Natural and unnatural complexities: flood control along Manitoba's Assiniboine River

Shannon Stunden Bower

Department of History and Classics, University of Alberta, 2-28 Henry Marshall Tory Building, University of Alberta, Edmonton, AB T6G 2H4, Canada

Abstract

Flooding and flood control long have been topics of concern for geographers and historians of North America, from Gilbert White's foundational work to attempts to understand the recent disaster in New Orleans. This paper considers the problem of flood control along the Assiniboine River in the province of Manitoba, Canada. The first section addresses the local landscape and the larger context, explaining changes in the relevant human and physical geography. The second section examines efforts to mitigate flooding, focusing on how the risk of inundation was shifted in location (not eliminated altogether) and compounded through time (not progressively resolved). The third focuses on a further source of complexity: the contested character of government jurisdiction. This final section also addresses major mid twentieth century changes in mitigation efforts: in the light of flooding on an unprecedented scale, governments became more open to compromise and more willing to undertake substantial projects. Gilbert White asserted that while floods are natural occurrences, flood damages are the responsibility of humanity. The question of responsibility might seem relatively clear in relation to flood mitigation, given that dykes are human constructions. The history of flood mitigation along the Assiniboine would suggest, however, that assigning responsibility for the failures and successes of flood mitigation is not so straightforward.

© 2009 Elsevier Ltd. All rights reserved.

Keywords: Floods; Manitoba; Natural disaster; Flood control; Assiniboine; Rivers

Introduction

On 14 May 1923, the Winnipeg Free Press printed a long commentary about flooding along the Assiniboine River on the Canadian Prairies. The author, identified only as J. M. L. (engineer), explained that the water situation was particularly troublesome in this region, arguing that it is ‘doubtful if anywhere on the continent a more complicated series of factors in flood conditions are met with than those whose effects are observed in Manitoba’. In the southern portion of the province, vast river basins encompassed areas that varied greatly in topography and climate, and human alterations for purposes of agriculture, settlement and transportation had only compounded matters. The basic question of which government should be responsible for managing the river was intensely debated. As the writer put it: 'The natural complexities have been made more intricate by unnatural ones…'. A copy of J. M. L.'s published piece is contained in the files of the Canadian government's Department of Public Works, surrounded by documents from the mid 1940s. Adjoining materials make clear that it is included not as a window into how an earlier generation perceived the flood situation, but as a useful analysis that spoke as much to the contemporary situation as to the historical context. Whether natural or unnatural, the complexities certainly had not disappeared.

In the mid twentieth century, geographer Gilbert White set the tone for much academic scholarship on natural hazards with the observation that while flooding is beyond human control (an Act of God, in his phrasing), flood damages are largely the work of humanity. By arguing that all flood disasters had both natural and cultural components, White broadened J. M. L.’s earlier assessment of the Assiniboine River situation. Following from White’s work, early hazards geographers focused on analyzing the social, political and economic components of various disasters. Typically, these scholars concentrated on a single hazardous episode or on comparisons between hazardous episodes in the same or different locations, rather than on extensive study of the long-term development of particular hazard-prone areas. More recently, historical geographers and environmental historians have filled in the
The Assiniboine River

The Province of Manitoba, Canada, is widely known to be afflicted with flooding. In 1950, much of the provincial south as well as a significant portion of the City of Winnipeg was under water. Images of the submerged province were circulated nationally and internationally, and significant financial aid was received from Britain and the United States. In the mid-1960s, the construction of the Winnipeg Floodway, an enormous channel meant to divert excess flows around the city, was a subject of significant public interest as one of the largest earth-moving projects in human history to that time. It was the Red River that was at the centre of these events. Known as the Red River of the North in the United States, this large, winding waterway runs northward along the Minnesota–North Dakota border, flows through southern Manitoba and the City of Winnipeg, and eventually dumps into Lake Winnipeg. Those who live along the Red endured another catastrophic flood in 1997, which resulted in the utter destruction of parts of the twin cities of Grand Forks and East Grand Forks, North Dakota. Some have hypothesized that it was only the Floodway that preserved Winnipeg from similar devastation. Because of these successive floods, many people, even those living far from the river’s banks, regard the Red with a mixture of caution and awe.

But southern Manitoba boasts another substantial waterway, and it too has a history of flooding. The Assiniboine has been called ‘the quintessential large prairie river’ for how it runs from the western Escarpment to the first prairie level or Red River Valley. The Assiniboine eventually dumps into the Red River in the heart of Winnipeg, Manitoba’s provincial capital and largest city (see Fig. 1).


4 O’Neill, Rivers by Design (note 5).

This paper concentrates on the history of flood prevention from near Portage la Prairie to near Winnipeg (see Fig. 2). In this area the landscape reflects the influence of the glacial Lake Agassiz, which dominated the continental interior for a substantial period. In the fine clay sediment of the former lakebed, the Assiniboine River shifted its channel substantially on a number of occasions before establishing its present course to the Red River. Today, the river meanders a great deal, winding north and south as it makes its way east. For instance, the distance from Portage La Prairie to Winnipeg along the general trend of the Assiniboine Valley is about 96 km (56 miles), but along the river channel it is 153 km (95 miles).

