] L. Bolton to J. McLeish. 16 September, 1926.
- [27] Anonymous. Annotation attached to L. Bolton, 16 September, 1926.
- [27] L. Bolton memorandum. 27 March, 1929.
- [27] C. Camsell to R. Wallace. 27 March, 1929.
- [27] R. Wallace to C. Camsell. 27 March, 1929.
- [27] R. Wallace to C. Camsell. 18 April, 1929.
- [27] A. Wilson to J. McLeish. 24 April, 1929.
- [126] Research Council of Alberta. 1931. Eleventh annual report, 1930. Edmonton. p. 61.
- [127] Freeman, J. 1966. Biggest sellout in history. Alberta New Democratic Party. Edmonton. p. 82.
- [118] PAA. Premiers' Papers. 69-289. File 10.66. Memorandum re International Bitumen Company. n.d. [1955]. p. 4.
- [43] Clark, p. 15.
- [128] Blair, S.M. 1950. The development of the Alberta bituminous sands. Board of Trustees, Oil Sands Project. Edmonton. p. 75.
- [129] Tanner, N. 1951. Government policy regarding oil sand leases and royalties. Proceedings, Athabasca oil sands conference, September, 1951. Board of Trustees, Oil Sands Project. Edmonton. pp. 169-182.
- [129] Tanner, pp. 169-182.
- [129] Tanner, p. 179.
- [129] Tanner, p. 178.
- [43] Clark, p. 20.

- [130] Alberta Statutes. 1955. Chapter 57. An act relating to statutes affecting bituminous sands operations; O.C. 1600/55. 14 December, 1955. Regulations governing disposition of bituminous sands rights the property of the Crown.
- [131] Canada Year Book. 1956. Dominion Bureau of Statistics. Ottawa. p. 506.
- [132] Canada Year Book. 1958. Dominion Bureau of Statistics. Ottawa. p. 510.
- [128] E. Manning to J. Macleod. 25 March, 1959.
- [23] Fitzgerald, p. 160.
- [43] Clark, p. 21.
- [127] Freeman, p. 73.
- [133] Government of Alberta. 1958. Royal commission on the development of northern Alberta. p. 16.

REFERENCES CITED (Section 4.6)

- [134] Careless, J.M.S. 1973. Aspects of urban life in the west, 1870-1914. Prairie perspectives 2. Holt, Rinehart, and Winston of Canada. Toronto. p. 38.
- [135] Rea, K.J. 1968. The political economy of the Canadian north. University of Toronto Press. Toronto. p. 343.
- [135] Rea, p. 345; pp. 55-58.
- [129] Tanner, p. 179.
- [134] Careless, p. 38.

