

TRANSBASIN ASPECTS OF THE GARRISON DIVERSION PROJECT

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ABSTRACT

The Garrison Diversion Unit (GDU) is a proposed transbasin diversion water project, located in North Dakota, which may transfer water from the Missouri River Basin and the Red and Souris Rivers. The project leads to international implications as the Red and Souris Rivers flow into Canada and eventually into the Hudson Bay as it flows northward. The purpose of this paper is to describe the project and the concerns, issues, problems, studies and proposed solutions, which have evolved during its long history as they relate to transbasin diversion of water.

The Flood Control Act of 1944 provided for the development of flood control, hydro power, irrigation, and navigation features in the Missouri River Basin. It was guided by the Pick-Sloan Plan, one of the most comprehensive river basin plans developed in the United States. The Act authorized, among other projects, construction of the GDU, which initially was proposed to develop over one million acres for irrigation in North Dakota. However, changing conditions resulted in a reauthorization in 1965, which provided for 101,000 hectares (250,000 acres) of irrigation as a first phase.

Growing concerns with the environment, land acquisition, economics and transbasin transfer into the Hudson Bay Basin in Canada precipitated a study by an appointed GDU Commission, which resulted in a project reformulation in 1986. This reformulated project reduced the proposed irrigation development to 52,610 hectares (130,000 acres) by eliminating the proposed irrigation development in the Red River Basin. It also authorized additional funding for the construction of municipal, rural and industrial water service facilities in North Dakota.

The Dakota Water Resources Act (DWRA), a revised Garrison Project which amends the 1986 Garrison Diversion Reformulation Act, was initially introduced

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into Congress in 1997 to meet the contemporary water needs of North Dakota by authorizing municipal, rural, and industrial water projects, natural resource and recreation development, and providing water to the Red River Valley. It does not authorize funding for irrigation development. The DWRA was passed by Congress on December 15, 2000, and then signed by the President.

There are several issues concerning transbasin transfer of water embodied in the history of the GDU. The Province of Manitoba, and the state of Minnesota, have raised major objections to the project over concerns of unwanted "biota transfer". Numerous attempts and millions of dollars have been expended to alleviate their concerns, which remain elusive and ever-changing. One of their first concerns in the early 70s was the danger of trash fish (fish and fish eggs, disease, and parasites) being transferred and also the degradation of water quality; this was followed by an added concern of "virus" transfer. These concerns were addressed first by the development of a very fine screening process for all diverted water and later with the offer to disinfect all transferred water with ozone and/or chloramine. Tests showed that the disinfection processes was 99.99 percent effective. The trend seems to be that each solution by project sponsors is met with another new problem from Canada. Whirling disease in fish is one of the latest problems suggested by the Canadians as a biota transfer concern. These are listed as concerns without regard to the degree of risk that actually exists. As reported in an unpublished manuscript *Science and Policy: Inter basin Water Transfer of Aquatic Biota*, risk assessment studies and a review of the historical and geological fish distribution data have shown that the natural process has a much greater risk for biota transfer than planned project activities.

Considering those concerns, it is ironic that Canada has developed and implemented numerous transbasin diversion projects, some of which have flows in the magnitude of $45\text{m}^3/\text{sec}$. (1,575 cfs) compared to less than $8.6\text{m}^3/\text{sec}$. (300 cfs) for DWRA planned flows. It is logical to believe that the much lower flows contemplated for the DWRA will pose almost an insignificant threat for biota transfer compared to those transbasin flows being proposed in Canada.

It has become apparent that the foundation for biota transfer concerns is primarily a political position, which is not supported by scientific data. Concluding remarks of Canadian representatives confirm this when stating, "It is not the known, but the unknown that concerns us." This is in contrast to the requirements of the Boundary Waters Treaty (BWT), which under normal and historic circumstances presume some real and present threat or evidence of injury to the other's waters should be found before a serious claim under the BWT is made.