Precipitation across the Assiniboine River basin is a major factor in flooding. The average yearly precipitation in the basin is about 38 cm (15 inches). But to speak of a normal rate of precipitation is somewhat misleading, as it can serve to mask the variability that characterized this precipitation regime. The Dominion Water and Power Bureau gauge station at Brandon recorded very different flow rates at different times, due in part to changes in precipitation patterns. For instance, as reported in 1940, the maximum measured discharge was 651 cubic metres (23,000 cubic feet) per second, recorded 7 May 1923; the minimum was 0.65 cubic metres (24 cubic feet) per second, recorded 5 December 1937. As a fairly long river that winds from the middle of Saskatchewan to the middle of Manitoba, a distance of some 1070 km (665 miles), the Assiniboine serves to concentrate variability, with flow rates affected by extreme conditions anywhere along its course.

Years of heavy precipitation are especially portentous when they come in bunches. Of all the precipitation that falls on the Assiniboine River basin, the average runoff is approximately 1 cm (0.4 inches). The rest is stored in the soil, captured in small creeks or depressions, or absorbed by plants before eventually returning to the atmosphere through evaporation or transpiration. If preceding wet years have already exhausted the available storage, the runoff rate might be substantially increased. More water makes it way to the Assiniboine River, and a flood may well result. Runoff rates are also affected by climatic conditions. Winters are long and cold in Manitoba. The ground often remains frozen after the snow has melted, which can dramatically increase runoff as it limits soil absorption. It has been estimated that a frozen, saturated area of the Assiniboine basin might produce as much as 19 cm (7.5 inches) of runoff, a significant increase over the average of 1 cm (0.4 inches).

Manitoba’s freeze-thaw cycle is also connected to flooding in other ways. Both the Red and the Assiniboine freeze to significant depth in the winter, and the spring melt can involve substantial ice flow as the rivers break up and begin moving. The twists and turns in the channel of the Assiniboine slow down the river, restricting its capacity to move melt water. The river’s meandering channel is also conducive to the formation of ice jams, where the ice piles up on itself, clogging the channel and creating overflows. Finally, flooding is especially problematic in a northerly climate because of the short growing season. Coarse grains must be sown by about the...
third week in June. Any delay in getting crops in the ground, whether due to flooding or other factors, might mean insufficient time for crops to mature. The winters that were themselves so difficult for settlers to endure also contributed to flooding.

The Province of Manitoba was created in 1870, and that decade saw rapid settlement within what were then its borders. Unfortunately for settlers crossing the prairie by cart or camping out while erecting a dwelling, precipitation rates were elevated through this period. Indeed, waterlogging in the lowlands around the Red River was one factor that prompted newcomers to move further west. The Assiniboine played a valuable role in transporting settlers and supplies. Steamships plied its waters from 1876, with vessels such as the Prince Rupert and the Marquette traveling regularly west from Winnipeg.

1882 was Manitoba’s first taste of the power of the Assiniboine River. But it was not enough to discourage newcomers from establishing farms along its banks. Settlement resumed after the water went down, though at a slower pace in keeping with shifts in the provincial land market. And it was not enough to cause residents or governments to think twice about tinkering with the river. The first major alterations to the river were cutoffs, substantial ditches excavated across oxbows. Cutoffs served to reduce the length and meander of the river, meaning that water moved more swiftly and smoothly. They also eliminated sharp bends that were conducive to ice jams, which was important in Manitoba’s northern climate. A cutoff begun in 1881 created an area known at that time as Ritchie’s island; another in 1882 resulted in Hatch’s island. Together, they amounted to an expenditure of about $10,300. Certainly to those residents who sought the cutoffs, and probably also to those government officials who approved them, the situation seemed relatively simple. Make a few minor changes to the river channel, reap the benefits of diminished flooding. And for the next few decades, in light of how reduced rates of precipitation meant a lessened risk of flooding, there was no real reason to doubt this view.

Both the work along the Assiniboine and the optimism that accompanied it were typical of activity along the rivers of North America during this period, as governments and experts worked toward the rationalization of the continent’s rivers. This was one of the hall-marks of what historians of the United States have termed the Progressive Era. In this early period, work was often focused on improving navigation, such as the construction of wing-dams along the Mississippi River. While there were some early twentieth century efforts to facilitate passage through a particularly troublesome area known as St. James rapids, efficiency in transportation was not an issue along the Assiniboine. The transcontinental railway crossed Manitoba in 1881–82, displacing the river from its role as a transportation corridor. But even if the railway had not offered a more convenient alternative, shipping along the Assiniboine would have likely declined. In this dry period, there was not enough water in the river to float ships of any real size. The sort of improvements necessary to make possible continued navigation would have been very costly. Even amid the era’s over-reaching ambition and prevailing optimism, it was clear that the Assiniboine River would no longer be used as a transportation corridor.

