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The Oldman River Basin

Everyone has a river in their life.

– Kevin Van Tighem, *Coming West: A Natural History of Home*¹

The Oldman, the Crowsnest, and the Castle Rivers rise in the front ranges of the Rocky Mountains in southern Alberta. The three rivers flow east from the mountains and through the foothills, converging about ten kilometres northwest of the town of Pincher Creek. From there, the Oldman continues its eastward journey through the Peigan Indian Reserve, past the city of Lethbridge, and across the prairie to a point south of the town of Brooks that the early European settlers called the Grand Forks. There, its flow combines with that of the Bow River to become the South Saskatchewan River, which meanders past Medicine Hat and into Saskatchewan, where it joins with the North Saskatchewan River to flow into Lake Winnipeg, the Nelson River, and finally into Hudson Bay (see Map 2). The fact that the Oldman is a part of the Saskatchewan-Nelson River system adds another dimension to consideration of the Oldman Dam.

The mean annual volume of flow in the Oldman River is about three and one-half million cubic decametres.² By comparison with rivers in other parts of the country, that is not a lot of water. It is 10 percent of the mean annual flow of the Ottawa River in Ontario, and 5 percent of the mean annual flow of the Fraser in British Columbia. Variable is the word that Alberta water managers choose to characterize the flow of rivers like the Oldman that rise in the mountains and flow eastward across the dry southern plains. The annual cycle of flow in these rivers begins in early spring, when the snow begins to melt on the plains and foothills. By mid-June, when the weather warms enough to melt the snowfall that accumulated in the mountains over the preceding winter, the river flows begin to rise. Streamflows peak in early July, then recede steadily into late summer as the mountain snowpack disappears, and are sustained through the fall by run-off from glacier melt and whatever rain happens to fall. Winter sets in around mid-November, the ground freezes, the rains turn to snow, and river flows drop to their yearly minimums, where they remain until spring



Map 2 The Saskatchewan-Nelson River system

returns. About 60 percent of their annual flow passes down these rivers in the months of June and July.

The flow in these rivers can also vary dramatically from year to year. Depending on the amount of snowfall in the mountains, streamflow can fall from near-record highs in one year to near-record lows the next. On occasion, streamflows remain well below average for periods of several years. When this happens, for example in the 1930s and again in the 1980s, summer rainfall is also well below the norm. Because of this variability, dams have been the favourite tool of the region's water managers. Water stored during the high flow period in early summer is available for use later in the year when the rivers begin to dry up or, in theory, during the next year should it be dry. In practice, so much of the water in most river systems is allocated for irrigation that there is rarely enough remaining in storage to meet demands in the second year of a dry cycle. That is why irrigation farmers are hit hard by water shortages during periods of drought and invariably raise the cry for more dams to capture and store the streamflow that is 'wasted' by being allowed to flow on through the system to Hudson Bay.

