

## The Boundary Waters Treaty and the International Joint Commission in the St. Mary–Milk Basin

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The St. Mary and Milk River basins, shared by Alberta, Saskatchewan, and Montana in the Western Prairies, have a long history of international conflict and co-operation. In fact, as mentioned in the introductory chapter of this book, international conflict in the St. Mary–Milk was one of the motivating factors in the negotiation of the Boundary Waters Treaty (BWT) in 1909, and part of the BWT is specifically dedicated to managing conflicts in the basin. The root of conflict in the St. Mary–Milk has to do with the region’s endemic water scarcity and the heavy demands placed on it by water users, particularly irrigators, on both sides of the border. Article vi of the BWT addresses this conflict by establishing an international water apportionment, dividing the waters of the St. Mary–Milk between the two countries sharing it. Quite quickly, the apportionment became the centre-piece of conflict management in the St. Mary–Milk and administering the apportionment became the International Joint Commission’s (IJC) most important function in the basin.

However, the article vi apportionment was introduced over a hundred years ago, so it is important to examine how successful it has been in managing conflict thus far, and whether it will be sustainable in the future. An examination of the historical record suggests that the apportionment

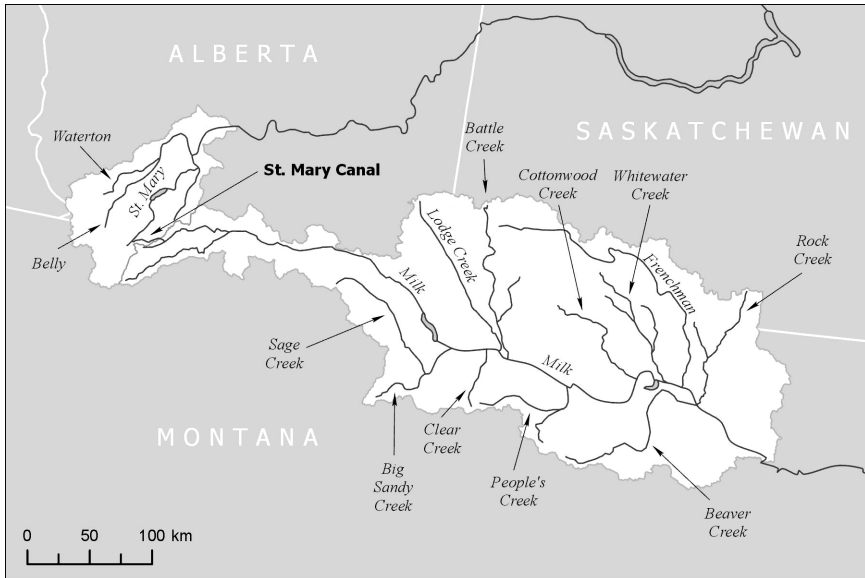


FIGURE 4.1. Map of the St. Mary–Milk watershed. J. Glatz, Western Michigan University Libraries.

has been successful in containing—but not resolving—water use conflicts in the St. Mary–Milk. That is, the apportionment has prevented many conflicts from getting out of hand, but it has not resolved these conflicts entirely. Looking forward, many of these simmering conflicts are likely to resurface, and could become more intractable, as the effects of climate change take hold. Climate change is expected to increase water scarcity in the St. Mary–Milk, so the demands on the basin, and the pressures on the governments sharing it, are likely to be even more acute in the apportionment’s second century than in its first.

This chapter examines the history (and future) of St. Mary–Milk conflict management in five sections. The first section describes the hydrology of the St. Mary–Milk, its economic uses, and its international upstream-downstream dynamics. The second section recounts the importance of the St. Mary–Milk in the negotiation of the BWT and the central role of the article vi apportionment in the management of international conflicts in the basin. Section three examines a range of historical conflicts

in the basin, noting the general trend toward conflict containment, but not resolution. The fourth section describes the most likely effects of climate change and projects how the changing climate could impact ongoing water conflicts in the region. The final section summarizes the analysis and speculates on the apportionment's future.

## The St. Mary–Milk Basin(s)

The St. Mary and Milk are naturally separate and adjacent river basins that, technologically and politically, have been joined as one.<sup>1</sup> The St. Mary basin originates in Montana and flows northward into Alberta, where it forms part of the larger Saskatchewan-Nelson basin that empties into Hudson's Bay. The Milk basin, just east of the St. Mary, also rises in Montana and flows into Alberta before turning southward, re-entering Montana, and joining the Missouri River, which, eventually, drains into the Gulf of Mexico. The two basins are separate in their natural hydrology, but close in their geographical proximity, particularly in their respective headwaters in northwestern Montana and southwestern Alberta. Early in the twentieth century, canals linking the two basins were built in both Montana and Alberta, allowing water to be diverted between them, and empowering their users to treat them as, essentially, a single basin. This inter-basin marriage was then formalized in article vi of the BWT, which explicitly and purposefully provided for the two basins to be governed as a single hydrological unit.<sup>2</sup> Since then, it has been impossible to separate the two basins, especially in their international governance.

