EXECUTIVE SUMMARY
Final Environmental Impact Statement
Red River Valley Water Supply Project

December 2007

U.S. Department of the Interior
Bureau of Reclamation
Dakotas Area Office

State of North Dakota
Garrison Diversion
Conservancy District

United States Department of the Interior

BUREAU OF RECLAMATION
Great Plains Region
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TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

GP-4200
ENV-6-00

DEC 21 2007

Subject: Distribution of the *Final Environmental Impact Statement for the Red River Valley Water Supply Project*

Dear Interested Party:

Enclosed is a copy of the *Final Environmental Impact Statement for the Red River Valley Water Supply Project* (FEIS) prepared in compliance with the National Environmental Policy Act (NEPA) of 1969.

The Executive Summary is provided in hardcopy format. The FEIS and appendixes are in electronic format on the first compact disk located on the inside back cover of the Executive Summary. For reference, the *Final Report on Red River Valley Water Needs and Options* that quantified the needs evaluated in the FEIS, the supplemental draft environmental impact statement (SDEIS), the draft environmental impact statement (DEIS), and the EIS supporting documents are on the second compact disk on the inside back cover.

This report was prepared by the U.S. Department of the Interior, Bureau of Reclamation and the State of North Dakota pursuant to Sections 5 and 8 of the Dakota Water Resources Act of 2000 (DWRA) and NEPA. In preparing the FEIS, Reclamation is representing the Secretary of the Interior, and the Garrison Diversion Conservancy District is representing the State of North Dakota.

Reclamation and the State of North Dakota, with help from federal, state, and other cooperating agencies, analyzed the environmental effects of six alternatives, including no action. The five action alternatives would meet the comprehensive water quality and quantity needs of the Red River Valley. The State of North Dakota and Reclamation have each identified the Garrison Diversion Unit Import to Sheyenne River Alternative as the preferred alternative in the FEIS.

The FEIS includes all comments received on the DEIS, SDEIS, and responses to those comments. No decision will be made on the proposed action and alternatives until at least 30 days after release of the FEIS. After the minimum 30-day waiting period, Reclamation will complete a Record of Decision which will state the alternative selected for implementation and discuss factors leading to the decision.

For additional information, please contact Signe Snortland, Dakotas Area Office, Bureau of Reclamation, at 701-221-1278 or ssnortland@gp.usbr.gov.

Sincerely,

Michael J. Ryan
Regional Director

Executive Summary

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Introduction

The Red River Valley faces a potential water supply crisis. Most of the people living in the Red River Valley rely on the drought-prone Red River of the North and its tributaries as their primary or sole source of water. For this reason the Project (Red River Valley Water Supply Project) is being proposed. Studies predict that the present water supplies would be inadequate during a severe drought similar to one that occurred in the Red River Valley during the 1930s. For example, in 1934 there were nearly five consecutive months of zero flow in the Red River at Fargo, North Dakota. During such a shortage, it would take 1,200 truckloads of water per day to supply Fargo's basic indoor household water needs. That is a truckload of water arriving every minute around the clock for five months to meet the current water needs. Given the predicted future population growth in the valley, the projected water supply shortages will become even greater in the future.

Without the Project During a 1930s-Type Drought 1,200 Truck Loads of Water Would Be Needed Each Day in Fargo to Supply Basic Indoor Water Needs.

Planning for future droughts is necessary because droughts have affected the northern Great Plains numerous times during the past 2,000 years. Two of the most severe regional droughts in USGS (U.S. Geological Survey) records were in the 1930s and the 1980s. As explained in a drought frequency study, Meridian Environmental Technology, Inc. (2004) concluded that the 1930s drought was not an anomaly occurring every 1,000 years; it typifies the type of drought that could realistically be repeated before 2050. According to the United States Drought Monitor, as recently as the summer of 2006 the Red River Valley experienced a moderate to severe drought. In fact, the National Weather Service ranked 2006 as one of the 10 driest years on record, and noted that the state has had "at least one major drought in every decade since 1900, except for the 1940s" (*Grand Forks Herald*, December 26, 2006).

The proposed Project would supply water to meet the comprehensive water needs of people and industries in the Red River Valley through the year 2050. Analyses in the FEIS (final environmental impact statement) focus on water shortages that would occur during a drought similar in severity to the 1930s. The future demands for water include projected increases in population and industrial growth.

This executive summary was written to give an overview of the contents of the FEIS. The FEIS is referenced throughout the executive summary and is included on the first CD in the back of this booklet. The second CD contains archived documents [the DEIS (draft environmental impact statement), SDEIS (supplemental draft environmental impact statement), and *Final Report on Red River Valley Water Needs and Options*, as well as supporting documents for the FEIS].

Purpose of the Final Environmental Impact Statement

Bismarck, North Dakota, February 2, 2006- One of Nine Public Hearings Held to Gather Public Comment on the DEIS

Reclamation (U.S. Department of the Interior, Bureau of Reclamation) and the state of North Dakota represented by Garrison Diversion (Garrison Diversion Conservancy District) have prepared the FEIS in response to substantive comments on the DEIS and SDEIS related to environmental issues. Comments were received from reviewing tribes, state and federal agencies, organizations, and interested members of the public.

Public comments, new information, and additional analyses led Reclamation and North Dakota to prepare a SDEIS, which was a thorough

revision of the DEIS. In addition, two alternatives evaluated in the DEIS were eliminated from consideration and a federally-preferred alternative was identified in the SDEIS. Reclamation and North Dakota addressed many comments received on the DEIS in the substantially revised text of the SDEIS.

Some changes were incorporated into the FEIS in response to comments on the SDEIS, but these revisions do not significantly change the impact analysis or results presented in the SDEIS. There are four primary changes from the SDEIS:

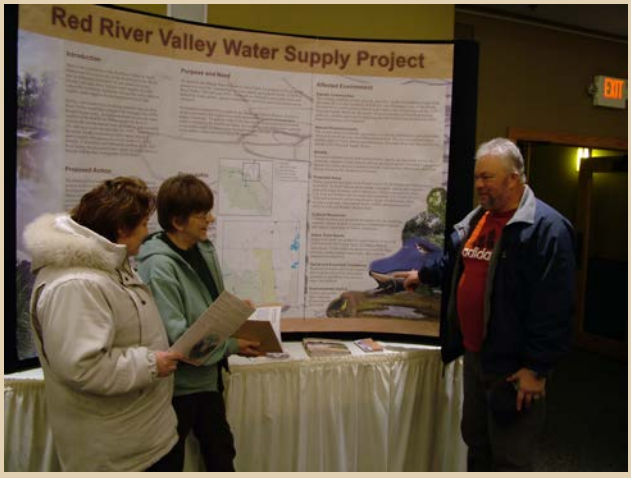
1) First, Reclamation prepared a final biological assessment in compliance with the ESA (Endangered Species Act), which is Appendix G.1.

2) The Corps (U.S. Army Corps of Engineers) (2007) analyzed the effects of forecasted depletions and sedimentation on the Missouri River system, which is summarized in chapter four "Missouri River system water quantity" section. Impacts to other resources quantified by the Corps analysis are discussed in various sections of chapter four and in Appendix C.

3) To address regional climate change, Reclamation reviewed the technical literature and summarized pertinent climate change information for the Project area (see chapter four, "climate change" section).

4) Appendix M.1 responds to comments received on the DEIS and SDEIS, and Appendix M.2 contains all of the comment documents.