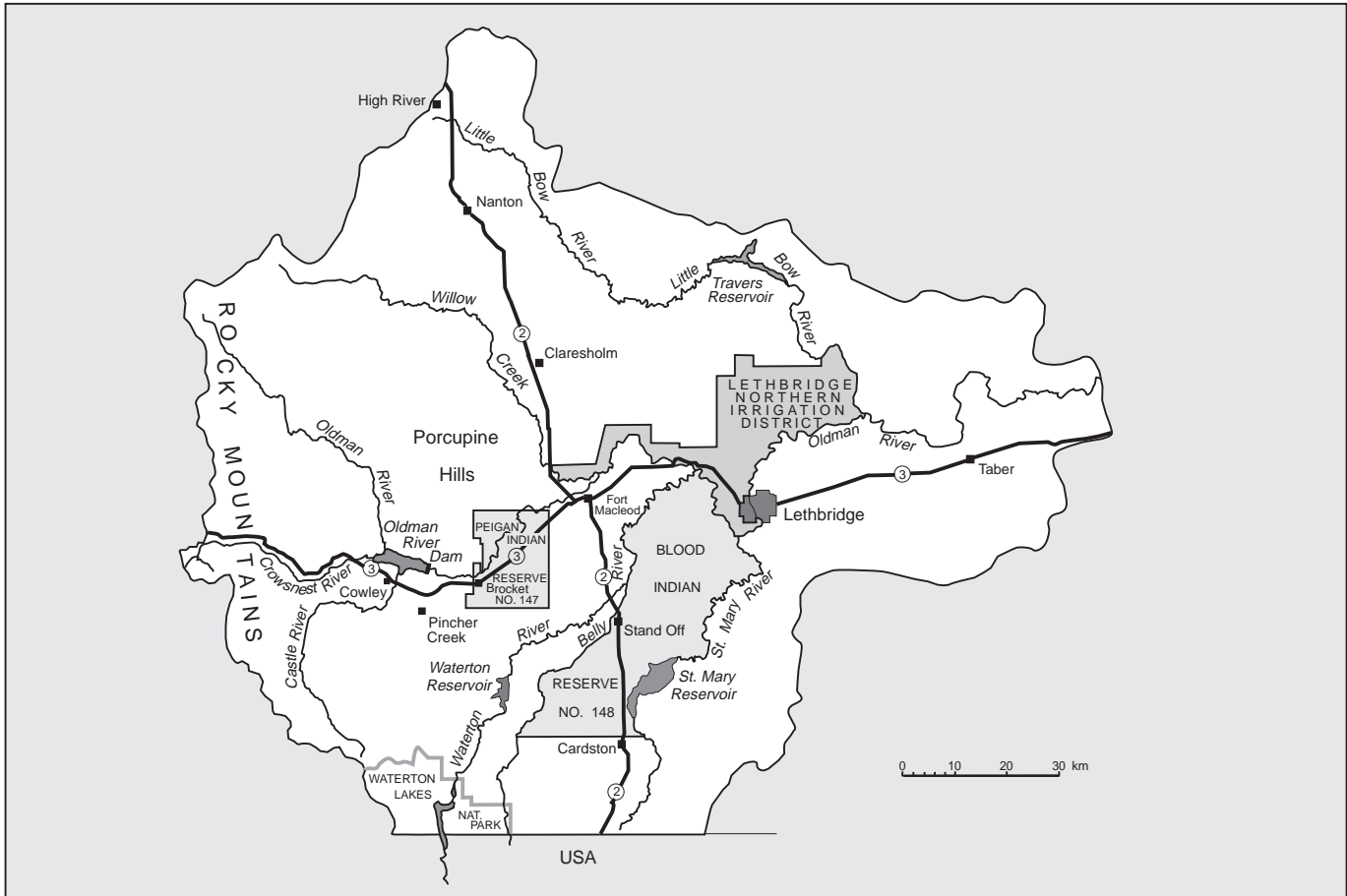
In the expanding economic conditions that followed the Second World War, irrigation and hydroelectric development proposals in the three prairie provinces posed the potential for conflict over the use and management of the river system. In 1948, the three provinces and the federal government established a Prairie Provinces Water Board (PPWB) to recommend the best use of the waters of the Saskatchewan River system, and how it should be allocated amongst the provinces. This arrangement, which began in a spirit of cooperation, broke down when provincial interests overcame the concept of an integrated plan for the development and use of the rivers. Because the PPWB was unable to agree on the relative merits of proposals put forward by the provinces, it was decided to adopt a formula for sharing the flow. The sharing arrangement was formalized in 1969, when the four governments reconstituted the PPWB, and ratified the Master Agreement on Apportionment.³

Although somewhat more complex in its details, the basic proviso of the apportionment agreement is that Alberta and Saskatchewan are each entitled to consume 50 percent of the flow of the Saskatchewan River system that flows into or originates in that province. The residual flow must pass to the downstream province. The agreement does not constrain the use of water in Manitoba. The agreement affords Alberta the option of considering the Red Deer River to be tributary to the South Saskatchewan in Alberta for the purpose of apportionment.⁴ Alberta has exercised this option continuously since the agreement came into effect and, in 1976, the province adopted the policy of managing the three tributaries that contribute to the flow of the South Saskatchewan – the Red Deer, Bow, and

Oldman – ‘in concert’ to meet its flow commitments to Saskatchewan.⁵ Because of these arrangements, the Oldman River Dam Project will have implications not only in the Oldman River system but also in the Bow and Red Deer systems. In particular, taking more water from the Oldman system to support the irrigation expansion that was the rationale for the project will limit future withdrawals from the Bow and Red Deer systems and threaten instream uses of water in those rivers.