Some of the reasons for connecting the two basins had to do with their natural characteristics. In terms of natural river flows, the St. Mary is far larger than the Milk. The median annual flow of the St. Mary River, at the international border, is 771,300 dam<sup>3</sup> compared to 149,400 dam<sup>3</sup> for the Milk.<sup>3</sup> The flows of the St. Mary are also more reliable than the Milk, as the St. Mary's flows range 106 per cent from the median while the Milk's flows range 220 per cent.<sup>4</sup> The St. Mary's flows are more reliable because part of its source is glacial melt from the Rocky Mountains, which is available every year, while the Milk relies entirely on snowmelt and rainfall runoff, which varies with the changing weather. The larger size and higher reliability of the St. Mary prompted plans to connect it with the Milk,

the objective being to augment the Milk's flows with St. Mary water to increase both the size and the reliability of the Milk.

Other reasons for connecting the St. Mary and Milk Rivers were related to their human uses, particularly agricultural irrigation, which is the largest user of water in the basin by far. The St. Mary–Milk is situated in the semi-arid Prairie region, where precipitation is scarce (500 mm or less per year) and highly variable.<sup>5</sup> In order to put more land into production and to grow higher-value crops, irrigation is very important on both sides of the border. However, irrigation requires a voracious use of water, so large-scale irrigation puts heavy demands on the basin's rivers. In Montana, irrigation development has concentrated in the eastern part of the Milk and, to support this irrigation, a canal was completed in 1917 to divert St. Mary's water into the Milk.<sup>6</sup> In Alberta, large-scale irrigation development has concentrated in the Lethbridge Plains of the St. Mary basin, with only a few, smaller irrigation projects in its portion of the Milk.<sup>7</sup> It is important to note that both Montana and Alberta covet the upstream flows of the St. Mary River, the former to support irrigation in the Milk and the latter to support irrigation in the downstream portion of the St. Mary. This political-economic dynamic has been fundamentally important in shaping how the St. Mary–Milk has been developed and, ultimately, how it has been governed.

In addition to the St. Mary and Milk Rivers, there are a number of smaller international rivers in the basin also worth mentioning. For example, the Waterton and Belly Rivers are located just west of the St. Mary. These rivers originate in Montana and flow into Alberta, where they join up with the St. Mary to help form the Oldman River. In the Milk basin, there are a number of rivers and creeks that originate in the Cypress Hills of Alberta and Saskatchewan and form tributaries of the Milk. These rivers are known as the Eastern Tributaries, and include such notable bodies as the Frenchman River, Poplar River, Battle Creek, Lodge Creek, and Sage Creek.<sup>8</sup> The Waterton and Belly Rivers, and the Eastern Tributaries, are all smaller than the St. Mary and Milk Rivers, but their political-economic dynamics are largely the same: irrigation is the dominant water use, and there is considerable competition among water users on both sides of the border to capture scarce water resources.<sup>9</sup>

Overall, international governance of the St. Mary–Milk is characterized by scarcity, zero-sum competition, and offsetting upstream-downstream dynamics. As a semi-arid region, water is naturally scarce in the St. Mary–Milk and heavy demands are placed on its rivers, particularly from agricultural irrigation. Since irrigation is a consumptive use of water, the water taken by some irrigators leaves less for others, giving the competition to secure water a zero-sum dynamic. This dynamic also plays out at the international level, particularly with respect to the St. Mary headwaters, which are sought-after by irrigators in both countries.<sup>10</sup> Even more interesting are the offsetting upstream-downstream dynamics in the basin. The main irrigation areas in both Alberta and Montana are situated in locations downstream of the others: Alberta’s irrigation areas are downstream of Montana on the St. Mary, and Montana’s irrigation areas are downstream of Alberta on the Milk. This makes each jurisdiction’s irrigation areas vulnerable to unilateral actions (and retaliations) by the other, creating a sort of “mutually assured destruction” situation that creates underlying incentives for co-operation. This has played a big role in the governance of the St. Mary–Milk and was a key factor in the negotiation of the BWT itself.

## The St. Mary–Milk in the Formation of the BWT

International controversy over the appropriation and use of the St. Mary–Milk dates to the early 1890s. Around this time, officials in both the US Department of Agriculture and the Canadian Ministry of the Interior realized that the waters of the St. Mary could be diverted to support large-scale irrigation in the region. On the US side of the border, a proposal was developed to build a canal from St. Mary Lake to the Milk River that would divert St. Mary water into the Milk. The diverted water would flow northward through Canadian territory until it re-entered the United States, where it could be tapped by American irrigators on the eastern part of the Milk. Since the Milk River naturally flowed in a deep channel, the river had plenty of capacity for additional water, and it was believed that the deep channel would make it impossible for the Canadians to divert this water for their own purposes as it flowed through their territory. On the Canadian side of the border, irrigation boosters were developing plans

for large-scale irrigation on the Lethbridge Plains, and these plans substantially relied on the availability of St. Mary water. “As there was not enough water in the St. Mary to satisfy the needs of all the lands on both sides of the border a controversy arose over who should have the right to use the waters.”<sup>11</sup>

Further complicating matters was the prevalence of the Harmon Doctrine in the United States at this time. The Harmon Doctrine, named after former US attorney general Judson Harmon, was developed during a conflict between the United States and Mexico over the waters of the Rio Grande. Under the Harmon Doctrine, the United States asserted that, as the upstream jurisdiction, it had absolute sovereignty over the waters of the Rio Grande; could dispose of these waters as it wished; and had no obligation to allow any of these waters to flow into Mexico. In effect, the Harmon Doctrine claimed unilateral control of waters for upstream jurisdictions.<sup>12</sup> On the St. Mary, the United States was the upstream jurisdiction, so many Americans called for the application of the Harmon Doctrine there as well. The United States was also a downstream jurisdiction on the Milk, but, since it was believed that the Canadians could not divert water out of the deep Milk channel, any upstream advantage enjoyed by Canada on the Milk was effectively negated.<sup>13</sup> So, for much of the 1890s and into the early 1900s, it looked like the St. Mary–Milk controversy might be addressed unilaterally by the United States through its application of the Harmon Doctrine.