---

15 Conservation and Flood Control Assiniboine River (note 9), 30.
18 Morton, Manitoba (note 16), 180.
19 Archives of Manitoba [hereafter AM], Executive Council, Orders-in-Council, GR 1530, OC # 697, Provincial Treasurer John Norquay to Executive Council, 4 May 1882.
20 J.A. Aulison, The River We Have wrought: A History of the Upper Mississippi, Minneapolis, 130–131.
But if the days of steamships did not last, neither did the dry decades. The rain eventually returned, and the Assiniboine inundated substantial areas in 1902 and 1904. An additional cutoff near Portage La Prairie followed. And in 1913, the first government-administered dyking effort began. A dyke is a substantial mound, often primarily constructed of the earthen materials available in the immediate vicinity but also sometimes involving the use of wood braces or protective rock. Dykes are intended to confine excess flows, providing protection to fields and structures that otherwise would have been subject to inundation. Construction continued in subsequent years, with the majority of work taking place on the southern bank between Portage La Prairie and Winnipeg. Between 1913 and 1920, nearly $22,000 was spent building and improving dykes (see Fig. 3). By 1940, the federal government had built nearly 116 km (72 miles) of dyke along the Assiniboine River. At first, the river had been so useful, facilitating the transportation of goods and settlers. Later, the river had seemed in need of some minor tinkering. Now, with human alterations compounding environmental complexity, it was becoming clear that managing the Assiniboine would be an ongoing challenge.

**Flood protection along the Assiniboine**

Beginning with an 1886–87 federal investigation that cost over $4000, governments invested significant resources in investigating the Assiniboine. From relatively early on, the focus was not the river but the dykes and cutoffs along its length. There was less attention to how settlement might adapt to the river and more concern with how the river might be altered to accommodate the farms in its floodplain. The intention of government and the hope of many farmers was that flood danger would be removed, that the waterway could be tamed sufficiently so it would no longer pose a threat to farms and homes. This goal proved difficult to realize, due to a complicated human geography as much as a dynamic prairie river.

Dykes were meant to protect farm lands, but they were not themselves immune to damage. Federal government dykes were especially vulnerable as they were situated close to the river. This minimized their interference with other land uses on the farms they crossed but also maximized their vulnerability to river forces. Dykes were damaged in a number of ways: by undermining of banks, by overtopping, and by ice action. Erosion along the Assiniboine can progress at rates of 1.5–3 m (5–10 feet) per year. While there are means to guard against undermining such as the utilization of rip-rap, not all dykes were so carefully constructed. In the case of overtopping, dykes would be subject to erosion on both sides. As floods often occurred in conjunction with the spring break up, the flooded river often bore enormous chunks of ice capable of inflicting significant damage on anything with which they came in contact. Even dykes that were able to contain water when first built were often subject to degradation through time, due to inadequate maintenance. And degraded dykes were more likely to fail in times of flood.

Importantly, the federal government’s dyke building effort did not include the acquisition of land. Dykes that stretched along the river ran across private property, and thus were subject to different ideas of how the lands should be used. In response to a particularly heavy spring freshet in 1916, the Acting District Engineer undertook an inspection of the flood prevention infrastructure along the banks of the Assiniboine. Along with a specific sense of where dykes were particularly in need of shoring up, the report also reflected the importance of the actions of private owners in relation...

---

21 Gilbert to Kirkpatrick, 3 December 1940 (note 8).
22 Gilbert to Kirkpatrick, 3 December 1940 (note 8).
23 Conservation and Flood Control Assiniboine River (note 9).
to the dykes. In most instances, permission to build dykes had been obtained from the landowners. But this did not ensure that dykes were treated with care in the long term. The engineer located damage attributable to ‘cattle trampling over the dykes or from some other unforeseen [sic] cause’. Even more infuriating was the area in which ‘the farmers seem to have plowed it down and used it for a road’. While noting there was no definitive proof, the engineer clearly found circumstantial evidence in the fact that the farmer whose land it crossed ‘has stated that the dyke should not be there’. For a government agent checking the integrity of a government infrastructure, all of this must have been frustrating. Perhaps he took an element of satisfaction in noting those areas in which farmers who had refused to grant permission for the construction of dykes were now subject to inundation.24

But the residents who refused dykes or altered existing structures were not simply being obstreperous. Rather, they were acting on alternative understandings of how the river should operate. The farmer in the previous paragraph who plowed down the dyke felt it should not be there because he thought, as reported by the district engineer, it was ‘natural for the waters to overflow the banks of the river, and run to the low land some distance south of the river’.25 Other people who altered the flood control infrastructure may have been concerned about how it would be constructed. The dykes that might offer protection in most years could actually worsen the situation in some locations, it did so by in effect passing along the high water. In the federal view, there was little to be gained by shifting flood waters downstream, as the federal government had an equal responsibility to all who lived along the river. The situation looked different from an individual or municipal perspective. Whether or not it was understood that dyking might hurt others, preoccupation with what was seen as a local disaster led riverside farmers and municipalities to invest effort and money in the construction of local dykes. The result was, as a 1940 federal government report explained, that at least some dyking ‘was done with a view to local protection only, and with little or no regard to its effect on neighboring lands nor upon the river below’.26 At a relatively small scale, the outcome was greater flood risk in areas that previously may have been relatively safe. Assessed more broadly, the result was a more complex landscape, as over time flood risk was shifted in location along the river.