The South Saskatchewan system in Alberta is intensively used and highly regulated. Each of the headwater tributary systems features one or more large onstream dams or diversion works, the operation of which affects the pattern of downstream flow in a major way. As of 1999, there are twenty of these with more in the offing. These dams and diversions are, as a general rule, operated to satisfy the water requirements of their owners or of the predominant water use that the dam or diversion was built to serve. For example, TransAlta Utilities’ dams on the Bow River system are operated almost exclusively for the generation of hydroelectricity. Virtually all of the remaining structures, most of which are owned and operated by the provincial government, are operated primarily to support irrigation. Though the government claims that the provincially owned structures are operated for ‘multi-purpose use,’ when the weather is hot and dry and natural streamflow is low, they are only rarely operated for purposes other than to supply water for irrigation. Under Alberta’s water law, instream uses are of the lowest priority, and structures are operated to provide flow in excess of what these uses require for bare survival only at times when natural streamflow is abundant. During low flow periods, extreme public pressure sometimes forces managers to operate structures on some rivers to maintain flow at some minimum level at which the destruction of fish and other aquatic organisms is ‘minimized.’

The Oldman River Basin, the land area drained by the Oldman River and its tributaries, encompasses an area of about 26,000 square kilometres (see Map 3). The upper one-third of the basin lies in the mountains and foothills, where the river valley is deeply incised. The well-vegetated banks and bottomlands provide habitat for large and diverse populations of wildlife. Black bear, mule deer, and white-tail deer, moose, elk, fox, coyote, and various smaller mammals range the valley and the surrounding uplands, while beaver and muskrat make their homes in the river and its banks. The cold water in the streams in the upper reaches of the watershed are home to mountain whitefish and various species of trout, of which the rainbow, an introduced species, provides the greatest attraction for anglers, who consider these rivers among the best trout streams on the continent. The bull trout, a species increasingly rare in southern Alberta streams, is found in limited numbers in the Oldman. The river also has one threatened fish species, the shorthead sculpin.



Map 3 The Oldman River Basin

Downstream from the dam, towards Lethbridge, the river enters the plains region, which comprises the lower two-thirds of the basin. The river water is warmer in the downstream reaches, and the coldwater fish species give way to pike and walleye, which are less appealing to dedicated sports fishers. The river in this region continues to flow in a deep valley, but the vegetation becomes sparse. The most common trees in the valley bottom are varieties of poplar, including the narrow-leaf and plains cottonwoods, the balsam poplar, and hybrids of these three species. These are the dominant species in the riparian forest ecosystems of the river valleys. Much has been made by environmentalists of the uniqueness and value of the cottonwoods and of the impact that regulation of the flow of the Oldman would have on their reproductive capability. The uplands in the lower watershed, before their occupation by farmers and ranchers, were predominantly grasslands, the range of vast herds of plains bison. Most of this land is now cultivated, and that which is not is used to graze the herds of beef cattle that are the staple of southern Alberta's ranching industry.

Precipitation in the mountains and foothills varies between 500 and 600 millimetres per year, much of it coming in the form of snowfall during the winter months. The Oldman River Dam is located towards the eastern end of this region. Precipitation in the downstream region decreases from about 450 millimetres around Lethbridge to less than 300 millimetres where the Oldman meets the Bow. This region receives an abundance of heat producing sunshine, which translates into a three- to four-month growing season. However, the combination of meagre summer rainfall, daytime temperatures in the 30-degree Celsius range, and almost constant dry westerly winds means that there is rarely enough moisture in the soil to allow farmers to take advantage of the otherwise excellent growing conditions. This, of course, is why irrigation was first introduced into the region, and why it remains so popular.