However, as the St. Mary–Milk controversy continued, a number of factors pushed the US and Canadian governments toward co-operation rather than confrontation. First, the canal diverting water from the St. Mary to the Milk in Montana did not materialize as quickly as first expected. The eventual St. Mary Canal did not become fully operational until 1917, leaving time for the governments to resolve their differences before the development pressures on the St. Mary became overwhelming. Second, the belief that the Canadians could not divert water out of the Milk proved false. Just such a canal was approved by the Canadian government and completed in 1903, allowing Canadian irrigators to reclaim any St. Mary water diverted into the Milk. This negated the upstream advantage enjoyed by the United States, made it almost impossible for them to apply the Harmon Doctrine, and provided strong incentives to reach some

kind of negotiated settlement.<sup>14</sup> Third, as negotiations progressed, the St. Mary–Milk controversy became linked with other cross-border water disputes, particularly those stemming from the development of hydroelectric power generation facilities on the St. Mary’s<sup>15</sup> and Niagara Rivers in the Great Lakes basin.<sup>16</sup> With this linkage, the negotiations over the St. Mary–Milk evolved into negotiations for a general treaty over Canada-US shared waters, as described by Whorley and Denning in their respective contributions to this volume.

By 1905, the United States, having moved away from unilateralism, expressed a desire to reach a mutually agreeable solution on the St. Mary–Milk. The two countries appointed representatives to an International Waterways Commission, which investigated the various cross-border water disputes and recommended measures to address them. In its April 1906 report, the commission made a couple of key recommendations with regard to the St. Mary–Milk. First, it suggested that each country should be able to divert “in equal quantities” from rivers crossing the international border.<sup>17</sup> This, in effect, recommended an international apportionment of the waters of the St. Mary–Milk that should be based on the principle of equal sharing. Second, the commission recommended the creation of a “permanent joint commission” that would allow the countries to deal more effectively with their cross-border water disputes than the current ad hoc approach.<sup>18</sup> This was particularly important in the St. Mary–Milk, where some sort of international body would be needed to oversee the international apportionment and manage disputes arising from it. Negotiations over a general water treaty ensued for another three years, but the principles espoused by the International Waterways Commission are clearly reflected in the eventual design of the BWT.

Article vi of the BWT is so specific to the St. Mary–Milk, and so unlike the other articles in the treaty, that Mitchner describes it as “almost a treaty within a treaty.”<sup>19</sup> Essentially, article vi fleshes out the apportionment recommended by the International Waterways Commission. It states that the two rivers “are to be treated as one stream for the purposes of irrigation and power, and the waters thereof shall be apportioned equally between the two countries, but in making such equal apportionment more than half may be taken from one river and less than half from the other by either country so as to afford a more beneficial use to each.”<sup>20</sup> During

the irrigation season, which lasts from April to October, article vi also established a US prior appropriation of 500 cubic feet per second (cfs) on the Milk and a Canadian prior appropriation of 500 cfs on the St. Mary, and guaranteed that the United States could use the Milk to convey water diverted from the St. Mary, without undue Canadian interference. Thus, the apportionment was meant to be equitable in aggregate, but Canada was granted measures to support irrigation development in the lower St. Mary basin and the United States was granted measures to support irrigation development in the lower Milk basin, reflecting the areas of major irrigation development in each country. Article vi further established that the entire apportionment arrangement would be jointly overseen by water administrators from both countries, a provision that would eventually result in the creation of an international administrative panel—known as the accredited officers—which still functions to this day.<sup>21</sup>

As Whorley points out in his chapter, the St. Mary–Milk and Niagara Rivers are the only waterways with specific provisions in the BWT, and only the St. Mary–Milk, through article vi, is subject to apportionment. Dividing the waters of the St. Mary–Milk was an important step in managing international conflict in the basin, and the apportionment approach was in keeping with practices utilized in other transboundary river basins in the arid and semi-arid parts of western North America and southeastern Australia.<sup>22</sup> However, the article vi apportionment did not end conflict in the basin once and for all. Instead, article vi became the institutional framework through which further conflicts in the St. Mary–Milk were played out, and its main effect has been to contain conflict in the basin rather than resolving it, as over a century of experience with the treaty can attest.

## Managing Conflicts Under the BWT

Within only a few years of the BWT's completion, Canada-US disagreements about the interpretation of article vi began to surface and became so severe that they put the treaty itself in jeopardy. In 1913, the IJC appointed two of its commissioners, Henry Powell of Canada and Obadiah Gardner of the United States, to a special committee to investigate apportionment-related disputes in the St. Mary–Milk. The two commissioners



toured the basin and recommended that public hearings be held before the IJC issued an order clarifying the interpretation of article vi.<sup>23</sup> The public hearings were held between 1915 and 1921, at various locations both inside and outside of the basin, and, during this period, the IJC issued a number of provisional orders dividing the St. Mary–Milk waters during irrigation seasons. Despite these efforts, the conflict threatened to spin out of control as the US government claimed that it would ignore any IJC ruling that did not favour its interpretation of the article vi apportionment.<sup>24</sup>