Valley City, North Dakota, February 9, 2006- North Dakota State Engineer Dale Frink Comments on the DEIS



Perham, Minnesota, February 16, 2006- An Open House Was Held Prior to Each of the DEIS Public Hearings

A Court Reporter Documented Public Comment at Each of the Nine Public Hearings

Proposed Action

The Department of the Interior, Reclamation and the state of North Dakota propose to construct the Project to develop and deliver a bulk water supply to meet both short-term and long-term future water needs of the Red River Valley in North Dakota and Minnesota. The proposed action would include construction of features and facilities needed to develop and deliver sufficient water to existing infrastructure for distribution to MR&I (municipal, rural, and industrial) water users in the service area (see Project map).

Area of the Proposed Project

Construction of a Water Supply Project in South Dakota

Purpose and Need

The proposed Project would supply water to meet the needs of people and industries in the Red River Valley through the year 2050. The purpose of the proposed action in the FEIS was established by Congress and is defined to meet the "comprehensive water quality and quantity needs of the Red River Valley" [DWRA (Dakota Water Resources Act) Section 8(c)(2)(A)]. The quality and quantity needs are defined by DWRA as MR&I water supplies, water quality, aquatic environment, recreation, and water conservation measures [DWRA Section 8(b)(2)]. The DWRA authorizes construction of features that meet water supply needs, including MR&I water supply demands, groundwater recharge, and streamflow augmentation [Section 8(a)(2)].

These needs were quantified in the Final Needs and Options Report *(Final Report on Red River Valley Water Needs and Options*), which is a needs assessment and engineering study (Reclamation 2005a). This report was prepared and published pursuant to DWRA Section 8(b). These needs, which address water resource sustainability, were considered in formulating and evaluating alternatives. Water resource sustainability is the necessary planning and management of water resources to provide an adequate supply of high quality water, while providing for the economic, environmental, and social needs of future generations (Kenel and Schlaman 2005). The information on the purpose and need for the Project is in chapter one of the FEIS.

Acre-Foot (ac-ft) - An ac-ft is the volume of water that would cover 1 acre to a depth of 1 foot, which equals 43,560 cubic feet of water or 325,851 gallons.

MR&I, Recreation, and Water Conservation Needs

Studies indicate there is a need to provide water to people and industries in the service area, which includes the 13 eastern counties of North Dakota, plus the Minnesota communities of Breckenridge, Moorhead, and East Grand Forks (see Project map on page 6). The population of the service area is 315,522, and the current water demand is 65,664 ac-ft (acre-feet).

The estimated population in the service area in 2050 would be 479,252, and total maximum annual water demand would be 113,702 ac-ft. This water demand includes water for recreation and incorporates water conservation measures.

Water Quality Need

Historic water quality in the Red River Valley is discussed in the USGS report, *Quality of Streams in the Red River of the North Basin, Minnesota, North Dakota, and South Dakota* (Tornes 2005). USGS found that historically water quality in the Red River Basin was generally suitable for intended uses, but there have been exceedances of standards or criteria. Most exceedances were brief, and many occurred prior to the current levels of wastewater treatment. The report states, "concentrations of major ions, including sulfate and specific conductance, have approached and occasionally exceeded water-quality standards or criteria and may continue to do so. These exceedances are to be expected because of base flow that is sustained from groundwater discharge from several aquifers, some of which are known to contain high concentrations of dissolved salts that contain sulfate and other ions" (Tornes 2005:2). Given the generally adequate historic and predicted future water quality in streams, the water quality need identified through the Needs and Options Report and other studies did not significantly influence the development of the Project alternatives.

Water System Assessment Executive Summary Final Report (Reclamation 2004c) evaluated municipalities with a population of 500 or more and assumed that smaller communities would be served by rural water systems by the year 2050. All of the MR&I water systems in the Red River Valley currently meet National Primary Drinking Water Regulations; however, a few have changed their water sources to comply with the lower arsenic regulation. Other systems will be required to make significant treatment upgrades to meet the recently implemented and future drinking water regulations governing filtration, disinfection, and disinfection byproducts. Some of the MR&I water systems currently have problems meeting non-enforced National Secondary Drinking Water Regulations for total dissolved solids, pH, and sulfate**.** All of these issues can be addressed with readily available treatment technologies under any of the proposed alternatives.

Aquatic Environment Need

Aquatic environment needs take the form of flow targets or minimum volumes of water that would be reserved for aquatic use. The FEIS includes two approaches to define the aquatic need for the Red River Valley study area: 1) a basic aquatic need and 2) target flows on the Sheyenne and Red Rivers recommended by North Dakota Game and Fish Department. All of the action alternatives evaluated in this FEIS meet the basic aquatic need, which is maintenance of a minimum Fish and Wildlife Conservation Pool of 28,000 ac-ft in Lake Ashtabula and a minimum release of 13 cfs (cubic feet per second) from the lake. Chapter four "aquatic communities" section and Appendix B.1 discuss how often the North Dakota Game and Fish Department's aquatic flow recommendations would be met by the alternatives.

Authorization and History

The Dakota Water Resources Act of 2000 directs the Secretary of the Interior and the state of North Dakota to jointly prepare and complete an environmental impact statement.

DWRA (Public Law 106-554) provides the underlying authority for the Project. Section 8 directs the Secretary of the Interior to conduct a comprehensive study of the water quality and quantity needs of the Red River Valley in North Dakota and possible options for meeting those needs. It also directs the Secretary of the Interior and the state of North Dakota to "jointly prepare and complete a draft environmental impact statement concerning all feasible options to meet the comprehensive water quality and quantity needs of the Red River Valley and the options for meeting those needs including delivery of Missouri River water to the Red River Valley" [Section 8(c)(2)(A)].

DWRA authorizes the construction of features that meet water supply requirements, including MR&I water supply needs, groundwater recharge, and streamflow augmentation [Section 8 (a)(2)]. If the Secretary of the Interior selects an alternative that includes the delivery of Missouri River water, additional Congressional approval is required prior to commencing construction of such an alternative [Section 8(a)(3)(B)].

Under this authority, two documents have been prepared to assist with planning and decision-making related to the Project. These are: (1) the Final Needs and Options Report, which is a needs assessment and engineering study prepared by Reclamation, on behalf of the Secretary, and (2) the EIS jointly prepared by Reclamation (the lead federal agency) and the state of North Dakota, represented by Garrison Diversion.

DWRA is an amendment to previous legislation. In 1944 the U.S. Congress passed the Flood Control Act (of which the Missouri-Basin Pick Sloan Act is a part), which authorized construction of dams on the Missouri River and its tributaries. The initial stage of GDU (Garrison Diversion Unit) was authorized in 1965, and construction began in 1967. The GDU project was designed to divert Missouri River water to central and eastern North Dakota for irrigation, municipal and industrial water supply, fish and wildlife conservation and development, recreation, flood control, and other project purposes.

Snake Creek Pumping Plant

The GDU project was reauthorized in 1986, which reduced emphasis on irrigation and increased emphasis on meeting the MR&I water needs throughout North Dakota. The 1986 Reformulation Act, which amended the 1965 Act, authorized a Sheyenne River water supply and release feature, including a water treatment plant capable of delivering 100 cfs of water to eastern North Dakota. Appraisal-level studies of water needs and options in the Red River Valley began in 1994 and were completed in 2000. These studies laid the foundation for the Final Needs and Options Report.

Fishing and Recreation Along the McClusky Canal

Most of the currently authorized GDU Principal Supply Works have been completed (Snake Creek Pumping Plant, McClusky Canal, and New Rockford Canal). The Lonetree Reservoir, which would have connected the McClusky and New Rockford Canals, has been deauthorized [DWRA Section 2(i)(5)]. The McClusky Canal currently delivers water for fish and wildlife, recreation, and irrigation. Although the canal was constructed to cross into the Hudson Bay Basin, a plug at mile marker 59 blocks flow out of the Missouri River Basin, in accordance with an agreement with Canada (see Project map on page 6). The New Rockford Canal has never been put into service.