The fundamental effect of this type of resistance or efforts to ban transbasin diversions of any kind, under any circumstances, promotes an international abyss and a barrier to cooperation within the regions on many fronts. In the opinion of the authors, it makes it more difficult to foster the cooperation that both countries

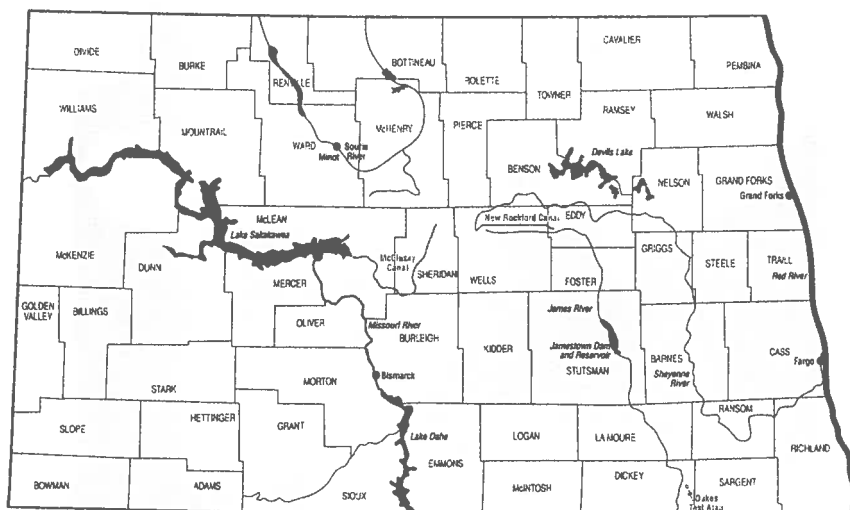
need in order to go forward on a variety of issues critical to their respective futures.

INTRODUCTION AND BACKGROUND

Introduction

The purpose of this paper is to describe the Garrison Diversion Unit (GDU) Project in the state of North Dakota and the concerns, issues, problems, studies and proposed solutions, which have evolved during its long history, as they relate to potential transbasin diversion of water. The GDU was authorized by the Flood Control Act of 1944, which was passed for the primary purposes of flood control, navigation, irrigation, and hydro power production.

North Dakota's most reliable and high quality water supply is the Missouri River, which flows through the southwestern part of the state. However, two thirds of North Dakota's population is in the Red River Basin in the eastern part of the state, which has an inadequate water supply during drought cycles. Consequently, the transfer of water from the Missouri River Basin to the Red River Basin is one of the options to meet the contemporary water needs of North Dakota (See Figure 1).



The GDU Project has evolved from an irrigation project, which proposed to irrigate more than one million acres in 1944 to a municipal, rural, and industrial (MR&I) water supply project in the 1990s. The water needs have been reduced dramatically; however, the potential need for transbasin transfer still exists to fully develop North Dakota's water resource. This concept was first mentioned in the North Dakota State Constitution prior to 1906.

The project has international transbasin implications, as the Red and Souris Rivers flow into Canada and eventually into the Hudson Bay on its journey northward (See Figure 2). Canada and the Province of Manitoba have historically objected to the transbasin diversion of water, which has resulted in major roadblocks and problems in completing the Garrison Project despite many honest efforts and extensive funding by the United States. Primarily because of this transbasin transfer issue, the project has a very long, tortuous history and has never been completed.

The following discusses the background and history of the project, along with problems, roadblocks, probable solutions and issues relating to the possible transbasin diversion of water.