7. LIST OF AOSERP RESEARCH REPORTS
1. AOSERP First Annual Report, 1975
 2. AF 4.1.1 Walleye and Goldeye Fisheries Investigations in the Peace-Athabasca Delta--1975
 3. HE 1.1.1 Structure of a Traditional Baseline Data System
 4. VE 2.2 A Preliminary Vegetation Survey of the Alberta Oil Sands Environmental Research Program Study Area
 5. HY 3.1 The Evaluation of Wastewaters from an Oil Sand Extraction Plant
 6. Housing for the North--The Stackwall System
 7. AF 3.1.1 A Synopsis of the Physical and Biological Limnology and Fisheries Programs within the Alberta Oil Sands Area
 8. AF 1.2.1 The Impact of Saline Waters upon Freshwater Biota (A Literature Review and Bibliography)
 9. ME 3.3 Preliminary Investigations into the Magnitude of Fog Occurrence and Associated Problems in the Oil Sands Area
 10. HE 2.1 Development of a Research Design Related to Archaeological Studies in the Athabasca Oil Sands Area
 11. AF 2.2.1 Life Cycles of Some Common Aquatic Insects of the Athabasca River, Alberta
 12. ME 1.7 Very High Resolution Meteorological Satellite Study of Oil Sands Weather: "A Feasibility Study"
 13. ME 2.3.1 Plume Dispersion Measurements from an Oil Sands Extraction Plant, March 1976
 - 14.
 15. ME 3.4 A Climatology of Low Level Air Trajectories in the Alberta Oil Sands Area
 16. ME 1.6 The Feasibility of a Weather Radar near Fort McMurray, Alberta
 17. AF 2.1.1 A Survey of Baseline Levels of Contaminants in Aquatic Biota of the AOSERP Study Area
 18. HY 1.1 Interim Compilation of Stream Gauging Data to December 1976 for the Alberta Oil Sands Environmental Research Program
 19. ME 4.1 Calculations of Annual Averaged Sulphur Dioxide Concentrations at Ground Level in the AOSERP Study Area
 20. HY 3.1.1 Characterization of Organic Constituents in Waters and Wastewaters of the Athabasca Oil Sands Mining Area
 21. AOSERP Second Annual Report, 1976-77
 22. Alberta Oil Sands Environmental Research Program Interim Report to 1978 covering the period April 1975 to November 1978
 23. AF 1.1.2 Acute Lethality of Mine Depressurization Water on Trout Perch and Rainbow Trout
 24. ME 1.5.2 Air System Winter Field Study in the AOSERP Study Area, February 1977.
 25. ME 3.5.1 Review of Pollutant Transformation Processes Relevant to the Alberta Oil Sands Area

26. AF 4.5.1 Interim Report on an Intensive Study of the Fish Fauna of the Muskeg River Watershed of Northeastern Alberta
27. ME 1.5.1 Meteorology and Air Quality Winter Field Study in the AOSERP Study Area, March 1976
28. VE 2.1 Interim Report on a Soils Inventory in the Athabasca Oil Sands Area
29. ME 2.2 An Inventory System for Atmospheric Emissions in the AOSERP Study Area
30. ME 2.1 Ambient Air Quality in the AOSERP Study Area, 1977
31. VE 2.3 Ecological Habitat Mapping of the AOSERP Study Area: Phase I
32. AOSERP Third Annual Report, 1977-78
33. TF 1.2 Relationships Between Habitats, Forages, and Carrying Capacity of Moose Range in northern Alberta. Part I: Moose Preferences for Habitat Strata and Forages.
34. HY 2.4 Heavy Metals in Bottom Sediments of the Mainstem Athabasca River System in the AOSERP Study Area
35. AF 4.9.1 The Effects of Sedimentation on the Aquatic Biota
36. AF 4.8.1 Fall Fisheries Investigations in the Athabasca and Clearwater Rivers Upstream of Fort McMurray: Volume I
37. HE 2.2.2 Community Studies: Fort McMurray, Anzac, Fort MacKay
38. VE 7.1.1 Techniques for the Control of Small Mammals: A Review
39. ME 1.0 The Climatology of the Alberta Oil Sands Environmental Research Program Study Area
40. WS 3.3 Mixing Characteristics of the Athabasca River below Fort McMurray - Winter Conditions
41. AF 3.5.1 Acute and Chronic Toxicity of Vanadium to Fish
42. TF 1.1.4 Analysis of Fur Production Records for Registered Traplines in the AOSERP Study Area, 1970-75
43. TF 6.1 A Socioeconomic Evaluation of the Recreational Fish and Wildlife Resources in Alberta, with Particular Reference to the AOSERP Study Area. Volume I: Summary and Conclusions
44. VE 3.1 Interim Report on Symptomology and Threshold Levels of Air Pollutant Injury to Vegetation, 1975 to 1978
45. VE 3.3 Interim Report on Physiology and Mechanisms of Air-Borne Pollutant Injury to Vegetation, 1975 to 1978
46. VE 3.4 Interim Report on Ecological Benchmarking and Biomonitoring for Detection of Air-Borne Pollutant Effects on Vegetation and Soils, 1975 to 1978.
47. TF 1.1.1 A Visibility Bias Model for Aerial Surveys for Moose on the AOSERP Study Area
48. HG 1.1 Interim Report on a Hydrogeological Investigation of the Muskeg River Basin, Alberta
49. WS 1.3.3 The Ecology of Macrobenthic Invertebrate Communities in Hartley Creek, Northeastern Alberta
50. ME 3.6 Literature Review on Pollution Deposition Processes
51. HY 1.3 Interim Compilation of 1976 Suspended Sediment Data in the AOSERP Study Area
52. ME 2.3.2 Plume Dispersion Measurements from an Oil Sands Extraction Plant, June 1977