New Rockford Canal

Scope of the Project

Missouri River
North of Bismarck, North Dakota

Lake Ashtabula

The Council on Environmental Quality regulations for implementing NEPA (National Environmental Policy Act) defines the scope of an EIS as consisting of the range of actions, alternatives, and potential impacts to be considered. The planning horizon for the Project is the year 2050, which is the temporal scope of the Project. This date was selected based on projections used in the Final Needs and Options Report. Planning a water supply system for the year 2050 is consistent with the typical service life of project features, such as water treatment plants, pumping plants, and storage reservoirs.

Actions within the Geographic Scope

The FEIS considers actions within the geographic scope of the Project that may be connected, cumulative, or similar. A cumulative action was identified in the Red River Basin. The cumulative effects of a Devils Lake Outlet are considered and discussed in the "Red River Basin surface water quantity" and "surface water quality" sections in chapter four and in Appendix B.1.

Devils Lake is located in northeastern North Dakota (see Project map on page 6). To alleviate flooding the state of North Dakota has constructed a state-funded outlet, and the Corps has issued a ROD (record of decision) for a federal outlet, but it has not been constructed. Both outlets and the Project would use the Sheyenne and Red Rivers to transport water, so the reasonably foreseeable cumulative effects of the Project and the Devils Lake Outlet are evaluated in the FEIS.

Analysis of future water withdrawals from the Missouri River system are described in Appendix C, and the cumulative effects of those withdrawals are discussed in the appropriate resource sections in chapter four.

View of the Red River Valley From the Pembina Observation Tower at Pembina, North Dakota, Near the Canadian Border.

The geographic area analyzed for possible impacts of the proposed action and alternatives for the FEIS is shown on the Project map on page 6. The geographic scope of potential impacts primarily encompasses portions of two major drainage basins – the Red River Basin, of which the Red River Valley is a part, and the Missouri River Basin. The primary features in the Red River Basin that would be affected by the alternatives are the Sheyenne River, Lake Ashtabula, and the Red River. The Missouri River is the primary feature in the Missouri River Basin that would be affected.

Sheyenne River

The Sheyenne River is a tributary to the Red River in the Hudson Bay Basin. The portion of the Sheyenne River potentially affected by the Project runs from eight miles above Lake Ashtabula (the reservoir created by Baldhill Dam) to the river's confluence with the Red River north of Fargo, North Dakota. Water users would rely on the Sheyenne River below Baldhill Dam as a water supply under all of the proposed alternatives.

Sheyenne River Valley

Lake Ashtabula

Baldhill Dam, located approximately 16 miles north of Valley City, North Dakota, impounds water from the upper Sheyenne River creating Lake Ashtabula, which is managed by the Corps. The dam was constructed by the Corps to augment low flow to meet downstream water supply needs and pollution abatement objectives and to reduce flooding in the Sheyenne River Valley. Recreation, fish, and

Aerial View of the Red River Flowing North Into Canada

wildlife enhancement are secondary objectives of the *Baldhill Dam and Lake Ashtabula Reservoir Regulation Manual*. Lake Ashtabula would store water for all action alternatives, as well as for the No Action Alternative.

Red River

The Red River is a meandering river that begins where the Otter Tail River and Bois de Sioux River join at Wahpeton, North Dakota and Breckenridge, Minnesota and flows north into Manitoba, Canada. Parts of South Dakota, North Dakota, and Minnesota in the United States and Manitoba in Canada are drained by the Red River. The Red River Basin is a sub-basin of the Hudson Bay Basin.

Missouri River and Reservoirs

The Missouri River is a source of water for three of the proposed alternatives. Two of the Corps' reservoirs could be directly affected by the Project, Lake Sakakawea and Lake Oahe.

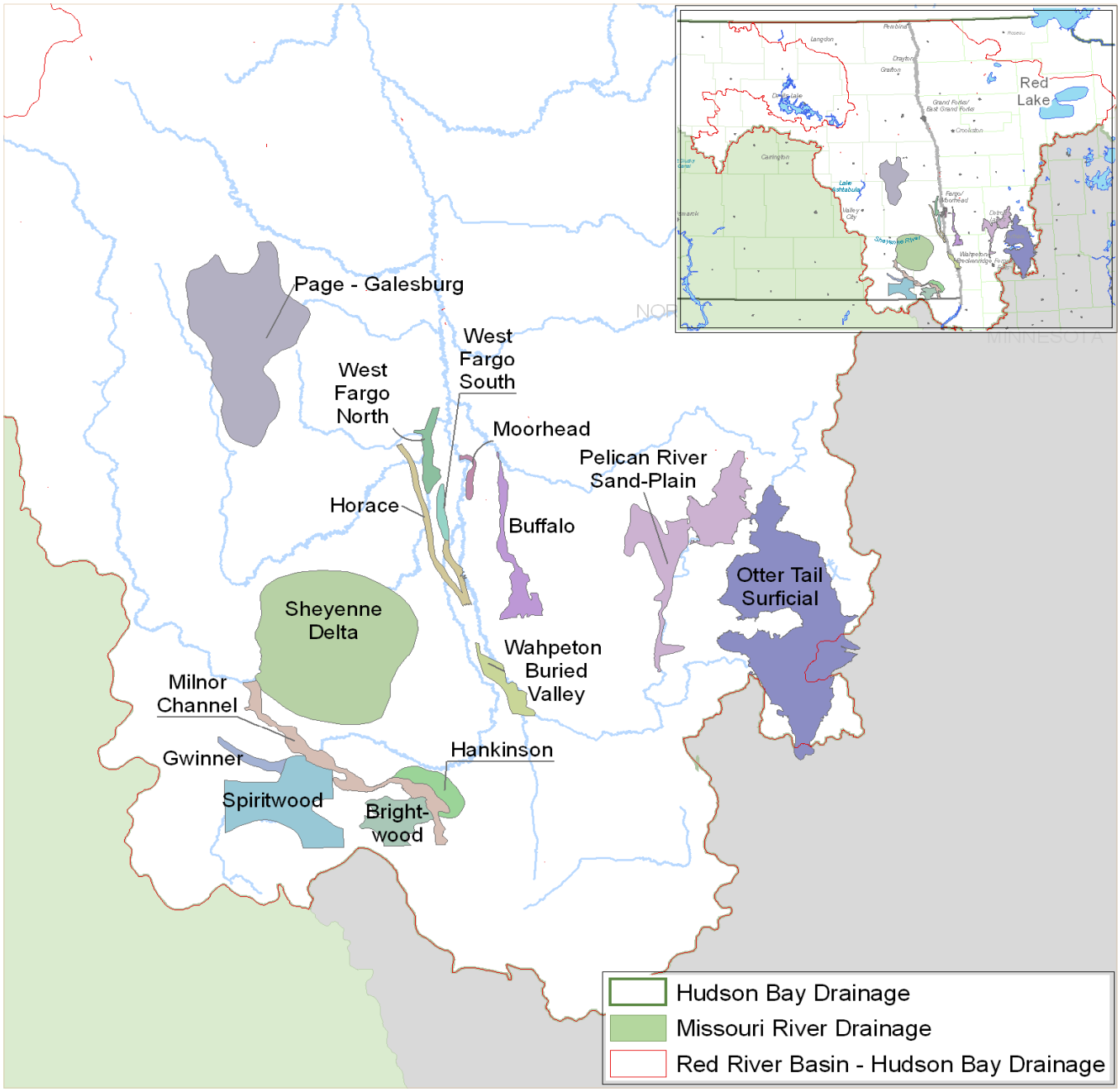
Lake Oahe

Groundwater

Aquifers proposed as Project water supply features are the Brightwood, Milnor Channel, Gwinner, and Spiritwood Aquifers in North Dakota (see map on page 15). Proposed change in existing use would affect the Horace and Wahpeton Buried Valley Aquifers in North Dakota, while indirect effects could be experienced by the Hankinson and Sheyenne Delta Aquifers. In Minnesota the Otter Tail Surficial, Pelican River Sand-Plain, and Buffalo Aquifers are also proposed as features in an in-basin alternative. ASR (aquifer storage and recovery) features would affect the West Fargo North and West Fargo South Aquifers in North Dakota and the Moorhead Aquifer in Minnesota.