The first human occupants of what is now southern Alberta were the ancestors of the various tribes of the Blackfoot Indian Nation. According to archaeologists, these people emigrated from the Asian continent towards the end of the last ice age, about 12,000 years ago, by way of a land bridge over the Bering Sea and an ice-free corridor along the eastern slopes of the Rocky Mountains.⁶ According to Blackfoot origin myths, the first people to make their homes in southern Alberta were put there by Napi, the Old Man, who made the world and everything in it. When Napi had finished his work of creation and taught the people how to hunt and live, he withdrew to the high mountains in the headwaters of the river that now bears his name – the Oldman. Whatever their origin, the Indian people occupied southern Alberta for centuries prior to the arrival of white settlers. The Oldman and its tributaries were the hunting grounds

of the Peigan, the largest of the ancient Blackfoot tribes, who 'followed the buffalo and lived by the hunt.'⁷ The first Europeans wandered into Blackfoot territory in the mid-1700s. Historian Hugh Dempsey reports that Anthony Hendy first met with tribes of the Blackfoot Nation in 1754.⁸ Since the Peigan did not do much trapping, there was little early contact with the fur traders; the nearest fur trading posts were at Rocky Mountain House, on the North Saskatchewan, and on the Missouri River system in Montana.

Until the white settlers arrived in force in the late nineteenth century, the Peigan led a nomadic existence, dictated by their reliance on the buffalo for most of the necessities of life. A fur trader in the early 1800s reported that the Peigan controlled all of the hunting grounds within 160 kilometres of the mountains.⁹ The seasonal pattern of their life saw them following the migration of the buffalo onto the plains in the spring, breaking up into small bands to follow and raid the herds on foot throughout the summer. In the fall, the small bands gathered in the area of the Porcupine Hills where they undertook to kill larger numbers of buffalo to sustain them through the winter. Before they acquired horses, buffalo jumps were favoured for the larger kills. With the arrival of snow and colder weather, the Peigan retreated to the valley of the Oldman, where they remained in sheltered campsites until spring and the beginning of a new seasonal round. The valley in the vicinity where Crow Lodge Creek flows into the Oldman River was one of the Peigan's most favoured overwintering areas. And it was there that they were destined to live on a permanent basis after the arrival of the white man and the disappearance of the buffalo.

The first non-Indians to take up residence in the Oldman basin were American whiskey traders from the Montana territory. These early-day entrepreneurs built a number of 'whiskey forts' in the area around present-day Lethbridge in the early 1870s, and entered into trade with the Peigan and Blood tribes. In 1874, the Dominion government raised the North-West Mounted Police (NWMP) and sent a force west to put an end to the whiskey trade and bring order to the Territories. The Mounties established a divisional headquarters at Fort Macleod, outposts along major rivers, and patrols throughout the region. The whiskey forts were soon transformed into legitimate trading posts. The first white settlers arrived in the Mounties wake, and by 1876 there were a number of farms and ranches in the area around Fort Macleod.

In 1877, the chiefs of the Blackfoot tribes in Canada, including the Peigan, and representatives of the government of Canada signed Treaty 7. Under the terms of this treaty, the Blackfoot surrendered all of their land, including the entire Oldman River watershed, to the Crown. In return, the government agreed to allow the Blackfoot to hunt throughout the area and to reserve a block of land for occupation by each tribe. The Peigan