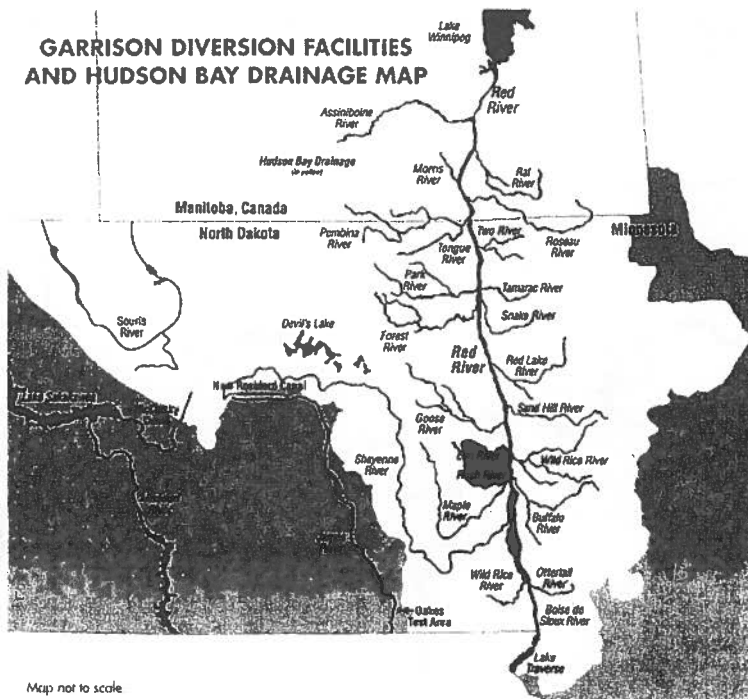


Figure 2 - Red River drainage area

Project Background

Disastrous floods in the early 1940s and the need for economic development precipitated the need for the development of the water resources of the Missouri River. The Bureau of Reclamation (Reclamation) and the Corps of Engineers collaborated on a study, which resulted in the writing of the Pick-Sloan Plan, one of the most comprehensive river basin plans in the United States. The Flood Control Act of 1944 authorized many facets of the Pick-Sloan Plan, including the construction of six major dams on the main stem of the Missouri River along with the GDU. The Act authorized these projects for the primary purposes of flood control, irrigation, navigation, and hydro power generation.

The six dams constructed on the main stem of the Missouri River are: Fort Peck Dam in Montana, Garrison Dam in North Dakota and Oahe, Big Bend, Fort Randall, and Gavins Point Dams in South Dakota. The reservoirs formed behind two of these dams, Garrison and Oahe, have inundated 222,580 hectares (550,000 acres) of prime North Dakota farmland. About 95 percent of North Dakota's water supply is available in the Missouri River, which is a high quality and reliable supply of water. Consequently, transbasin diversion of water from the Missouri River is a realistic solution for providing an adequate water supply to the Red River Basin.

This has been a concept since the early 1900s when the first attempts were made to study this problem; however, no projects to divert transbasin water were seriously contemplated until the GDU Project was authorized in 1944. This issue, however, was indirectly addressed with the passage of the "Boundary Waters Treaty of 1909 (BWT)". Article 4 of this Treaty provides "that neither country will take any action which will cause water pollution resulting in harm or injury of health or property." The International Joint Commission (IJC) was established for the purpose of resolving disputes over the terms of the BWT; it has repeatedly ruled that the Treaty's intent was not to preclude development of natural resources.

The GDU was authorized to develop irrigation on over one million acres of land in North Dakota in the Missouri, Souris and Red River Basins in part to mitigate the farmland inundated by those reservoirs. Between 1944 and 1965, surveys and studies were performed to assess the feasibility of irrigating this land using Missouri River water. Results of those studies and other factors changed the project significantly, and reauthorization was required before development could begin. In 1965, legislation was passed, which authorized initial irrigation development of 101,000 hectares (250,000 acres), municipal and industrial water development, fish and wildlife development and recreation. Construction of the principal supply works was started in 1968 and continued until the mid 1980s, when it was halted because of environmental issues, private land acquisition, economics of irrigation, and Canadian concerns about transbasin transfer of water

from the Missouri River to the Red and Souris River Basins. The amount of water proposed for transfer at that time was about 2,000 cfs.

The matter was referred to the IJC in 1975, and in 1977 they issued their report entitled "Transboundary Implications of the Garrison Diversion Unit". The Conclusions and Recommendations in that report were based upon an analysis completed by the International Garrison Diversion Study Board wherein they examined whether or not the Garrison Diversion Project, as planned at that time, would violate the terms of the BWT. The Study Board report contained a series of recommendations including one that recommended the project be modified to eliminate any direct transfer of fish, fish eggs, fish larvae and fish parasites, and to reduce the risk of transfer of fish diseases to the Hudson Bay drainage.

Fish screen research was subsequently conducted by the Bureau of Reclamation, and a prototype fish screen facility was tested using Missouri River water. Four years of testing showed conclusively that the screening facility was capable of removing all viable fish, fish eggs, fish parasites and larvae from the project water. A fish screen structure, which has not been used, was also constructed in the McClusky Canal for the installation of screens.