Impacts to Canada

This FEIS incorporates information regarding impacts to Canada that has been prepared after coordination with the U.S. Department of State. The FEIS complies with Executive Order 12114 - Environmental Impacts Abroad of Major Federal Actions, January 4, 1979, published at 44 *Federal Register* 1957, and addresses the appropriate consideration of international effects in an environmental compliance document.



Map of Potentially Affected Aquifers

Reclamation has complied with the Executive Order by informing the Department of State of the Project and by providing technical support to the Department of State for its consultation with Canada. The Department of State has counseled Reclamation regarding the diplomatic sensitivities of the issues involved.

Reclamation notes that the statutory provisions of NEPA (and the Council on Environmental Quality's regulations implementing NEPA) do not require assessment of environmental impacts within the territory of a foreign country. However, as a voluntary measure, to further the purposes of the Executive Order, and for the purpose of efficiency and convenience, the FEIS includes an appropriate evaluation of potential impacts of Project alternatives on waters flowing across the United States - Canadian border and of areas within Canada.

Actions Outside the Scope of the EIS

The following actions are outside the scope of the EIS:

An inlet to Devils Lake:

Devils Lake was proposed to receive water from the Missouri River in previous GDU authorizations, but DWRA Section 8(f) prohibits funding for any facility that would transfer Missouri River water to Devils Lake. It states, "No funds authorized under this Act may be used to carry out the portion of the feasibility study of the Devils Lake basin, North Dakota, authorized under the Energy and Water Development Appropriations Act of 1993 (Public Law 102-377), that addresses the needs of the area for stabilized lake levels through inlet controls, or to otherwise study any facility or carry out any activity that would permit the transfer of water from the Missouri River drainage basin into Devils Lake, North Dakota."

Therefore, the co-leads concluded that construction of an inlet to Devils Lake that would rely on GDU facilities as a water source is prohibited. While the repeal of these statutory prohibitions is possible, to assume such an action by Congress would be speculative. A non-federal inlet that conveys Missouri River water to Devils Lake without using the GDU Principal Supply Works has not been proposed and would be prohibitively expensive for state or local interests.

An agency need not speculate about all conceivable impacts, but it must evaluate the reasonably foreseeable significant effects of the proposed action. In this context, reasonably foreseeable means that the impact is sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision. Since no federal, state, or private entity has a viable plan for an inlet to Devils Lake, Reclamation and North Dakota have concluded that it is not a reasonably foreseeable future action; and therefore, it was not evaluated in the EIS.

Irrigation - the Project's authorizing legislation, DWRA, specifically precludes irrigation from the Project:

Development of Irrigation in the Hudson Bay Basin/Devils Lake Sub-Basin:

DWRA Section 5(a) specifically authorizes the development of 5,000 acres of irrigation in the Oakes Test Area, 13,700 acres in the Turtle Lake service area, 10,000 acres along McClusky Canal, and 1,200 acres along New Rockford Canal. However, according to DWRA Section 5(a)(2), none of the authorized

irrigation may be developed in the Hudson Bay Basin or in the Devils Lake Sub-Basin.

Irrigation Along McClusky Canal:

Although development is authorized, irrigation along the McClusky Canal was not evaluated because that irrigation development does not depend on any of the action alternatives and is already occurring.

Irrigation Along the New Rockford Canal:

Because the New Rockford Canal was considered but eliminated from use in any of the Project's proposed alternatives, development of irrigated acres along New Rockford Canal is outside of the scope of this Project (see chapter two, "alternatives considered but eliminated" section).

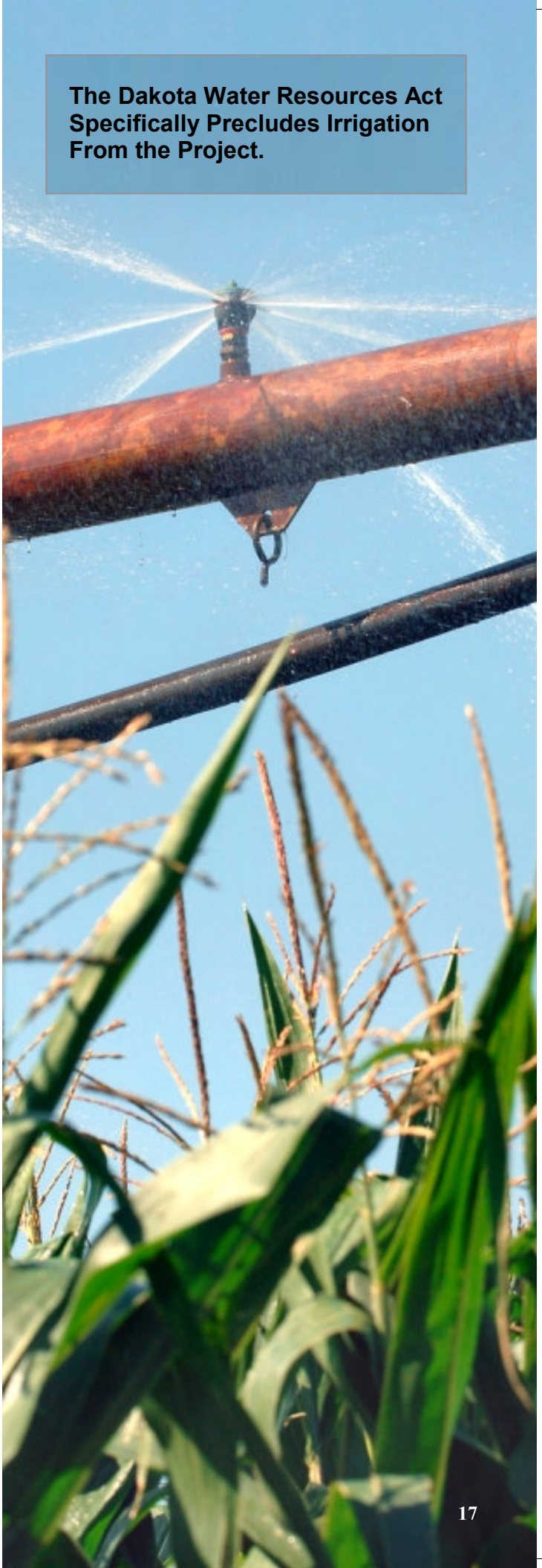
Irrigation in the Oakes Test Area:

Actions that could supply water to the James River and the Oakes Test Area during periods of reduced water demand in the Red River Valley are outside the scope of this Project. Such water delivery would require construction of a James River release structure from one of the Missouri River import alternatives as it crosses the James River. These actions are infeasible due to the high cost of using treated water for irrigation; the unreliability of the source, because it could be delivered only when water was not needed in the Red River Valley; and potential impacts to the Arrowwood National Wildlife Refuge by two of the import alternatives. It is not reasonably foreseeable that a release structure on the James River would be built (see the "alternatives considered but eliminated" section in chapter two).

Rose Creek Bypass Feature:

The Rose Creek Bypass conveyance feature is outside the scope of the EIS and therefore not included in the alternatives (see chapter two). The Rose Creek Bypass is a local infrastructure water supply distribution feature and not considered part of a bulk water supply project.