In this dynamic landscape, advocacy on the part of landowners was an important determinant of where federal government dyking efforts were concentrated. It was those on the south side of the Assiniboine River who were most active in the first few decades of the twentieth century.31 Grain was grown along the length of the southern bank, and landowners sought relief from the floods that threatened their farms. Shared concern led to the formation of the South of the River Flood Relief Association, which petitioned the federal government in the early 1930s.32 In contrast, landowners along the opposite bank were more likely to use the lands adjacent to the river for haying and grazing, with which flooding did not significantly interfere. By the late 1930s, the south bank was dyked to above flood level, while the north side remained comparatively unprotected.33 A rough estimate in 1943 was that in the 40 miles downstream from Portage La Prairie, the dyking was fairly continuous along the south, while along the north there were broken lengths adding up to not more than 35 km (22 miles).34 But as the flood risk changed through time, so did the views and desires of those who lived along its banks. A fairly typical story of upstream action and downstream consequence became more complex as residents re-evaluated their land and their river.35 Some on the south side began regretting the lost soil fertility that, had the river remained undyked, might have been partially replaced

25 Repat by Acting District Engineer, 26 April 1916 (note 23).
26 Gilbert to Kirkpatrick, 3 December 1940 (note 8).
27 LAC, RG 11, Vol. 4354, file: 5816-1-B, District Engineer J.E. St. Laurent to Chief Engineer A. St. Laurent, 29 July 1922.
30 Gilbert to Kirkpatrick, 3 December 1940 (note 8).
31 Gilbert to Kirkpatrick, 3 December 1940 (note 8).
33 LAC, RG 11, Vol. 4355, file: 5816-1-D, Memorandum on suggested scheme of river improvement by floodway or diversions with or without headwaters dam by G.P. Morse, Senior Assistant Engineer, 31 December 1938; LAC, RG 11, Vol. 4355, file: 5816-1-C, Senior Assistant Engineer G.P. Morse to Chief Engineer K.M. Cameron, 9 July 1942.
34 LAC, RG 11, Vol. 4355, file: 5816-1-F, District Engineer P.E. Doncaster to Chief Engineer K.M. Cameron, 9 July 1943.
35 Scholarly works that consider upstream–downstream dynamics include: Kelman, A River and Its City (note 4); O’Neill, Rivers by Design (note 5); Schneider, Enclosing the floodplain (note 27).
through deposition of sediment in times of flood. They felt that the loss of flood enrichment meant that their yields were diminished by half, and began to favour restrictions on further dyking. Some on the north side had become interested in grain, and by 1922 wheat, barley and oats were being grown.\textsuperscript{36} While much of the area was still used for hay, those preoccupied with the success of their new crops raised ‘a great row’ when water sat on their lands for any period.\textsuperscript{37} But by this time, the preferences of an earlier generation had been inscribed on the landscape. Residents grappled with conditions created in part by human desires that seemed as changeable as the river.

A closer examination of events surrounding Ritchie’s island, the inside of a large oxbow that became surrounded on all sides with water as a result of the first cutoff undertaken along the Assiniboine, provides another window on the difficulties inherent to solving the flood problem. This was the first major change to the river channel, and an alteration that has been judged to have been relatively successful over the long term. But even in this instance, the matter became more complicated over time as the situation was assessed from different perspectives. A Mr. Prystash purchased Ritchie’s island in the early 1930s, and he worked to develop farming on his land. By 1936 he was appealing to the federal government for some action to prevent further erosion on the river banks in front of his property. The Public Works Department responded by putting the matter in context. Between Portage La Prairie and Winnipeg, a long meandering stretch of the river, the department estimated there were at least 50 miles of eroded bank.\textsuperscript{38} The damage to Mr. Prystash’s property was typical, not exceptional: ‘there is no doubt that the bank of the Assiniboine River along the frontage now owned by Mr. Prystash is eroded to some extent, but no worse than generally occurs along the banks of the Assiniboine River in Manitoba’.\textsuperscript{39} Not only was the damage typical of the Assiniboine River, so was it characteristic of waterbodies around the world: ‘forces of nature are ever at work eroding sea costs [sic – coasts], lake shores or river banks, and it would be an impossible task financially or otherwise to try to provide protection works against these forces wherever they are the cause of damage to property’.\textsuperscript{40} This sort of change was to be expected. If not desirable, it was perhaps inevitable: the passage of time as recorded on a riverbank.

Prystash did not accept this. In a letter to Canadian Prime Minister Mackenzie King, Prystash expressed outrage at ‘how many hundred of thousands of tons of the best alluvial silt there is in Manitoba, is being eroded and washed out yearly by the Assiniboine’. This was not the inevitable passage of time but the tragic loss of one of the country’s treasures, the rich soil of the prairie region. Though securing government support for efforts to curtail erosion was certainly in his personal interest, Prystash argued for the need to preserve the soil for future Canadians, asserting that the ‘generations that will come after us will condemn us for allowing this [erosion] to happen’. Prystash felt the Prime Minister should dedicate Canadian financial resources to shoring up the water courses of the nation. This argument for the protection of soils was of particular salience in the 1930s, when parts of the North American Great Plains were suffering from soil loss due to extended drought and inappropriate agricultural techniques. In case this initial plea fell short, Prystash also appealed to Mackenzie’s baser nature, suggesting a political legacy tied to preventing erosion: ‘Sir John MacDonald is figuring in the Confederation, Sir Laurier is great in opening this country for immigration. Let me hope that you, Our Dear Great Leader, will figure as the greatest of all of them by preserving this country for the citizens of our beloved Canada’.\textsuperscript{41} By referencing the political accomplishments of former prime ministers, Prystash situated the protection of river banks among the significant nation-building achievements of the past, making clear that as MacDonald and Laurier are celebrated in the 1930s, so would King be celebrated in the future. The implication, of course, was that the failure to prevent erosion in the present represented a failure to protect the inheritance of future generations. The soil wealth that had taken so long to accumulate would be washed away in a matter of years. Current inaction and the passage of time would add up to an impoverished nation.