were assigned Reserve No. 147, a 181.4-square-mile (470-square-kilometre) tract of land straddling the Oldman River west of Fort Macleod.¹⁰ For several years after 1877, the Peigan continued to follow the buffalo herds, hunting for food and for hides to trade with the white man. But by the early 1880s the buffalo had disappeared from the Canadian plains, and the Peigan, their numbers reduced by starvation and disease, were forced to abandon their traditional way of life. They withdrew to their reserve, where they were encouraged by Indian Affairs and the NWMP to take up farming. For the next twenty years, the Peigan struggled to grow potatoes and grains in a climate that was not suitable for either. They also tried raising cattle, at which they were marginally more successful, but the Peigan never became farmers on any scale. Once settled on the reserve, and in constant contact with white society, the Peigan population, which numbered about 1,000 in 1880, was steadily reduced by tuberculosis and other diseases. By the time the 1918 influenza epidemic was over, the population had dwindled to only 250 persons.¹¹ The reserve population recovered in subsequent years, and now numbers about 2,000.

Neither the Palliser nor the Dawson expeditions, efforts by the British and Canadian governments in the 1850s to obtain more useful information about the vast interior of western Canada, held out much prospect for agricultural settlement in the southern plains. Palliser's scientific expert, Dr. James Hector, described this arid country as 'deficient in wood, water and grass'; Palliser himself dismissed it as a 'desert.' Henry Yule Hind, a geologist in Dawson's camp, called it 'permanently sterile and unfit for the abode of civilized man.' Despite these assessments, agriculture – farming, ranching, and the processing and service industries that go along with them – is now the basis of the economy of this sparsely settled region. Fewer than 150,000 people, most of them on farms and in small towns, lived in the entire basin in the mid-1980s. Lethbridge, with fewer than 60,000 residents, was the largest urban centre. At the heart of this agricultural economy are the nine irrigation districts that draw water from the Oldman River system. Between them, they irrigate almost 285,000 hectares of land. The five largest districts – the Lethbridge Northern (LNID), St. Mary River (SMRID), Magrath (MID), Taber (TID), and Raymond (RID) – together account for over 90 percent of this total. The LNID draws its water supply from the Oldman River, through headworks located on the Peigan Indian Reserve. The other four large districts are supplied from the St. Mary headworks system, which draws water from rivers that are tributary to the Oldman – the St. Mary, Belly, and Waterton Rivers.

In 1893, a British-based coal mining company joined forces with a group of Mormon settlers to form the first of a series of companies that financed and constructed works to divert water from the St. Mary River for irrigation

with a view to attracting more settlers to the region. The seeds of this development were sown in the 1880s when the Northwestern Coal and Navigation Company obtained substantial land grants from the Dominion government to construct railway lines from Lethbridge to Medicine Hat and south into Montana. The Mormon settlers, recent immigrants from Utah where irrigation was well established, purchased portions of this land and brought in more settlers. In 1912, the Canadian Pacific Railway (CPR), owner and developer of two large tracts of irrigated land on its main line between Medicine Hat and Calgary, purchased control of the company (by then The Alberta Railway and Irrigation Company).

In the early years of this century, the federal government worked very closely with the CPR to colonize western Canada.¹² This cooperation was an integral part of the national policy introduced by Sir John A. Macdonald's Conservatives in the 1870s and maintained in different forms by successive federal governments. The objective of the national policy was to solidify the Canadian nation by developing a national economy, in part to counter US ambitions to exercise its 'manifest destiny' to control the entire North American continent. The establishment of a system of protective tariffs, the construction of a transcontinental railway, and the agricultural settlement of the western plains served both the national economy and the CPR. Agricultural development of the west provided produce for shipment to the processing and manufacturing centres in eastern Canada and a market for goods of eastern manufacture. The CPR owned large tracts of land in the west and shipped goods in both directions.

The Department of the Interior was the major federal government agency involved in irrigation development. By the late 1800s, officials of the department were doing whatever was in their power to ease the way for irrigation. They were led by William Pearce, the superintendent of mines for the North-West Territories, located in Calgary, and Colonel J.S. Dennis, the chief inspector of surveys in Ottawa. The department drafted the North-West Irrigation Act, which became law in July 1894.¹³ The act, which was the model for Alberta's water management legislation, gave ownership and all rights to surface water in the Territories, and the authority to allocate the use of that water to the federal Crown. The act also authorized federal engineers to design irrigation works and survey potential dam sites to store water for irrigation. Departmental field staff actively promoted irrigation in what is now southern Alberta and Saskatchewan. The Dominion Land Act was amended in 1898 to make land that was to be developed for irrigation available for one-fifth the going market price. Patterned after similar legislation in the United States, this measure, which became known as the 'irrigation system,' sparked much apparent interest in irrigation, but was abused by speculators more interested in acquiring the land than in growing anything on it.