The conflicts of interpretation essentially boiled down to two issues: 1) the locations at which the apportionment should be measured; and 2) the reconciliation of the countries' prior appropriations with the principle of equal sharing.<sup>25</sup> In order to divide the waters of the St. Mary–Milk, the countries needed to agree on locations at which the river flows would be measured and apportioned. While the United States argued that the apportionments should take place where the rivers crossed the international border, Canada argued that the apportionments should take place much further upstream, closer to the rivers' respective sources, before any water had been lost to evaporation, absorption, or diversion. Canada pushed for this interpretation because it would secure it a larger share of the basin's water. On the other question, both countries agreed that Canada should receive its 500 cfs prior appropriation from the St. Mary and that the United States should receive its 500 cfs prior appropriation from the Milk before the remaining river flows were divided between the two countries. However, after the initial 500 cfs prior appropriations were met, Canada argued that the waters of the St. Mary and Milk should be divided equally between the two countries, while the United States argued that the next 500 cfs on each river should go to the lower-prioritized countries, as a sort of balancing measure, with equal division of river flows only thereafter. The United States took this position because it would provide its irrigators with more water from the St. Mary in the driest years.

The conflict over the interpretation of article vi intensified with the completion of the St. Mary Canal in 1917, which placed more demands on the basin's waters, and the IJC finally issued an order in October 1921 clarifying its interpretation of the apportionment. The commissioners crafted a compromise that essentially accepted the American position on the locations at which the apportionment should be measured and the

Canadian position on the reconciliation of the prior appropriations with the principle of equal sharing. Under the 1921 order, all international rivers in the St. Mary–Milk basin, including the Eastern Tributaries, would be apportioned at the international border. During the irrigation season, each country would receive its respective prior appropriation, and river flows beyond these levels would be divided equally. In especially dry years, when river flows were low and meeting the prior appropriations would create hardships in the lower-prioritized countries, the prior appropriations were reduced to three-quarters of the available flows, to ensure that the lower-prioritized countries received at least a small amount of water. The order also touched on the apportionment of the Eastern Tributaries, which, because there were no established prior appropriations, were to be divided equally between the two countries.<sup>26</sup> Neither country was entirely satisfied with the 1921 order and, much like article vi itself, the order has become part of the institutional framework for managing international conflict in the St. Mary–Milk.

The most dissatisfaction has been expressed by Montana, which has repeatedly claimed that the 1921 order violates the principle of equal sharing in article vi because, in aggregate, it provides more water to Canada than the United States.<sup>27</sup> Historic flow records show that, indeed, Canada has consistently received more water from the St. Mary–Milk than has the United States. However, whether this is attributable to the 1921 order, to a lack of storage capacity in Montana, or to other factors remains controversial.<sup>28</sup> Nevertheless, between 1928 and 1932, Montana brought its concerns about the order before the IJC no less than four times. In 1932, the IJC voted on whether to reopen the order and—for the first time in its history—the commissioners split along national lines, with the American commissioners voting in favour and the Canadian commissioners voting against. The stalemate meant that there was no mandate to reopen the order, so it remained in force as the status quo, establishing a sort of uneasy truce in the St. Mary–Milk conflict, a truce that persisted for the rest of the twentieth century.

The persistence of this truce, and one of the main reasons that article vi and the 1921 order have succeeded in containing conflict in the St. Mary–Milk, has to do with the work of the accredited officers. The accredited officers is an international panel of water administrators that monitors

flows in the St. Mary–Milk and reports on compliance with the international apportionment: three of its members come from the Canadian government and three from the US government.<sup>29</sup> The creation of such an international oversight panel was provided for in article vi of the BWT, and the 1921 order elaborated further on its responsibilities.<sup>30</sup>

The accredited officers are very important in the St. Mary–Milk because they work to manage small international water conflicts before they can become big ones. For example, the accredited officers report on apportionment compliance every fifteen or sixteen days, a time span known as a balancing period. If an upstream country has diverted too much water during a balancing period, this creates a water deficit owing to the downstream country whose treaty entitlement has not been met. Standard practice of the accredited officers is to have any water deficit from one balancing period be made up in the next balancing period, thereby fulfilling treaty requirements without creating an international incident.<sup>31</sup> The accredited officers are also empowered to trade off water deficits between rivers in the St. Mary–Milk basin if the trade-offs are acceptable to both countries and can facilitate treaty compliance.<sup>32</sup> In this way, and others, the accredited officers have a degree of flexibility and discretion in monitoring and implementing the apportionment, and they have used this to make the apportionment work for both countries and to manage and contain conflicts.

Despite the general success of the accredited officers, Montana's underlying resentment of the 1921 order has remained, and the state continues to challenge it. In 2003–4, Montana's governor requested that the IJC reopen the order on the grounds that it violated the principle of equal sharing by providing more water to Canada. In response, the IJC held public meetings in the basin during the summer of 2004 and appointed an Administrative Measures Task Force to review the order's implementation.<sup>33</sup> The task force recommended a number of changes to the way the St. Mary–Milk apportionment is administered, and it encouraged the governments of Alberta and Montana to work more closely on St. Mary–Milk governance issues. Alberta and Montana followed up by launching the joint Water Management Initiative in early 2009, and since then Alberta and Montana officials have met over a dozen times to discuss St. Mary–Milk issues.<sup>34</sup> Nevertheless, the order itself was not reopened or amended,

so it is unlikely that the underlying source of Montana's grievance has been addressed.