Through the work of dyking, the Assiniboine River came over time to reflect an irrevocable intermixing of natural and unnatural complexities. Few were pleased with uncontrolled flooding, but the attempted solutions were little more satisfactory. Subject to the unforeseen consequences of flood control efforts, residents struggled to cope not only with flooding but also with the consequences of dykes and cutoffs. Different views of how the situation should be addressed were entertained as various individuals, governments, and groups sought to realize their vision for the river. And as time passed and ideas about flood control changed, residents battled the consequences of past actions as well as the forces of nature. Along the Assiniboine River, the challenges and failures of flood mitigation were due to human as much as physical geography.

Government jurisdiction over flood control

The events of the early 1920s drove home the severity of flooding along the Assiniboine. 1922 saw extensive inundation due primarily to climatic conditions.\textsuperscript{42} 30,351 hectares (75,000 acres) of wheat land were flooded, including 7,282 hectares (18,000 acres) that had already been seeded. About $10,000 in damage was done to the highway between Portage La Prairie and Winnipeg. At Brandon, about 200 families were evacuated, and lands around the city were inundated for 45 days. Damage was at least as severe the following year, when flooding was due primarily to ice jams.\textsuperscript{43} For those with the misfortune to have been affected by back to back floods, the situation was scarcely tolerable.\textsuperscript{44} A 1924 government inspection along the Assiniboine examined both human and environmental conditions in the flood zone. J. E. St. Laurent, District Engineer for the federal Department of Public Works found that, despite significant investment in flood control infrastructure, the flood problem was chronic.\textsuperscript{45} In this heavily dyked and perennially vulnerable area, something had to be done. But which government was to do it?

To this point analysis has focused largely on the activities of the federal government’s Department of Public Works. From the 1880s, it was the entity most involved in flood mitigation. But this was

\textsuperscript{36}LAC, RG 11, Vol. 4355, file: 5816-1-D, Memorandum on suggested scheme of river improvement by floodway or diversions with or without headwaters dam (note 32).
\textsuperscript{37}District Engineer J.E. to Chief Engineer A., 29 July 1922 (note 26).
\textsuperscript{38}LAC, RG 11, Vol. 4355, file: 5816-1-E, Assistant Deputy Minister of the Department of the Interior to Private Secretary J.G. Mitchell, 29 April 1920.
\textsuperscript{39}Goodspeed to Cameron, 20 February 1936 (note 37).
\textsuperscript{40}LAC, RG 11, Vol. 4355, file: 5816-1-A, District Engineer J.E. to Chief Engineer A., 29 July 1922 (note 26).
\textsuperscript{41}Repat by District Engineer J.E., 29 March 1924 (note 41).
\textsuperscript{42}Gilbert to Kirkpatrick, 3 December 1940 (note 8).
\textsuperscript{43}Repat by District Engineer J.E., 29 March 1924 (note 41).
hardly a settled affair. This section examines inter-governmental and inter-departmental disputes over responsibility for flood protection along the Assiniboine River. It illustrates a profound reluctance on all sides to take responsibility. Despite general consensus that flooding was a problem that must be solved, all interested governments disagreed on who was responsible for the solution. This interfered with efforts to mitigate Assiniboine River flooding.

Canada was created in 1867 through the British North America Act. In large measure, the provisions of this legislation were extended to Manitoba on creation of the province in 1870. The BNA Act established that the federal government had authority over navigable waterways. By the early years of the twentieth century it was abundantly clear that the Assiniboine River was not navigable, at least for a craft of any real size. Yet the waterway’s limited history of steamships nevertheless became part of the reason that the federal Department of Public Works was involved in flood control along the Assiniboine River. As the Minister of Public Works Alphonse Fournier explained in November 1949, ‘the only obligation on this department and the reason why we contributed anything in the past is the fact that before the development of our present railway system this river was used as a transportation route and, such being the case, the responsibility for its upkeep became the charge of the Dominion Government’. 46 In Fournier’s view, the federal responsibility for the Assiniboine River amounted to a precedent set in a long ago period in which circumstances – both human and environmental – were far different. Despite this, and despite the fact that at least some federal officials recognized that control over navigable waterways did not necessarily imply responsibility for keeping them within their banks, most federal officials accepted this precedent as a reason for continued federal involvement. 47

Jurisdictional disputes, while characteristic of the Canadian federal system, were particularly intense on the prairies before 1930. In this period, and in contrast with the situation in the other provinces, the federal government retained control over land and resources. Because of resentment over this arrangement on the part of the Prairie Provinces and concern to maintain authority on the part of the federal government, all jurisdictional boundaries were patrolled with particular vigilance. This was apparent with regard to the issue of timber cutting in the Assiniboine River watershed, which was seen to change runoff patterns in a manner that heightened flood risk. Continued federal control over timber was therefore proposed as another reason that the federal government bore responsibility for flood mitigation. 48 It was also apparent with respect to land drainage. Manitoba held charge of land drainage in the province, and insofar as drains could alter the rate and amount of water flowing into the Assiniboine, this was put forth as an argument for provincial involvement in flood mitigation. 49 Neither government was willing to compromise on either issue, even as both agreed that high water required concrete action. Ultimately, both were more concerned with establishing the other’s responsibility for flood mitigation along the Assiniboine than with any sort of fair and logical assessment of who should actually do the work.