In 1984 the National Audubon Society, an environmental organization, caused legislation to be introduced in the US Congress, which became Public Law 98-360 and established the GDU Commission to conduct an independent review of the project. The Commission was appointed by the Secretary of the Interior in 1984 to recommend changes of direction for the project. In their December 20, 1984, report, the Commission, after considering the IJC report and other related information, recommended development of the GDU significantly different from the project described in the 1957 feasibility report and the project authorized in 1965. The major recommendations relating to the transbasin concerns were:

- *Proposed irrigation development reduced from 101,000 to 52,610 hectares (250,000 to 130,940 acres), none of which would be in the Hudson Bay drainage. (In the meantime, irrigation development continued unabated in Manitoba.)

- *Construction of a water treatment facility to treat Missouri River water that would be transferred into the Hudson Bay drainage to comply with the BWT

- *Designation of the Lonetree Reservoir site as a Wildlife Management Area

- *Authorized the transfer of 2.8 meter³/sec (100 ft³/sec) to the Red River Valley for municipal, rural and industrial purposes, a relatively small amount of water compared to most transbasin transfers.

*The Secretary of Interior may authorize delivery of water to the Hudson Bay drainage only after the Secretary of State and the Administrator of the Environmental Protection Agency have determined that adequate treatment has been provided to meet the requirements of the BWT

Clearly, the modifications more than met the recommendations of the 1977 IJC report. After review of the newly authorized project, the Canadian government delivered Diplomatic Note No. 201 dated March 26, 1985. The note stated that the plan provided by the Commission, "as a package does not pose a threat to Canadian waters and, once approved by Congress, should resolve a longstanding problem on the Canada-United States agenda." We can only imagine that officials in the United States believed the message contained in Diplomatic Note No. 201 and heaved a sigh of relief as the 1986 Act passed, believing that at long last they had resolved the issue. It proved to be a premature sigh.

Among the activities that followed passage of the Act was the preparation of a Draft Environmental Impact Statement (DEIS) for the reformulated project. The release of that document prompted yet another Diplomatic Note No. 177 from the Canadian government, which expressed additional concerns beyond those previously considered and addressed in the IJC report; thereby reversing their previous position and raising the question of when can we believe their diplomatic statements.

In addition to the preparation of the DEIS in 1987, the Bureau of Reclamation, the North Dakota State Water Commission and the Garrison Diversion Conservancy District began contributing funding to an independent research effort to determine the potential impacts of a transbasin diversion as recommended by the GDU Commission. From 1987 to 1995, twenty studies were conducted involving scientists from both the United States and Canada. An unpublished draft manuscript of the studies reports that the species previously identified as species of concern are either already in Lake Winnipeg or cannot survive in the Hudson Bay environment. One study concludes that the risk of biota transfer is much greater from bait bucket transfer and fish hatchery operation than from the proposed Garrison Project.

Nevertheless, in response to Diplomatic Note No. 177, the two governments, acting through a consultative group, established a Joint Technical Committee, (JTC) on September 26, 1989. In 1994 the JTC, while studying the Northwest Area Water Supply project, determined that .. "If actual studies demonstrate that Giardia and viruses can be inactivated to levels required for drinking water (i.e., 3 log inactivation for Giardia and 4 log inactivation for viruses) at the Continental Divide, then the water can be considered adequately treated for purposes of mitigating biota transfer."

Tests were conducted to determine whether or not two specific proposals for disinfection would meet the standard. Both tests successfully met the standards. Nevertheless, the Canadian government continued to oppose the transfer of water into the Hudson Bay drainage for reasons not previously expressed. This time the concern was expressed in terms of an unknown species with unknown impacts. They suggested that the United States should meet yet undeveloped standards. The target was moving so fast that United States officials were given to questioning the sincerity of the process.

In 1997 the Dakota Water Resources Act (DWRA) was drafted to again pursue legislation which would meet the identified water needs of the state. The DWRA is a new authority and direction for the Garrison Project, one purpose of which is to address the concerns of Canada in a responsible manner. The major provisions of this legislation were state MR&I, Red River Valley MR&I, and Indian MR&I water development, in addition to natural resource and recreation development. This legislation has been pursued persistently since 1997, and on December 15, 2000, it was passed into law as the "Dakota Water Resources Act". Technical and environmental studies will continue to support this legislation, along with environmental assessments for this work.