As intimated above, other, smaller rivers in the St. Mary–Milk basin have also been subject to international apportionment, and the situations on these rivers are similar to those on the St. Mary and Milk Rivers themselves: difficult and protracted zero-sum conflicts that the BWT and the 1921 order have contained but not permanently resolved.

Take, for example, the Waterton and Belly Rivers (also discussed by Pentland and Yuzyk in their chapter in this volume), which lie west of the St. Mary, originating in Montana and flowing northward into Alberta's Oldman River. In the late 1940s, the Canadian government, through its Prairie Farm Rehabilitation Administration, undertook irrigation development in the Waterton and Belly sub-basins that would appropriate most of the water available from these rivers. Since most of the land in Montana's portion of the Waterton and Belly was not amenable to cropping, the Canadian government expected little resistance from the United States. However, the United States objected to the Canadian appropriations on the grounds that it could, at some point, divert these rivers to remote areas more suitable to agriculture, and it argued that it should receive compensation for Canada's over-appropriation, in the form of additional water from the St. Mary. Canada rejected this position and the matter was referred to the IJC in 1948.<sup>35</sup> After two years of investigations and hearings, the commissioners were unable to reach consensus, but instead split along national lines and issued separate reports to their governments. This is the only instance in the history of the IJC in which separate reports have been submitted. Ultimately, no satisfactory resolution to the Waterton-Belly conflict was found: Canada went ahead with its irrigation development and further escalation was avoided only because the terrain on the American side of the border made retaliatory action prohibitively difficult.<sup>36</sup>

On Sage Creek, a small, closed stream<sup>37</sup> originating in the Cypress Hills of southeastern Alberta and terminating just across the border in Montana, international conflict over apportionment also came to a stalemate. Conflict erupted in the mid-1940s when ranchers on the American side of the border complained that the flow of Sage Creek was being unduly interrupted on the Canadian side. The matter was referred to the IJC

for investigation, and the commission issued a report recommending a formal apportionment for the stream and the construction of a dam to serve the water users in the area. However, both governments rejected the IJC's recommendations as financially unviable, so the IJC resorted to working informally with water users on both sides of the border in an effort to contain the conflict.<sup>38</sup>

On the Eastern Tributaries of the Milk, apportionment is also an issue in the three largest streams: Lodge Creek, Battle Creek, and the Frenchman River. Apportionment of these rivers is covered by the 1921 order, which, in the absence of any specified prior appropriations on these streams, called for them to be apportioned equally between the two countries. Formal apportionment began in 1937 on the Frenchman River, in 1957 on Battle Creek, and in 1961 on Lodge Creek. The other notable Eastern Tributaries, which include the Woodpile, East Fork Battle, Lyons, Whitewater, Rock, and McEachern Creeks, do not have apportionments because they are not heavily used on the Canadian side of the border, and they have not prompted complaint from the American side.<sup>39</sup> Presumably, these streams and any other Eastern Tributaries would also be governed by the principle of equal sharing if cross-border appropriation conflicts were to emerge.

Overall, in the St. Mary–Milk basin, the BWT and the IJC have been tasked with managing difficult, zero-sum water apportionment issues, and, though they have succeeded in containing these conflicts, in most cases they have not been able to resolve them. Montana remains unsatisfied with the 1921 order on the apportionment of the St. Mary and Milk Rivers, and no agreement on apportioning the Waterton River, the Belly River, or Sage Creek has been reached. The apportionment of the Eastern Tributaries appears to be more settled, but there remain a number of unapportioned streams in this area that could be a source of conflict. The difficulties faced by the IJC in managing St. Mary–Milk apportionment conflicts are illustrated by the splits among the IJC commissioners with respect to the St. Mary and Milk Rivers in 1932 and the Waterton and Belly Rivers in 1950. Such splits have been exceedingly rare in the history of the IJC, and it is telling that they have been most prevalent on apportionment issues in the St. Mary–Milk.

Despite these challenges, international water conflict has not escalated out of control, and neither country has significantly defected from the BWT. The offsetting international upstream-downstream dynamics surely have something to do with this, as each country knows that the other can retaliate if it takes damaging unilateral action on any one river. However, it is also clear that both countries see something of great value in the treaty that is worth preserving. Close co-operation, particularly through the accredited officers, has been good for irrigation development in the basin, facilitating the irrigation of 247,600 hectares in the Canadian lower St. Mary, 3,480 hectares in the Canadian Milk, 13,800 hectares in the Canadian Eastern Tributaries, and 44,500 hectares in the American Milk.<sup>40</sup> Both countries are unwilling to put the international water governance regime that underpins this development at risk by allowing any single water conflict to destroy it. Moreover, more than a century of close co-operation has created a network of contacts and trust ties between water administrators on both sides of the border, which has also helped to contain escalating conflicts. So, although the BWT has not resolved water conflicts in the St. Mary–Milk, it has effectively contained them, which may be the most that can be reasonably expected in a basin characterized by intractable, zero-sum water apportionment issues.

## A Changing Climate

In their second century, the BWT and the IJC now face a new water governance challenge in the St. Mary–Milk basin: climate change. Most climate change models predict that the Prairie region will become warmer and its precipitation patterns more erratic as climate change accelerates, with important implications for the region's rivers and how they are governed.