Over a period of decades, the federal government expended significant sums of money on Assiniboine River flood prevention. Even as it went ahead with various projects, the federal government maintained that, in the words of federal Public Works Minister H.A. Stewart, work was undertaken ‘as a matter of grace and not as a matter of right…’. 50 Despite awareness of an American precedent for federal government assistance with flood protection, the Canadian federal government remained unwilling to accept ultimate responsibility for flood prevention. 51 The 1930 transfer of the natural resources to the Prairie Provinces was used as an opportunity to underline this position, with the federal government arguing the new arrangement absolved them of the responsibility they had never been willing to acknowledge. 52 Indeed, the perversity of this back-handed effort to clear the federal government reflects how jurisdictional disputes made it difficult for involved parties to think objectively about Assiniboine River flood mitigation.

The transfer of natural resources to the Prairie Provinces eliminated a logic that had occasionally been used to justify federal involvement along the Assiniboine. Yet a number of other developments mitigated against any substantial shift of responsibility at this point. Significant flooding along the lower Mississippi River in 1927 prompted the American federal government to undertake substantial flood mitigation projects, which flood-vulnerable Manitobans may well have regarded with an envious eye. 53 Closer to home, the drought and depression of the 1930s led the Canadian federal government to pass the Unemployment and Farm Relief Act of 1931. 54 This legislation, which authorized public works projects that would provide employment to needy individuals, was well-suited to heavy labour, low skill projects such as dyke building. Significant flood prevention work along the Assiniboine was undertaken under its auspices. Even as the federal Department of Public Works saw an opportunity to divest itself of a task it had undertaken only grudgingly, the federal government passed emergency legislation that amounted to support for further dyking. And as the post World War II period brought increased expectations of government, it became increasingly unlikely that the Public Works department would be able to back away from the role it had now occupied for decades.

By the mid twentieth century, the City of Winnipeg had achieved a substantial size and a corresponding influence on government policy at both provincial and federal levels. In the floods of the late nineteenth and early twentieth centuries, the peak flows of the Red and the Assiniboine Rivers were staggered. The flood crests did not arrive together at the confluence of the two rivers in the heart of Winnipeg. There was significant concern that alterations to the Assiniboine might upset this lucky pattern, and that the combined peaks would be more than sufficient to devastate the city. 55 While liability long had been a concern in relation to rural flooding, the
situation seemed more serious with all the residents of the City of Winnipeg as potential claimants. Given the work the Department of Public Works had already undertaken on the river, withdrawing at this late date would leave them powerless in relation to future changes to the river but vulnerable to claims based on past actions. In part for this reason, and in spite of the transfer of natural resources, the federal Department of Public Works continued its involvement in dyking along the Assiniboine.

Forty years after the federal government had undertaken its first cutoff along the Assiniboine, the risk of flooding persisted despite significant shifts in the human and physical landscape. Notwithstanding continued disagreements over which party had primary responsibility for flood mitigation, federal and provincial agents agreed that a new approach was necessary. A conference was held on 25 April 1944 at the Legislative Buildings in Winnipeg for the purposes of discussing postwar projects related to water and land management along the Assiniboine River. In attendance were officials from relevant departments of both the federal and provincial governments. Also present was a representative from the Prairie Farm Rehabilitation Administration (PFRA), a federal government agency created in the mid 1930s to address agricultural adjustment on the Canadian prairies. At the conference, significant attention was paid to the problem of flood control. If the conference was held in part because of frustration with the persistence of longstanding problems, it was also held in part because of new opportunities: the hope was that flood control might be identified as a postwar rehabilitation project, and that the situation would be improved through the resulting investment of funds and effort.

By this time it seemed clear that cutoffs and dykes would not in themselves be sufficient to safeguard lands along the Assiniboine. More effective flood control would depend on the establishment of some mechanism for the storage of significant amounts of water at times of heavy precipitation or rapid melt. The excess would be released at a later time, when the risk of flooding had abated. The impounding of large quantities of water was also useful for purposes beyond flood control. For instance, it presented advantages for areas looking to expand water-based recreational activities or for regions in need of irrigation. Indeed, by the mid 1940s the PFRA was already investigating possibilities for storage along the upper Assiniboine, with an interest in developing irrigation in this dry portion of the watershed. As it was engaged in this complementary work and as it had the available personnel, the PFRA agreed to enlarge its information-gathering efforts to encompass the issue of flooding. A second conference about the Assiniboine took place on Friday 17 August 1945. Along with discussions of the current situation along the river, delegates reviewed the PFRA’s report on headwater storage. At the conference, PFRA Director George Spence expressed a willingness to have the PFRA undertake further work along the Assiniboine. But despite Spence’s eagerness to expand the work of the agency, he went on to note that such activity would be beyond the agency’s purview, implying that this might prove a significant impediment. The problem was that Spence’s supervisor did not share his enthusiasm. Minister of Agriculture James Gardiner, who had ultimate authority over the PFRA, had on numerous occasions expressed his opposition to the transfer of responsibility for Assiniboine River flood mitigation from the Department of Public Works to the PFRA. Gardiner had ample opportunity to record his view in response to overtures from W. G. Weir, Member of Parliament for Portage-Neepawa, a Manitoba constituency that included a significant amount of land vulnerable to Assiniboine River flooding. In the course of a long-running campaign for more effective flood control along the Assiniboine River, Weir made contact with Gardiner, with federal Minister of Public Works Alphonse Fournier, and with relevant provincial and local officials. Over the years, there had been many advocates for improved dyking or new cutoffs, whether they were elected officials, civil servants, or members of the public. But Weir took a different tack. He interested himself less in the building of new physical infrastructure and more in the creation of new institutional mechanisms that might lead to more successful efforts to cope with flooding. His approach was based on an awareness of the failed efforts of the past and a conviction that something different should be done in the future. But all Weir’s efforts ran up against James Gardiner’s formidable will. Gardiner was unconvinced that the PFRA should become involved in flood control, and feared that any transfer would amount to an increase in responsibility without any corresponding increase in funding and resources.