TRANSBASIN DIVERSION UNDER THE DAKOTA WATER RESOURCES ACT OF 2000

Red River Valley Water Supply Needs Study

The DWRA calls for a study of the means to meet the water supply needs of the Red River Valley and if the recommended means of meeting that need involves a transfer of Missouri River water to the Hudson Bay drainage, the Secretary of Interior is to submit the report to Congress for approval before proceeding. The studies will include a comprehensive evaluation of present water uses and possible conversion, conjunctive use of surface and groundwater, conservation, desalinization, treatment and other appropriate issues. The complex issues of the Corps of Engineers on Devils Lake and Lake Ashtabula projects will also be addressed relative to their combined impacts on this project.

A Programmatic Environmental Impact Statement (PEIS) is being considered to address all broad issues at an early date, along with another PEIS relating to specific project conditions. An economic evaluation will also be made to determine financial viability of the project.

The alternatives will consider three broad categories: 1) no action, 2) inbasin and 3) transbasin.

The no action alternative analyzes the possibility of no further federal funding. It will look at the existing capabilities and options available to the State and local communities as well as the impacts of the limitations that this alternative naturally imposes on the region. This alternative will serve two very important purposes. One purpose is to define the problem and the other is to establish the need for federal involvement. Whenever a program is proposed in Washington, one of the first questions to answer is "What is the federal interest? This will establish the need for federal assistance or not."

The inbasin alternative, analyzes the options and impacts of meeting the water supply needs from inbasin resources. This option will include a look at an aggressive conservation program, the potential for reclamation of saline and/or waste water sources, as well as the potential for the conversion of existing uses such as irrigation water to municipal use. Because this option could eliminate the need for transbasin transfer of water, some may be tempted to rush to a judgement on this option. For purposes of this analysis, all reasonable options will be thoroughly analyzed on an equal footing.

The transbasin alternative would result in a transfer of Missouri River water to the Red River Valley. The water crossing the divide between the Missouri River drainage and the Hudson Bay drainage will be treated to the level necessary to assure that injury does not occur to downstream receiving streams and uses. A thorough examination will need to be conducted to determine how any plans for routing Devils Lake flood waters into the Sheyenne River would have on any means of meeting the water supply needs of the Red River Valley.

SPECIFIC CONCERNS EXPRESSED BY CANADA

Perhaps some sense can be made out of this matter by discussing some of the Canadian's specific objections to the DWRA as we understand them. Following are objections along with our response to each, which seem to be the most prevalent.

- ★ The DWRA is not specific about what project or features might ultimately be authorized.

The DWRA provides for a full-scale investigation into options other than the transfer of Missouri River water. We are currently evaluating and will continue to evaluate the technical, economical and environmental feasibility of other inbasin alternatives. This opens up the possibility that no transfer will be necessary. This is different than past plans, which guaranteed an transbasin transfer.

- ★ The DWRA does nothing to reduce the significance of the potential for biota transfer.

The maximum amount of water required under the DWRA is very small compared to that originally proposed for the Garrison Project. The water required for the original Garrison Project was about 3 million acre feet as compared to that required for the DWRA, which is only 72,000 acre feet.

- ★ The DWRA does not include a requirement to consult with Canada or other process safeguards that are presently part of the GDU Reformulation Act.

The following language is included in Section 1 of the DWRA, "Prior to construction of any water systems authorized under this Act to deliver Missouri River water in the Hudson Bay basin, the Secretary, in consultation with the Secretary of State and the Administrator of the Environmental Protection Agency, must determine that adequate treatment can be provided to meet the requirement of the BWT". The timing of consultation to determine compliance with the BWT was changed from "prior to delivery of water to prior to construction of facilities". It is clear that amendments (DWRA) to the 1986 Act provide greater protection and assurance rather than less. The feature of concern at that time was the Lonetree Reservoir, and it no longer requires consultation because it was taken out of the project. The timing of consultation to determine compliance with the BWT was changed from "prior to delivery of water" to "prior to construction". It is hard to imagine how these changes are harmful to Canadian interests. This should alleviate Canadian concerns relative to timing.