The various interests promoting irrigation development in the west joined voices in the Western Canada Irrigation Congress – the earliest manifestation of the Iron Triangle discussed in Chapter 15. This happy band of politicians, railway officials, land developers, and government engineers reached its prime in the years immediately before and after the First World War. Its executive was composed of cabinet-rank politicians and senior officials of the governments of Canada and the four western provinces and representatives of the railway and land development companies. The interlocking nature of this relationship was reinforced when Pearce and Dennis moved from their government posts to senior positions with the CPR.

Despite some agitation for more government involvement in funding irrigation development, it was widely accepted that irrigation would pay its own way. In the early years, both the federal and provincial governments stood firm in their determination to avoid any direct financial involvement. Though they stopped short of direct funding, their generous assistance in kind laid the foundation for the public subsidization of irrigation that has continued to the present day. The depression of the 1930s all but bankrupted the provincial governments, leaving their fledgling water management agencies with no money and no staff to put to work at water development. The CPR, with the bulk of its lands taken up by settlers and its revenues reduced by the depression, lost interest in its irrigation projects. Unable or unwilling to spend the money needed to maintain its water distribution works, the CPR scrambled to get out of the irrigation business, selling its aging and disintegrating works to the farmers on its projects, or to the Alberta government, at bargain-basement prices.

In the wake of the Second World War, a new force arrived on the irrigation scene. In 1935, the federal government passed the Prairie Farm Rehabilitation Act, establishing an advisory committee to advise ‘as to the best methods to be adopted to secure the rehabilitation of the drought and soil drifting areas in the Provinces of Manitoba, Saskatchewan and Alberta.’¹⁴ By the 1950s, the advisory committee had blossomed into a full-blown bureaucracy, the Prairie Farm Rehabilitation Administration (PFRA), with the authority to ‘develop and promote’ water supply and land utilization systems – a Canadian version of the US Bureau of Reclamation.¹⁵ For the first ten years of its existence, PFRA’s scientists and engineers were fully absorbed in the task of preventing western Canada’s topsoil from migrating to Ontario. Its water development activities were limited to the construction of farm ponds and dugouts to catch and store water for stock watering and the domestic needs of farm families. During the Second World War, PFRA’s activities, like those of most government agencies not providing services or material for the war, were curtailed because of shortages of money and staff. But PFRA was not without its visionaries, and those left

behind spent their war years designing 'shelf projects' that would come to life as public works projects in the post-war period.

Canada emerged from six years of war with an army of returning veterans and a backlog of displaced farmers driven from marginal prairie lands by the drought of the 1930s. The federal government selected irrigation development as one way to get these men back to work. PFRA was ready and willing to lead the way. The St. Mary Project, begun in the late 1940s, the Bow River Project, an irrigation resettlement scheme launched in the 1950s, and the Gardiner Dam, started in 1958 and completed in the early 1960s, were the major water development schemes built by PFRA. As work on the Gardiner Dam began to wind down in the mid-1960s, Canadians and their governments experienced the awakening of the environmental movement. Coincident with this phenomenon, the federal government began to realize, as had the CPR thirty years earlier, that irrigation in western Canada was a money-losing proposition. The federal emphasis in regional development switched from agriculture, particularly from irrigation and big water development to the industrial and service sectors, and PFRA faded from the water scene. Its place as the lead federal water agency was taken by the Water Sector of the Department of Energy, Mines and Resources, the agency that was later to be the nucleus of Environment Canada. Meanwhile, the Alberta economy, sparked by the discovery and development of several major oilfields, began to grow and the Department of Agriculture continued to prop up a number of irrigation districts that had fallen on bad times during the depression.