Ultimately, it seems that natural forces, not human arguments, were most responsible for Gardiner’s eventual change in view. In spring 1948, a major flood tore down British Columbia’s Fraser River. Dykes were destroyed, roads were washed out, and communities were inundated. As described by the Deputy Minister of Public Works E. P. Murphy, flooding along the Fraser in 1948 ‘created what was termed a “National Disaster”...’. In response, the federal government offered substantial assistance to British Columbia in reconstructing broken dykes (which had originally been built without federal help). According to the Deputy Minister of the Department of Public Works, this emergency work along the Fraser was the only significant dyking the Department of Public Works had undertaken to that point, other than work along the Assiniboine. Manitoba also experienced significant flooding in 1948, and one outcome of this was a provincial government effort to develop legislation bearing on flood prevention. In 1948, both federal and provincial governments were making changes to the ways they had addressed flooding in the past. These changes were in tune with shifts in thinking about rivers taking place in the United States and internationally, as the rise of ideas such as multipurpose water storage and unified basin planning emphasized the importance of careful management by appropriate government authorities.

---

56 LAC, RG 11, Vol. 4355, file: 5816–1-F, District Engineer P.E. Doncaster to Chief Engineer K.M. Cameron, 20 May 1944.
57 LAC, RG 17, Department of Agriculture, Vol. 3282, file: 559–13 (3), Prairie Farm Rehabilitation Administration Director of Rehabilitation George Spence to Minister of Agriculture James Gardiner, 19 December 1944.
58 Doncaster to Cameron, 20 May 1944 (note 55).
59 LAC, RG 17, Vol. 3282, file: 559–13 (3), Memorandum for Mr. Stevenson by George Spence, 28 June 1944.
61 LAC, RG 17, Vol. 3282, file: 559–13 (3), Minister of Agriculture James Gardiner, to Deputy Minister Dr. Barton, 26 December 1944; LAC, RG 17, Vol. 3283, file: 559–13 (8), Memorandum from Minister of Agriculture James G. Gardiner to Deputy Minister Dr. Barton, 26 December 1944.
63 Murphy to Stitt, 21 December 1948 (note 61).
If the federal and provincial governments had in 1948 begun to change their approach to flood management, additional impetus arrived in the spring of 1950. This was the year of a substantial flood along the Red River. High water swept northward through southern Manitoba, flooding farm land and rural communities. Major sections of the City of Winnipeg were also inundated, and it was only through a frantic dyking effort that key sections were kept dry. This was a dramatic affair, involving significant loss of property, extensive evacuations, and even a few deaths. The waters of the Assiniboine River did not make a major contribution to the crisis of 1950. But the flood was so catastrophic that it had consequences for how flooding was perceived and addressed, along the Assiniboine as well as along the Red.

In the aftermath of the flood, government agencies cooperated to produce a multi-volume study of the causes and consequences of flooding in southern Manitoba. The various volumes amounted to an extensive account of the numerous human and environmental factors bearing on flooding, as well as a careful consideration of how to mitigate the flood risk. Appended to the report focusing on the Red River was a substantial study undertaken by the PFRA on conservation and flood control along the Assiniboine River. Even the authoring of this piece was beyond what Gardiner had been willing to have the agency undertake in an earlier period. Over subsequent years, and based on the outcomes of the reports undertaken soon after the 1950 flood as well as on the recommendations of the 1958 Manitoba Royal Commission on Flood Cost-Benefit, work was begun on three major flood control works. The Winnipeg Floodway would divert Red River flood waters around the City of Winnipeg, the Portage Diversion would direct Assiniboine River flood waters to Lake Manitoba, and the Shellmouth Reservoir would impound excess flows in an upstream portion of the Assiniboine. The PFRA had responsibility for construction of this last undertaking. Further, responsibility for the existing flood control infrastructure along the Assiniboine River was transferred to the agency in 1950. If insufficient resources were part of the reason Gardiner was concerned about taking on Assiniboine River flood control, the catastrophic events of 1950 changed matters. By demonstrating to politicians and the public the magnitude of the problem, the flood helped ensure that substantial funds would be available for mitigation efforts.