The predicted effects of climate change in the St. Mary–Milk are manifold. As the region becomes warmer and its precipitation patterns more erratic, it is likely to experience more frequent extreme weather events, such as intense floods and prolonged droughts. Higher winter temperatures are predicted to cause more winter precipitation to fall as rain rather than snow, which is highly problematic for farmers because much of the water will run off during the winter months when it cannot be used for irrigation, rather than staying around as snowpack and feeding the

rivers during the spring melt.<sup>41</sup> There is also evidence that the St. Mary River, which has part of its source in the Rocky Mountains, will experience a long-term decline in flows due to melting glaciers and reduced winter snows. Furthermore, higher summer temperatures, while increasing the potential growing season for farmers, will also increase evaporation rates, creating more demand for water at times when available supplies are likely to be at their lowest.<sup>42</sup> Overall, the median water supply in the St. Mary–Milk is expected to decline as a result of climate change, creating a number of new challenges for the international river apportionments in the basin.

These climate change effects must also be considered in light of the St. Mary–Milk’s current state of use, which can best be described as “full allocation.” While the governments of Canada and the United States are responsible for the international governance of the basin, the governments of Alberta and Montana are responsible for allocating water entitlements in the basin, and these governments have decided (individually) that most of their respective portions of the St. Mary–Milk have reached the point of full allocation. Full allocation means that such a large volume of water entitlements has already been allocated that the rivers do not have enough remaining flows to support additional entitlements. As a result, Alberta closed the St. Mary, Waterton, and Belly Rivers to new water licence applications in the late 1970s and closed its portion of the Milk River in 1985.<sup>43</sup> Similarly, Montana closed part of its portion of the Milk basin in 1991.<sup>44</sup> At full allocation, there is very little “extra” water in the St. Mary–Milk system, so if the median water supply declines as a result of climate change, there is unlikely to be enough water to support all existing uses. In other words, current development levels in the basin—particularly current irrigation levels—may not be sustainable in the context of climate change, and this is likely to create new challenges in the international governance of the basin.

For example, consider the projected long-term decline in St. Mary River flows. The melting and eventual disappearance of the Rocky Mountain glaciers that feed the St. Mary River is problematic because both countries rely heavily on this water. The St. Mary is the largest river in the basin and it has the most reliable flows, due, in part, to the glacial melt that provides part of its source. The main irrigation areas on both sides of the border

rely on this water and its disappearance creates a considerable problem for them. As the St. Mary's flows decline and become more erratic, both the US and Canadian governments are likely to face pressure to secure access to the dwindling flows, but there simply may not be enough water available to support existing development. This is not only a zero-sum conflict, but a zero-sum conflict with existing development at stake, which is likely to be more intractable than the zero-sum conflicts faced in the past. Moreover, Montana is already dissatisfied with the existing apportionment under the 1921 order, and it may be particularly motivated to correct what it views as a past injustice. So, a simmering conflict that has been contained thus far could boil over into something more substantial, challenging the very basis of the international apportionment in the St. Mary–Milk.

As the effects of climate change take hold, it may also be necessary to revisit the apportionment's focus on the irrigation season from April to October. Both article vi and the 1921 order establish apportionment arrangements that apply only during the irrigation season, and, in a basin where there is no winter irrigation and little winter run-off, this makes sense. However, in a warming climate, more winter precipitation is expected to fall as rain and there is likely to be more winter run-off, so water users may try to capture and store this winter run-off for later use, possibly to the detriment of other users. Therefore, it may make sense to extend the St. Mary–Milk apportionment provisions year-round, but doing so will likely require the reopening of both article vi and the 1921 order to international negotiation, since the irrigation season restrictions are entrenched in both. Although extending the apportionment provisions year-round seems like a relatively simple change in itself, reopening article vi and the 1921 order to negotiation could provide an opportunity for long-contained conflicts to come to the fore, so it could be quite difficult to achieve, in practice.

The effects of climate change could spark other international water conflicts in the St. Mary–Milk, as well. In a hotter, drier climate, governments and water users may turn to previously untapped or underutilized rivers to support development. The United States, for example, may decide that the cost of diverting the Belly and Waterton Rivers is worthwhile in the context of declining St. Mary flows, and any such diversions would create serious problems for downstream irrigators in Canada, where



the rivers are already fully allocated. Or, Canada may decide to increase diversions from the Milk or its Eastern Tributaries, creating all sorts of problems for American irrigators downstream in the eastern Milk. If river flows become less reliable and more erratic, governments may also turn to the construction (or expansion) of dams to increase storage capacity and provide more control over flows. Canadian residents on the Milk River, for example, have revived calls for the construction of an on-stream dam on the Milk to reduce their vulnerability.<sup>45</sup> Related to this is the declining state of existing infrastructure, particularly the large siphons in Montana that carry diverted water from the St. Mary to the Milk. The siphons have been operating for over a century, and though they have been repeatedly patched over the years, they will soon need replacement.<sup>46</sup> The siphons are a key point of vulnerability in the St. Mary–Milk system, and could spark international conflict if the Americans responsible for operating and maintaining them fail to do so and downstream Canadians are seriously impacted by this failure.