- ★ The DWRA assumes that the focus on MR&I water supply rather than irrigation eliminates much of the objection to transbasin transfer—this is not the case since the risk remains due to pipeline breaks, failure of treatment systems, etc.

The shift to MR&I water supply was viewed by the project sponsors as an action that would remove much of the objection to the project. This appears logical simply from the viewpoint of the amount of water now proposed for transfer for MR&I is 40 times less than that originally proposed for irrigation. The shift of the focus from irrigation to MR&I is a major concession by project sponsors to what have proved to be unfounded and exaggerated fears. The concession by North Dakotans to give up the irrigation portion of the GDU is major in terms of emotions and potential benefits. They are deprived of major potential agricultural benefits, while irrigation continues to proliferate in Manitoba. In fact, since the IJC study, irrigation acres in Manitoba has increased by over 100

percent. In any case, the potential harm from the reformulated MR&I project is logically lower.

- ★ The DWRA includes the authority for an inlet and outlet on Devils Lake as a project feature.

The DWRA specifically deauthorizes a study of the Devils Lake area that addresses stabilized lake levels through an inlet or outlet.

CONCLUSIONS

Movement of water between Canada and the United States is governed by the BWT, which stipulates quite simply that water movement across the borders will not result in harm to either country. The full development of North Dakota's water resources depends strongly on transbasin water diversion from the Missouri River to the Hudson Bay drainage basin for the Northwest Area Water Supply Project and, likely, the Red River Valley components of the Garrison Diversion Project. The District has shown good faith to Canada by explicitly eliminating the authority for an inlet and outlet to Devils Lake from the Garrison Project.

The BWT specifically states "waters herein and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other side". While North Dakota is in full agreement on this language, the Canadian government apparently is not. Their only acceptable position has been of "no risk". This exceeds the wording of the Treaty and is untenable to North Dakota. The Canadian position is not a requirement of the Treaty and limits any progress in resolving the issues.

A large number of transbasin diversions that exist today are in Canada. Ironically, the Great Lakes issue of greatest concern in recent years has been a proposal by Canada to export water from the Great Lakes not to the neighboring water basin, but to another country for profit.

Logical solutions to identified or potential problems are usually met by a requirement from Canada for more studies on "as yet unidentified issues". It is clear that potential biota transfer, resulting from transbasin diversion of water has become an emotional and political issue in Canada rather than a technical problem that has a finite solution. A new fish, a new disease, a new treatment, have all been used to delay the North Dakota project. To say that most North Dakotans are frustrated with the Canadian objections would be an understatement.

It is somewhat ironic that the intent of the Dakota Water Resource Act was to analyze thoroughly the best means to meet the water supply needs of the Red

River Valley. We should not prejudge the outcome. The preferred means for meeting those needs is not known. Lets not prejudge them before the facts are in.

The District recognizes a legal and ethical commitment to Canada to assure that biota transfer will not harm Canada's water resources and feels that all practical measures have been taken and will be to protect Canada's waters in pursuit of its much needed water resource development.

It is critical to the future of North Dakota that its water resource is effectively developed; this includes providing a high quality, reliable water supply to the Red River Valley. We are also sincere in our efforts to implement all practical measures to prevent harm to Canadian water resources.

It is our hope that the Canadians realize the sincerity and persistence by North Dakota and allow the analysis to proceed in a timely manner. The BWT recognizes the right of each country to develop its water and other resources, and we, in North Dakota, view that as a basic right that we will not relinquish. Nowhere on either border has a dispute of this nature been framed as a concern about an unknown species with unknown impacts.

An off-handed comment by one of the Canadian officials may be the key to resolution. He asked why should Canada settle at all? We (Canada) are exposed to the risk however small, and we get nothing for it. The answer to that question is simple. A continuation of the bitterness associated with this issue will further separate a region that needs to work in cooperation. Cooperation on issues of commerce are vital to each country's future and the required cooperation is made more difficult by allowing this issue to fester.