Through its work on the Shellmouth Reservoir, the PFRA participated in a flood control project that diminished the risk of inundation for many Manitobans who live near the Assiniboine River. The project was in keeping with the large-scale construction efforts such as dams for irrigation the PFRA was undertaking by the mid twentieth century. And as it was conceived as a multipurpose water storage project, the project also reflected contemporary thinking about river management. The PFRA’s success along the Assiniboine is attributable in part to how it greatly increased its involvement at a point when governments were prepared to invest substantial resources in flood mitigation. The agency also offered to both the provincial and federal governments a kind of détente: a way of backing away from their principled positions on government jurisdiction without losing face. As a relatively new agency undertaking land and water projects across the prairies, the PFRA was an outlet valve on the regional pressure cooker of natural resources administration.

Throughout the history of flood mitigation projects along the Assiniboine, an array of factors ranging from variable flow rates through changing agricultural patterns to political disputes have compounded each other. The result was an intensely complicated landscape, with relevant physical, settlement and political geographies laid atop each other. The PFRA contributed to a rare simplification, as the involvement of this new agency meant that the jurisdictional disputes over responsibility for flood mitigation receded some distance into the background. Importantly, and in an interesting parallel of how the 1927 floods along the Mississippi led the American federal government to undertake more substantial flood control projects, it was the Red River flood of 1950 that laid the groundwork for the expanded PFRA role. Along the Assiniboine River, a notable step forward in flood mitigation was due to a flood event as much as to human efforts.

**Conclusion**

On 9 August 1949, Member of Parliament W. G. Weir wrote to Minister of Agriculture J. G. Gardiner on the subject of Assiniboine River flood control. Like so many other Manitobans who had written to the federal government regarding the Assiniboine River situation, Weir had a complaint about flooding. But Weir also had a broader observation about how flood protection had been executed. Continued flood problems were hardly surprising, given that only ‘a more or less patchwork job’ of flood protection had ever been attempted.66 In Weir’s view at least, what the Assiniboine needed was effective coordinated management in areas subject to flooding. What got instead was a motley assortment of flood protection efforts, put in place in response to advocacy by residents and municipalities, as funds became available, and when possible given jurisdictional disputes. Ultimately, these did not address the flood problem and, for certain areas, may indeed have worsened the situation. Widespread disagreement over how the river should be managed combined with administrative confusion had become a barrier to effective flood control.

Weir thought the PFRA might help the situation. Indeed, perhaps one of the most remarkable aspects of the history of flood control along the Assiniboine is the enlarged role of the PFRA in the wake of the mid century floods. Following decades of trying the same problematic modifications and fighting the same fights, the floods of 1948 and 1950 went some distance toward moving the debate beyond the range of options considered in an earlier period. They contributed to circumstances in which the PFRA could undertake construction of the Shellmouth Reservoir: a new form of flood control by an agency that, according to the will of the minister in charge, had long resisted extensive involvement in Assiniboine River flood control.

Environmental historians have worked with the idea of path dependence, which expresses how the choices of the past affect the options available in the future.67 The concept was developed with reference to technological systems laid out across space such as sewers, with scholars examining how the previous investment of money and effort made it likely that future efforts would amount to straightforward extension or minor tinkering rather than fundamental change to existing structures. Flood control along the Assiniboine River, made up of dykes and cutoffs, is an example of a system maintained and enlarged despite its lack of effectiveness.

---

in many areas. The Assiniboine River provides an example of how a catastrophic episode can prompt a period of intense innovation, as 1950 flooding disrupted the momentum that had long driven flood mitigation efforts. The parallel with the outcome of the 1927 floods in the United States underlines the importance of catastrophe as a catalyst to innovative action in various contexts.

But if Weir were in a position to perform a retrospective assessment of the PFRA’s work on Assiniboine River flood mitigation, he would likely be disappointed. While the agency certainly changed flood mitigation along the Assiniboine, it neither solved all political problems nor prevented all future flooding.\(^{68}\) Gilbert White argued that floods were beyond human control while flood damages were largely the work of humanity. The question of responsibility would seem relatively straightforward in relation to flood mitigation, given that dykes and cutoffs are human constructions. The history of flood mitigation along the Assiniboine would suggest, however, that the matter is more complicated. Early flood mitigation efforts failed in part because of human factors: different views on how the river should be managed, downstream consequences of upstream actions, and change over time in how people felt the river should be managed. The stage was set for the PFRA’s comparative success in Assiniboine River flood mitigation by a significant flood episode, one that washed away the jurisdictional disputes that had served to complicate previous flood mitigation efforts. The Winnipeg Free Press piece that opens this paper acknowledged the conflictual character of flood control. Engineer J.M. L. had no hope that ‘every engineer or economist will agree’ with his description of the problem and potential solutions. Rather, he felt it would be ‘satisfactory’ if he succeeded in contributing to public debate.\(^{69}\) The question of responsibility for the state of flood control along the Assiniboine River is complex, with natural and unnatural complexities flowing together in the variable channel of this dynamic prairie stream.

Acknowledgement

I am grateful to the editors and anonymous reviewers for the Journal of Historical Geography. I also would like to thank commentator Matthew Evenden and co-panelists Jennifer Bonnell and Jim Clifford as well as audience members who participated in the session of the Canadian Historical Association Annual Meetings at which I presented a version of this paper. Thanks to Sean Gouglas for his work on my maps. For financial support, I am grateful to the Social Sciences and Humanities Research Council of Canada and to the University of Alberta (through the Grant Notley postdoctoral fellowship programme).


\(^{69}\) Winnipeg Free Press, May 1923 (note 1).