The Dakota Water Resources Act Specifically Precludes Irrigation From the Project.



Alternatives

Above: This is a Demonstration Xeriscape Garden in Fargo, North Dakota. A Water Conservation Program is Included in Each of the Alternatives.

The FEIS evaluates six alternatives; one no action and five action alternatives. Each action alternative includes seven to eleven features, depending on the main source of water (see FEIS chapter two). Each alternative would supplement existing water supplies with new or expanded use of water features in the Red River Basin or would import water from the Missouri River. Generally, in-basin alternatives have more features than import alternatives, because in-basin sources have limited water availability; therefore, more water supply features must be combined to meet demands. In addition, one of the features is a water conservation program, which was included in all alternatives. The water conservation measures would reduce water use by approximately 1.4 billion gallons (4,300 ac-ft) of water annually Project-wide.

As the Project is formulated through the planning and NEPA process, the alternative selected in the ROD may vary from the five action alternatives and the No Action Alternative, but the selected alternative will only include water supply features evaluated in the EIS.

A No Action Alternative is always included in an EIS and is the basis to which all other alternatives are compared [40 CFR Section 1502.14(d)]. In the description of alternatives starting on page 22, tables summarize the environmental effects of action alternatives and compare alternatives by engineering, environmental, and social-economic aspects. A ten-year drought is the focus of the environmental summary, because that is when resources typically would be at their most vulnerable, and impacts would be most likely to occur. Because the No Action Alternative is compared to existing conditions, the consequences of this alternative are discussed separately. All five of the action alternatives propose to supplement existing water supplies with in-basin or imported water to meet water shortages during droughts similar in magnitude to the 1930s.

No Action Alternative

The No Action Alternative is the future without the federal Project. This alternative includes all planned or reasonably foreseeable federal, state, tribal, and local MR&I water supply projects that could be constructed in the service area by 2050. These projects would supply approximately 4,895 ac-ft of water. The estimated construction cost of non-Project water supply activities planned or reasonably foreseeable in the service area through 2050 is $24.3 million. Since projects were in the planning stages no OM&R (operation, maintenance, and replacement) estimates were available. Annual OM&R costs were estimated based on 1% of construction costs which is typical of the action alternatives considered in the FEIS. Annual OM&R costs would be $1,023,000 per year, including $780,000 for water conservation activities, which is included in all FEIS alternatives.

The figure on page 20 shows the locations of planned or reasonably foreseeable water supply projects depicted by a red star. These water supply projects were identified using a number of planning resources and contacts with MR&I water systems. This process is discussed in chapter two of the FEIS and described in detail in Appendix A.2.

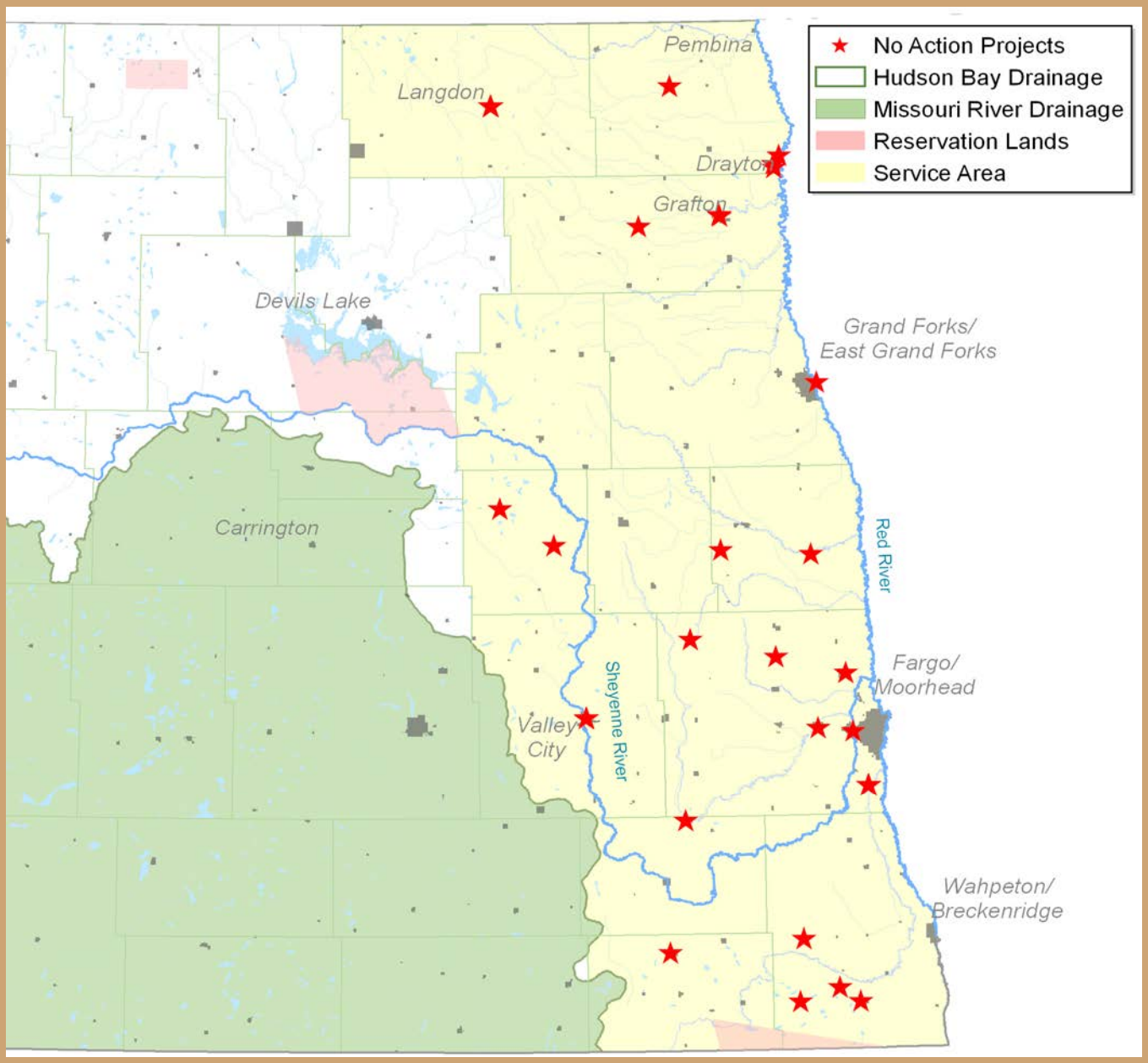
The residents of the Red River Valley depend on surface water sources to meet water demands because of limited groundwater sources, particularly in North Dakota. Approximately 90% of the water that serves MR&I water systems comes from the Sheyenne and Red Rivers, including storage in Lake Ashtabula. Since only 4,895 ac-ft of water would be developed by the No Action Alternative projects, this alternative assumes that all additional water needs in the future would be supplied by surface water. No Action Alternative hydrologic modeling reveals that the service area would be short as much as 55,000 ac-ft in the worst year of a 1930s-type drought. Therefore, the No Action Alternative does not meet the purpose and need of the Project.

Red Lake River, 1910


Red River, 1936


Low Flow (17 cfs) in Sheyenne River Below Baldhill Dam, 2006

No Action Alternative



Consequences of No Action

The No Action Alternative is the future without the federal Project; however, this does not mean that there would not be environmental consequences if No Action were the selected alternative. The consequences of No Action are based on comparisons to current conditions described in chapter three of the FEIS. The following list of the consequences is summarized from chapter four.