Finally, there is the state of riverine environments in the St. Mary–Milk and their further decline in the context of climate change. It is important to understand that the apportionment in the St. Mary–Milk divides the waters between Canada and the United States; riverine environments were not part of the apportionment and were treated as an afterthought. In fact, in the era when article vi and the 1921 order were introduced, water left in rivers was regarded as wasted water, and full allocation of rivers was a desired objective. This has had a tremendous environmental impact on the rivers in the St. Mary–Milk basin. Heavy use of these rivers has destroyed fish, fowl, and wildlife habitat, increased the concentration of water pollutants, altered river flow patterns, channelized rivers, interrupted fish spawning, and caused a loss of biodiversity. The environmental damage wrought in the St. Mary–Milk is illustrated in recent water quality assessments by the US Environmental Protection Agency, which found that a very high number of the river branches in the St. Mary–Milk basin were impaired, meaning that water quality conditions were so poor that one or more water uses could not be supported.<sup>47</sup> Climate change is likely to make things worse environmentally, and this could be a flashpoint of cross-border conflict. Since the late 1990s, the IJC has introduced an International Watersheds Initiative, in an effort to

introduce ecosystem-based governance in international water basins that addresses environmental problems. The initiative has yet to take hold in the St. Mary–Milk, but it could provide a path forward in addressing the basin’s pressing environmental issues.<sup>48</sup>

In short, many of the conflicts that have thus far been contained under the BWT could become increasingly difficult to contain in the context of climate change. As the St. Mary–Milk basin becomes warmer and its median water supply declines, the zero-sum nature of apportionment is amplified, and conflicts become more difficult to resolve. This is especially true given the powerful vested interests on both sides of the border that have come to rely on the basin’s waters. So, many of the twentieth-century conflicts that were contained but unresolved could become even more intractable in the twenty-first century, creating unprecedented challenges to the BWT, the IJC, and the partner governments.

## Conclusion

Over the first hundred-plus years of its existence, the international apportionment of the St. Mary–Milk has been successful in containing international water conflicts in the basin. Given the difficult, zero-sum nature of these conflicts, this containment is no small achievement. However, containment means that these conflicts have been prevented from escalating out of control; it does not mean that these conflicts have been permanently resolved. In fact, many unresolved conflicts remain in the St. Mary–Milk, and the effects of climate change could very well bring these conflicts to the fore in the not-so-distant future: Montana is still aggrieved about the 1921 order, and a decline in St. Mary flows could inflame this grievance further; the Waterton, Belly, and Sage Rivers still have no formal apportionment even though Canada uses them heavily and the United States covets them; the Eastern Tributaries could face additional water use pressures on both sides of the border; the 1921 order may need updating to accommodate a new climate and hydrology in the basin; and the entire apportionment arrangement could face reform to halt the continued deterioration of the basin’s riverine environments and wetlands. Clearly, the challenges facing the IJC and the partner governments in the St. Mary–Milk are formidable.

Moving forward, it seems likely that the governments of Alberta and Montana will play a crucial role. Most of the governance challenges in the St. Mary–Milk stem from the heavy development (or overdevelopment) of the basin’s waters and, due to the design of Canadian and American federalism, provincial and state governments have important responsibilities in this area. These governments are responsible for the issuance of water entitlements, play a major role in irrigation development and support, and have important powers of environmental regulation. Therefore, any substantive efforts to address water use and overuse in the St. Mary–Milk will necessarily involve the sub-national governments in the basin, and there is already some evidence that things are moving in this direction. For example, the Administrative Measures Task Force recommended that Alberta and Montana engage in greater coordination on St. Mary–Milk issues, and the two governments followed up on this recommendation by signing the joint Water Management Initiative in 2009. Thus, while the first century of the St. Mary–Milk apportionment was characterized by international governance dominated by the two national governments, the second century of the apportionment is likely to be characterized by multi-level governance involving both the national and sub-national governments of the basin, all of which play important roles in containing St. Mary–Milk conflicts.

## Notes

- 1 There is some disagreement as to whether the St. Mary–Milk should be described as one basin or two. Since the basins have been hydrologically connected, and they are treated as one hydrological system in the BWT, I refer to the St. Mary–Milk as a single basin while acknowledging that, naturally, they are two separate basins.
- 2 Boundary Waters Treaty, (1909).
- 3 R. Halliday and G. Faveri, “The St. Mary and Milk Rivers: The 1921 Order Revisited,” *Canadian Water Resources Journal* 32, no. 1 (2007): 77.
- 4 Ibid.
- 5 Environment Canada, “Section 2: Annual Statistics: Canada’s Physical Environment,” *Human Activity and the Environment: Annual Statistics 2007 and 2008*, <http://www.statcan.gc.ca/pub/16-201-x/2007000/5212638-eng.htm>.
- 6 E. Alyn Mitchner, *The Development of Western Waters* (Edmonton: Department of History, University of Alberta, 1973); William J. Simonds, “The Milk River Project,