As the federal government manoeuvred to get out of the irrigation business in the 1970s, the Alberta government, determined to exercise greater control over Alberta's destiny, set out to diversify the provincial economy. Fortified by rising oil revenues, the government was in an expansionary mood, ready and willing to invest in infrastructure that would foster diversification. Fortunately for irrigation interests in southern Alberta, the government chose to focus on established sectors, where it believed Alberta had an economic advantage. One such sector was agriculture, in particular irrigation, which produced feed for livestock and so-called specialty crops, like corn, potatoes, and carrots, both of which could support an expanded food-processing industry. The vacuum left by the reduced federal presence in water development was gradually filled by the provincial agency, the Agriculture Department's Water Resources Division. As was to be the case with the federal Water Sector, the Water Resources Division became the nucleus of Alberta's new environment department. Throughout the 1970s, the agency expanded rapidly to deliver the water management programs required to support the irrigation expansion to which the government was committed.

In 1973, Canada agreed to transfer ownership and control of the extensive

network of federal irrigation works in Alberta to the provincial government.¹⁶ In 1975, Alberta announced its Water Management for Irrigation Use policy, which expanded its commitment to irrigation development and consolidated its control over the system of dams, diversions, and canals that supply water to the irrigation districts.¹⁷ The policy included commitments to reserve more water for irrigation; take over, rebuild, and expand all district-owned headworks; and increase its investment in the rehabilitation of district-owned water distribution systems. A key element of the policy was a commitment to provide additional regulation of the Oldman River – a commitment that evolved into the Oldman River Dam.

A scheme to divert water from the Oldman River to irrigate land north of Fort Macleod was a ‘live issue’ as early as 1910.¹⁸ In 1913, the federal Department of the Interior completed surveys and a feasibility study for the Lethbridge Northern Irrigation Project. The point selected for diversion from the Oldman was on the Peigan Indian Reserve. In 1916, with the Lethbridge Northern Project still no more than a concept, engineers in the department’s irrigation branch were considering the possibility of a dam on the Castle River to support ‘further extension’ of the project.¹⁹ In 1919, farmers in the area north of Lethbridge established the Lethbridge Northern Irrigation District (LNID) under the terms of Alberta’s new Irrigation Districts Act, and the Department of the Interior approved an allocation of water for the project from the Oldman River. In 1922, the district purchased a 205-acre (83-hectare) right-of-way on the Peigan Indian Reserve from the federal government and began construction of works to divert water from the Oldman to the LNID. The Peigan have since maintained that this purchase transpired without their consent and in contravention of the provisions of the Indian Act. Construction of the works – a diversion weir, a canal, and a flume across the Oldman River – was completed in May 1923. This canal, which was routed through a Peigan burial ground, was destroyed by flood waters later in the same year. The LNID borrowed from the Alberta government to rebuild the works, and the district finally began operations in 1924.

This diversion project marked the beginnings of both the ongoing dispute between the Peigan and the LNID and the never-ending flow of cash out of Edmonton to subsidize irrigation in the Oldman River Basin. Farmers in the district were unable or unwilling to pay the high rate levied by the district to repay its government loan, and the district was soon in serious financial difficulty. In 1926, the Alberta government absorbed the debt, and placed the district under the control of a provincially appointed trustee. This arrangement continued until 1968, when the district reverted to the control of a board of directors elected by the ratepayers.

Irrigation of district lands, which peaked at 32,000 hectares in 1950, had

fallen to less than 20,000 hectares by the late 1960s. Encouraged by a provincial program, introduced in 1970, to share the costs of rehabilitating capital works in the districts, the LNID embarked on a period of expansion, and, by 1975, it was committed to supply water to 44,000 hectares. At this level of development, however, the district was unable to supply the water demands of its irrigators in dry years and was forced to introduce rationing. Recurring shortages led the district board and the water users to put pressure on the provincial government to make more water available to the district.