53. HY 3.1.2 Baseline States of Organic Constituents in the Athabasca River System Upstream of Fort McMurray
54. WS 2.3 A Preliminary Study of Chemical and Microbial Characteristics of the Athabasca River in the Athabasca Oil Sands Area of Northeastern Alberta
55. HY 2.6 Microbial Populations in the Athabasca River
56. AF 3.2.1 The Acute Toxicity of Saline Groundwater and of Vanadium to Fish and Aquatic Invertebrates
57. LS 2.3.1 Ecological Habitat Mapping of the AOSERP Study Area (Supplement): Phase I
58. AF 2.0.2 Interim Report on Ecological Studies on the Lower Trophic Levels of Muskeg Rivers Within the Alberta Oil Sands Environmental Research Program Study Area
59. TF 3.1 Semi-Aquatic Mammals: Annotated Bibliography
60. WS 1.1.1 Synthesis of Surface Water Hydrology
61. AF 4.5.2 An Intensive Study of the Fish Fauna of the Steepbank River Watershed of Northeastern Alberta
62. TF 5.1 Amphibians and Reptiles in the AOSERP Study Area
63. ME 3.8.3 Analysis of AOSERP Plume Sigma Data
64. LS 21.6.1 A Review and Assessment of the Baseline Data Relevant to the Impacts of Oil Sands Development on Large Mammals in the AOSERP Study Area
65. LS 21.6.2 A Review and Assessment of the Baseline Data Relevant to the Impacts of Oil Sands Development on Black Bears in the AOSERP Study Area
66. AS 4.3.2 An Assessment of the Models LIRAQ and ADPIC for Application to the Athabasca Oil Sands Area
67. WS 1.3.2 Aquatic Biological Investigations of the Muskeg River Watershed
68. AS 1.5.3 Air System Summer Field Study in the AOSERP Study Area, June 1977
69. HS 40.1 Native Employment Patterns in Alberta's Athabasca Oil Sands Region
70. LS 28.1.2 An Interim Report on the Insectivorous Animals in the AOSERP Study Area
71. HY 2.2 Lake Acidification Potential in the Alberta Oil Sands Environmental Research Program Study Area
72. LS 7.1.2 The Ecology of Five Major Species of Small Mammals in the AOSERP Study Area: A Review
73. LS 23.2 Distribution, Abundance and Habitat Associations of Beavers, Muskrats, Mink and River Otters in the AOSERP Study Area, Northeastern Alberta
74. AS 4.5 Air Quality Modelling and User Needs
75. WS 1.3.4 Interim Report on a Comparative Study of Benthic Algal Primary Productivity in the AOSERP Study Area
76. AF 4.5.1 An Intensive Study of the Fish Fauna of the Muskeg River Watershed of Northeastern Alberta
77. HS 20.1 Overview of Local Economic Development in the Athabasca Oil Sands Region Since 1961.
78. LS 22.1.1 Habitat Relationships and Management of Terrestrial Birds in Northeastern Alberta

This material is provided under educational reproduction permissions included in Alberta Environment's Copyright and Disclosure Statement, see terms at <http://www.environment.alberta.ca/copyright.html>. This Statement requires the following identification:

"The source of the materials is Alberta Environment <http://www.environment.gov.ab.ca/>. The use of these materials by the end user is done without any affiliation with or endorsement by the Government of Alberta. Reliance upon the end user's use of these materials is at the risk of the end user.