- Bureau of Reclamation History Program,” <http://www.usbr.gov/dataweb/html/milkrive.html#Milk>.
- 7 Mitchner, *The Development of Western Waters*; Prairie Farm Rehabilitation Administration, *History of Irrigation in Western Canada* (Ottawa: Government of Canada, 1982).
  - 8 International Joint Commission, “The Accredited Officers of the St. Mary-Milk Rivers—Members,” [http://ijc.org/en/\\_aosmmr/Members](http://ijc.org/en/_aosmmr/Members).
  - 9 Halliday and Faveri, “The St. Mary and Milk Rivers: The 1921 Order Revisited.”
  - 10 B. Timothy Heinmiller, “The Boundary Waters Treaty and Canada-US Relations in Abundance and Scarcity,” *Wayne Law Review* 54, no. 4 (2008): 1499–1524.
  - 11 Mitchner, *The Development of Western Waters*, 110–11.
  - 12 Stephen McCaffrey, “The Harmon Doctrine One Hundred Years Later: Buried, Not Praised,” *Natural Resources Journal* 36, no. 4 (1996): 965–1007.
  - 13 Mitchner, *The Development of Western Waters*, 112–14.
  - 14 *Ibid.*, 123
  - 15 To clarify, the St. Mary River is shared between Montana and Alberta, while the St. Mary’s River connects Lake Superior with Lake Huron.
  - 16 Nandor F. Dreisziger, “Dreams and Disappointments,” in *The International Joint Commission Seventy Years On*, ed. Robert Spencer, John Kirton, and Kim Richard Nossal (Toronto: Centre for International Studies, 1981), 8–23.
  - 17 International Waterways Commission, *Joint Report of the International Waterways Commission* (1906).
  - 18 *Ibid.*
  - 19 Mitchner, *The Development of Western Waters*, 133.
  - 20 Boundary Waters Treaty (1909).
  - 21 *Ibid.*
  - 22 B. Timothy Heinmiller, “Multilevel Governance and the Politics of Environmental Water Recoveries,” in *Multilevel Environmental Governance: Managing Water and Climate Change in Europe and North America*, ed. Inger Weibust and James Meadowcroft (Cheltenham, UK: Edward Elgar, 2014), 58–79.
  - 23 Mitchner, *The Development of Western Waters*, 135–6.
  - 24 William R. Willoughby, “Expectations and Experiences” in *The International Joint Commission Seventy Years On*, ed. Robert Spencer, John Kirton, and Kim Richard Nossal (Toronto: Centre for International Studies, 1981), 24–42.
  - 25 Halliday and Faveri, “The St. Mary and Milk Rivers: The 1921 Order Revisited,” 80.
  - 26 International Joint Commission, *In the Matter of the Measurement and Apportionment of the Waters of the St. Mary and Milk Rivers and their Tributaries in the United States and Canada* (1921).

- 27 Lawrence S. Dolan, "Comment on 'The St. Mary and Milk Rivers: The 1921 Order Revisited,' by R. Halliday and G. Faveri," *Canadian Water Resources Journal* 32, no. 4 (2007): 335–8.
- 28 Ibid.
- 29 International Joint Commission, "The Accredited Officers of the St. Mary-Milk Rivers—Members."
- 30 The accredited officers effectively function as an IJC international board for the St. Mary–Milk, similar to the IJC boards that operate in the other Canada-US basins, even though it is not labelled as a "board."
- 31 Halliday and Faveri, "The St. Mary and Milk Rivers: The 1921 Order Revisited," 87.
- 32 Ibid.
- 33 Ibid., 82.
- 34 Nigel Bankes and Elizabeth Bourget, "Apportionment of the St. Mary and Milk Rivers," in *Water Without Borders? Canada, the United States and Shared Waters*, ed. Emma S. Norman, Alice Cohen, and Karen Bakker (Toronto: University of Toronto Press, 2013), 170–3.
- 35 Louis M. Bloomfield and Gerald F. Fitzgerald, *Boundary Water Problems of Canada and the United States: The International Joint Commission* (Toronto: Carswell, 1958), 177–80.
- 36 Willoughby, "Expectations and Experiences," 24–42; Prairie Farm Rehabilitation Administration, *History of Irrigation in Western Canada*.
- 37 A closed stream is one that is not connected with a larger river basin. In this case, Sage Creek is in the area considered to be part of the Milk basin, but it does not connect with the Milk River.
- 38 Bloomfield and Fitzgerald, *Boundary Water Problems of Canada and the United States*, 174–5.
- 39 International Joint Commission, "The Accredited Officers of the St. Mary-Milk Rivers—Members."
- 40 Halliday and Faveri, "The St. Mary and Milk Rivers: The 1921 Order Revisited," 84.
- 41 James Byrne, Stefan Kienzle, and David Sauchyn, "Prairie Water and Climate Change" in *The New Normal—The Canadian Prairies in a Changing Climate*, ed. David Sauchyn, Harry Diaz, and Suren Kulshreshtha (Regina: Canadian Plains Research Centre, 2010), 61–79.
- 42 J. P. Barnett, J. C. Adam, and D. P. Lettenmaier, "Potential Impacts of a Warming Climate on Water Availability in Snow-Dominated Regions," *Nature* 438 (2005): 303–9
- 43 B. Timothy Heinmiller, *Water Policy Reform in Southern Alberta: An Advocacy Coalition Approach* (Toronto: University of Toronto Press, 2016), 14; Halliday and Faveri, "The St. Mary and Milk Rivers: The 1921 Order Revisited," 81
- 44 Ibid.

- 45 Barb Glen, "Water Infrastructure Well Past Its Prime," *The Western Producer* (Saskatoon), 25 August 2016.
- 46 Paul Azevedo, "The Need to Rehabilitate the St. Mary Facilities 2004," <https://www.kobo.com/us/en/the-need-to-rehabilitate-the-st-mary-facilities-electronic-resource>.
- 47 United States Environmental Protection Agency, *Montana Water Quality Assessment Report*, <https://archive.org/details/41888D1D-8C7C-40D5-A91C-AE7530597FC7/page/n7>.
- 48 Murray Clamen, "The IJC and Transboundary Water Disputes: Past, Present, and Future," in *Water Without Borders? Canada, the United States, and Shared Waters*, ed. Emma S. Norman, Alice Cohen, and Karen Bakker (Toronto: University of Toronto Press, 2013), 70–8; International Joint Commission, "International Watersheds Initiative–History," <https://www.ijc.org/en/what/iwi/history>.