In the event of a 1930s-type drought reoccurring in the Red River Valley, the consequences of No Action would be:

- The alternative would have the lowest cost but would not supply the projected water needs of the service area. Hydrologic modeling estimates a maximum annual shortage of 55,000 ac-ft during a 1930s-type drought, which is 41% of the water needed.

- The cumulative economic consequence of being unprepared for a 1930s-type drought would be approximately $20.4 billion over a 10-year period.

- The Missouri River would be used as a source of water by three of the action alternatives. Without the Project, water withdrawals would increase over existing conditions in the Missouri River Basin. The annual depletion would be 557,000 ac-ft greater than it is now, due to increased MR&I water demands from projected population growth, expanded industrial use, and new water projects.

- Lake Ashtabula, which is the main water supply source in the Red River Valley, would be drained below the minimum 28,000 ac-ft Fish and Wildlife Conservation Pool. The lack of water in the reservoir would have adverse consequences on aquatic life, recreation, and other resources dependent on lake levels.

- Water users would tap the only other available water supply - local groundwater sources in North Dakota and Minnesota. Currently, these aquifers are almost fully appropriated and withdrawal of additional groundwater to replace surface water during a severe drought would deplete groundwater.

- The threat of invasive species successfully invading the Hudson Bay Basin through existing pathways would continue. For example, international shipping in the Great Lakes poses a high risk of new invasive species, although this risk could be reduced through future regulations. Once established in the Great Lakes, numerous pathways are available for dispersal of invasive species into adjacent basins, including the Hudson Bay Basin.

- Extremely low flows in the Sheyenne and Red Rivers would result from increased depletions and lack of releases from Lake Ashtabula. There would be consequences to aquatic communities and riparian wetlands, woodlands, and grasslands.

- The western prairie fringed orchid, a threatened species near the Sheyenne River protected by the ESA, could decline because of increased use of the river and aquifers, such as the Sheyenne Delta Aquifer.

Western Prairie Fringed Orchid

- Industries in the Wahpeton area would not have enough water to operate; therefore, return flows would decrease, and water quality would improve. With the exception of total phosphorus, this difference in water quality is gradually diminished farther downstream at the Canadian border. Water quality at the Canadian border would resemble downstream tributaries and return flows between Fargo and Emerson, Manitoba.

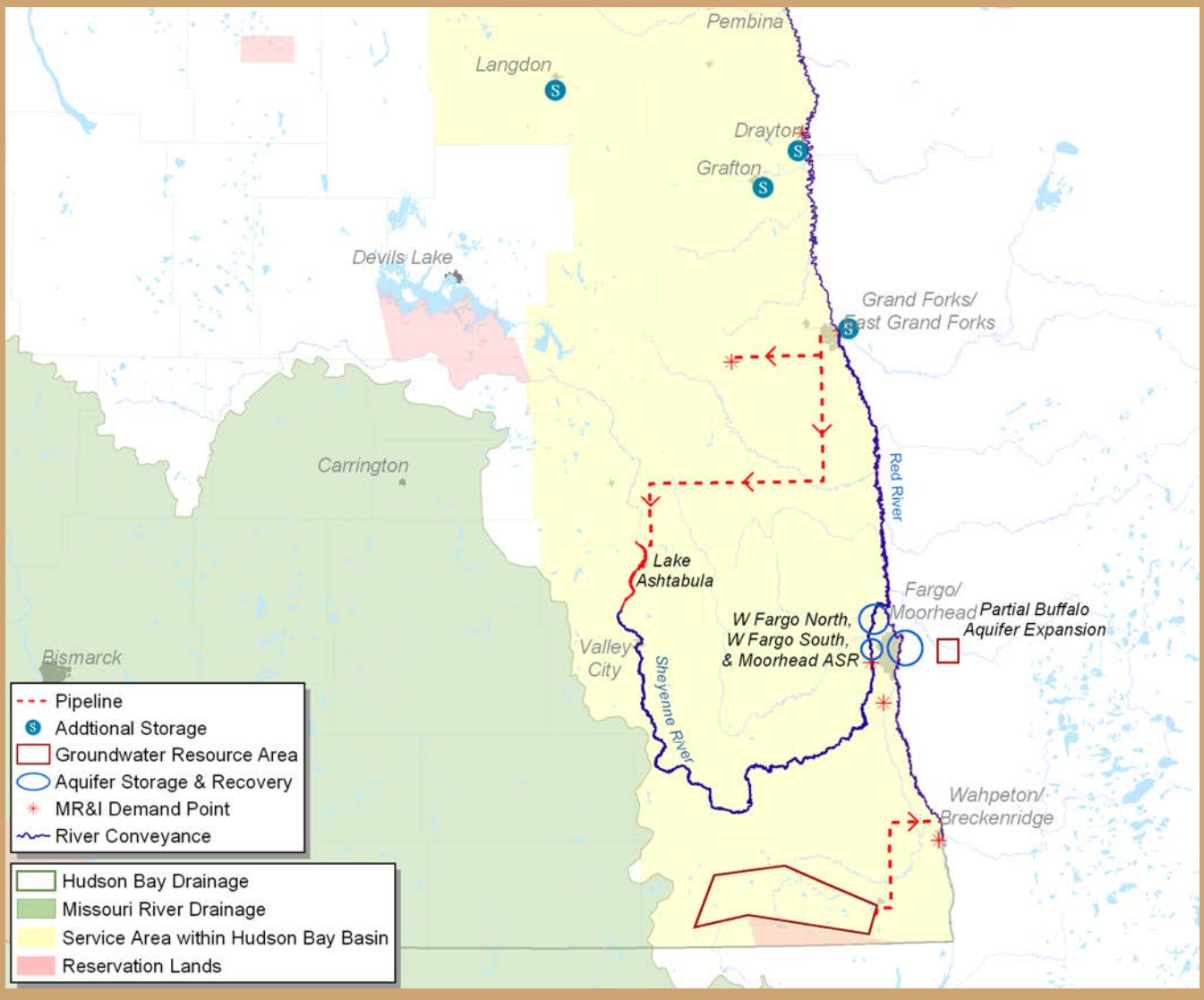
- Given the relatively few acres that would be disturbed, No Action has the least potential of adversely affecting historic properties.

North Dakota In-Basin Alternative

This alternative would supplement existing water supplies and use the Red River and other North Dakota water sources to meet future water demands. The alternative includes 11 water supply features, including water conservation. The main water supply feature is a 48 cfs buried pipeline that captures Red River flows downstream of Grand Forks and conveys these flows back to Lake Ashtabula for storage and release to meet MR&I water demands.

The alternative also includes developing new groundwater sources in southeastern North Dakota to serve industries. To supplement water supplies during a drought, ASR systems are proposed for Fargo, Moorhead, and West Fargo. Moorhead would continue to draw on Minnesota groundwater sources for some of its water demand.

Additional storage facilities would be needed by communities in the northern part of the Red River Valley. The Cass Rural Water Users District and Grand Forks-Traill Water District would connect to the Fargo and Grand Forks municipal systems. The intake for Grafton would be relocated north on the Red River behind an existing lowhead dam to improve reliability during low flow river conditions. The estimated construction cost of this alternative is $457.3 million, and the annual OM&R cost is $5.60 million.



North Dakota In-Basin Alternative

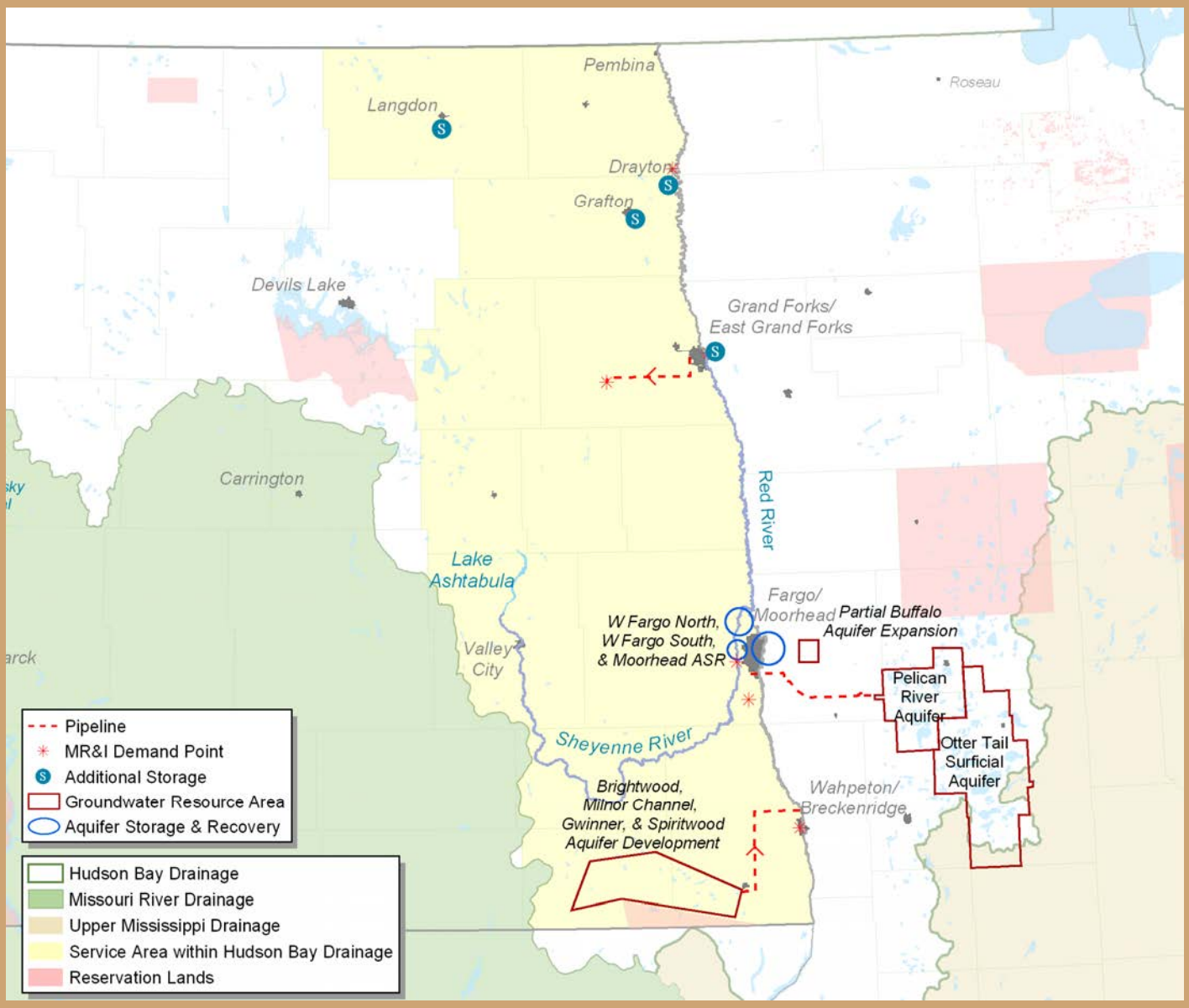
Advantages	Disadvantages
• Second lowest cost action alternative. • Water supply features are in the Red River Basin, so the Project is already authorized under the DWRA. • State of North Dakota has regulatory control of water supply features. • Augments flows in the Sheyenne River. • Stabilizes pool elevations in Lake Ashtabula during non-drought years and maintains the Fish and Wildlife Conservation Pool. • Improves fish and mussel habitat in the Sheyenne River and mussel habitat in the Red River. • Biota water treatment is not necessary. • Positively affects riparian areas by augmenting the Sheyenne River during a 1930s-type drought.	• Does not deliver treated water directly to Grand Forks to address their water quality concerns. • Could use up to 100% of available stream flows north of Grand Forks, so the risk of water shortages is potentially higher than with the other alternatives, which have more reliable and abundant water sources. • Uses all available in-basin North Dakota water supplies, leaving no additional water resources for demands beyond 2050 estimates. • Because the alternative reuses water multiple times, it potentially increases water quality problems associated with currently unregulated contaminants, such as pharmaceuticals and endocrine disrupters. • Requires use of ASR, which has yet to be successfully demonstrated in these aquifers. Extensive pilot studies are needed to test the viability of ASR. • Includes storage to meet peak water demands, which could be problematic. Water quality problems associated with long-term storage of treated or raw water due to the formation of disinfection byproducts or precursors could result. • Has the lowest flow of all the action alternatives in the Red River between Grand Forks and Canada during a drought. • Fully uses groundwater sources in southeastern North Dakota and transfers water resources away from rural North Dakota communities to benefit growth in larger cities. • Development of Spiritwood, Gwinner, Brightwood, and Milnor Channel Aquifers to meet Project needs would limit future use of these groundwater sources for non-Project water users. In addition, a long-term adverse effect is expected in the Buffalo Aquifer. • May adversely affect historic properties.

The advantages and disadvantages of this action alternative were identified by comparing the effects of this action alternative to those of the No Action Alternative.

Red River Basin Alternative

This alternative would supplement existing water supplies and would draw on a combination of the Red River, other North Dakota water sources, and Minnesota groundwater sources to meet future demands. The alternative uses 11 water supply features, including water conservation. The main water supply feature would be a series of wellfields developed in Minnesota with an interconnecting buried pipeline serving the Fargo-Moorhead metropolitan area. The alternative also would include developing new groundwater sources in southeastern North Dakota to serve industries.

To supplement water supplies during a drought, ASR systems are proposed for Fargo, Moorhead, and West Fargo. Moorhead would continue to draw on Minnesota groundwater sources for some of its water demand. Additional storage reservoirs would be needed by communities in the northern end of the Red River Valley. The Cass Rural Water Users District and Grand Forks-Traill Water District would interconnect to the Fargo and Grand Forks municipal systems. The Grafton intake would be relocated north to improve reliability during low flow river conditions. The estimated construction cost of this alternative is $415.4 million, and the annual OM&R cost is $6.68 million.



Red River Basin Alternative

Advantages	Disadvantages
• Lowest cost action alternative. • Water supply features are in the Red River Basin, so the Project is already authorized under the DWRA. • Minnesota groundwater has more consistent water quality than surface water, which is an advantage when treating water. • Project water is conveyed directly to the Fargo area providing an instantaneous supplemental supply when needed. • Lake Ashtabula's Fish and Wildlife Conservation Pool is maintained. • Red River mussels would benefit from flows in the Red River. • Biota water treatment is not necessary.	• Does not deliver treated water directly to Grand Forks to address their water quality concerns. • Use of Minnesota groundwater to serve North Dakota water demands would require a permit from the State of Minnesota and approval from the Minnesota legislature. • Minnesota has suggested that the Project's use of Minnesota groundwater would be limited to drought periods. The alternative was not modeled with this assumption and would not work if groundwater were available only during drought periods. • Out-of-state diversions are the lowest priority for conflicting water uses in Minnesota, so the water supply may be unreliable if resources become limited. A Minnesota appropriation permit would be subject to amendment or termination at any time. • Minnesota would not allow groundwater sources to be used by new industrial water users during a drought. The alternative was not modeled based on this limitation, because it would fail to meet the purpose and need for the Project. • Development of Pelican River, Otter Tail Surficial, Brightwood, Milnor Channel, Gwinner, and Spiritwood Aquifers to meet Project needs would limit future use of these groundwater sources for non-Project water users. • Requires use of ASR, which has yet to be successfully proven to work in these aquifers. Extensive pilot studies would be needed to prove the viability of ASR. • Includes storage to meet peak water demands, which could be problematic. Water quality problems associated with long-term storage of treated or raw water, due to the formation of disinfection byproducts or precursors, could result. • Fully uses groundwater sources in southeastern North Dakota and transfers water resources away from rural North Dakota and Minnesota communities to benefit growth in larger cities. • Adverse effects to the Otter Tail Surficial and Pelican River Sand-Plain Aquifers would occur from increased use lowering water tables. • May adversely affect historic properties.

The advantages and disadvantages of this action alternative were identified by comparing the effects of this action alternative to those of the No Action Alternative.

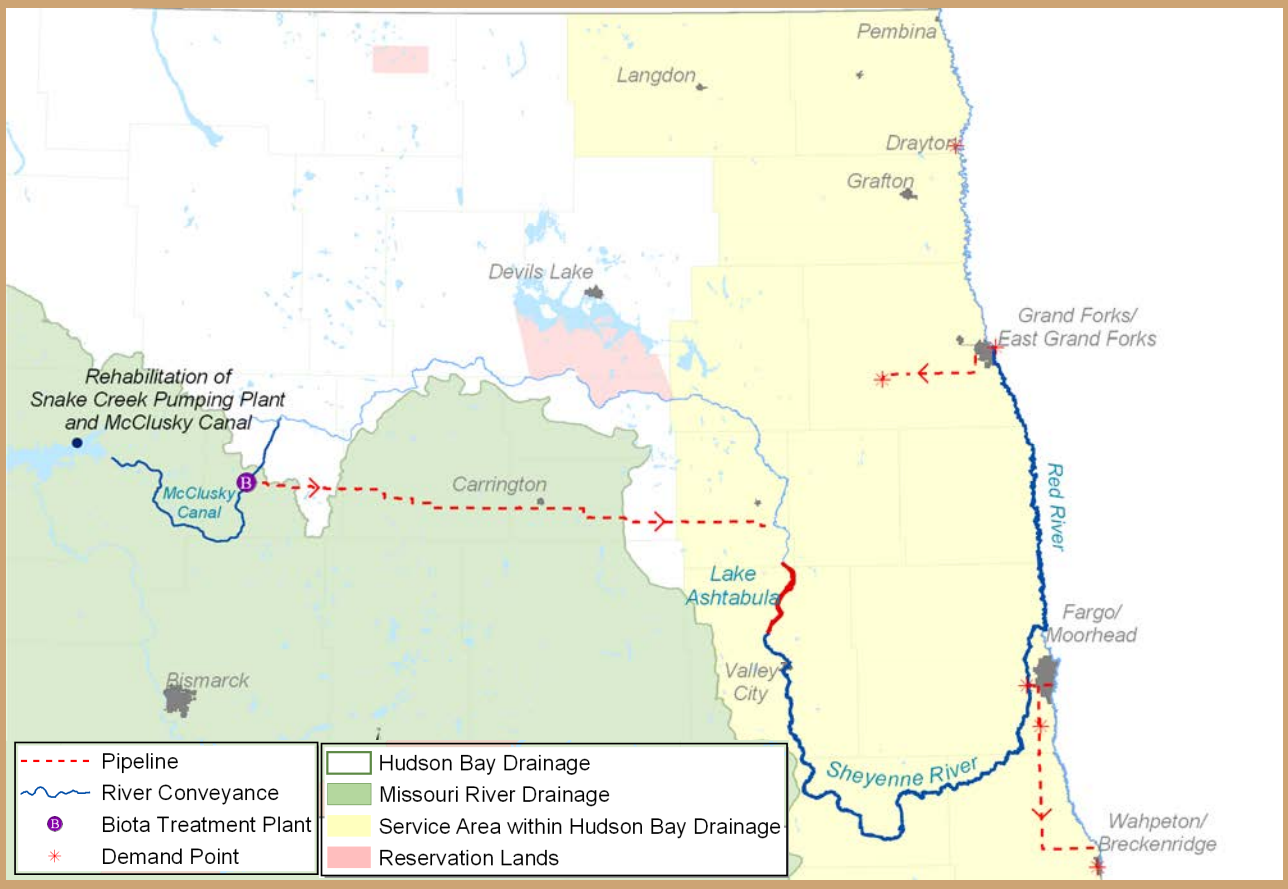
GDU Import to Sheyenne River Alternative

This alternative would supplement existing water supplies to meet future water needs with a combination of Red River, other North Dakota in-basin sources, and imported Missouri River water. The alternative includes eight water supply features, including water conservation. The primary feature of this alternative would be a 122 cfs buried pipeline from the McClusky Canal to Lake Ashtabula that would release treated Missouri River water into the Sheyenne River about eight miles above the reservoir. The pipe would be sized so peak-day demands could be met by Lake Ashtabula releases into the Sheyenne River.

The alternative would use the existing Principal Supply Works constructed as part of the GDU, so repayment of a portion of these original construction costs is included in the alternative estimate. The Cass Rural Water Users District and Grand Forks-Traill Water District would interconnect to Fargo and Grand Forks municipal systems. The Grafton intake would be relocated north on the Red River behind an existing lowhead dam to improve reliability during low river flow. The alternative would include a buried pipeline from Fargo to the Wahpeton area to serve industrial water demands in southeastern North Dakota.

The alternative has sufficient capacity in the pipeline to Lake Ashtabula to serve MR&I water systems in northeastern North Dakota. Most of the water systems currently use groundwater sources, but it is reasonably foreseeable to assume that they may need service in the future. Because this is a bulk water supply Project, the cost of distributing water in northeastern North Dakota is not included in the alternative.

The alternative would include a biota water treatment plant adjacent to the McClusky Canal to reduce the risk of transferring invasive species into the Hudson Bay Basin. The In-filter DAF (Dissolved Air Flotation) treatment process or a comparable, cost effective treatment process was identified for this alternative. The treatment process includes In-filter DAF pre-treatment, filtration, ultraviolet disinfection, and chlorination. Aquatic life is very sensitive to chlorine, so any residual concentrations would be removed prior to releasing Project water into the Sheyenne River above Lake Ashtabula. The estimated construction cost of this alternative is $659.8 million, and the annual OM&R cost is $4.9 million.



GDU Import to Sheyenne River Alternative	
Advantages	**Disadvantages**
• Uses the Missouri River system, which is the largest and most reliable source of water in North Dakota. • Has pipeline capacity to serve communities and rural water systems in northeastern North Dakota. • Does not use limited groundwater resources of southeastern North Dakota or technically challenging ASR features. • Lowest cost of the Missouri River import alternatives. • Augments flows in the Sheyenne and Red Rivers. • Stabilizes pool elevations in Lake Ashtabula during non-drought years and maintains the Fish and Wildlife Conservation Pool. • Beneficially affects North Dakota aquifers; groundwater is available to meet other water demands. • Beneficially affects the Buffalo Aquifer in Minnesota by providing water to Moorhead. • Meets all of the North Dakota Game and Fish Department recommended aquatic flow targets on the Sheyenne River 100% of the time during a 1930s-type drought and 40% of the time on the Red River below Fargo. • Benefits fish and mussels in the Red and Sheyenne Rivers with augmented flows. • Provides beneficial effects to riparian areas from augmented flows in the Sheyenne and Red Rivers.	• Does not deliver treated water directly to Grand Forks to address their water quality concerns. • Use of Missouri River water requires congressional authorization. • Biota water treatment plant is required. • Has the highest annual diversion from the Missouri River during a 1930s-type drought. • May adversely affect historic properties.

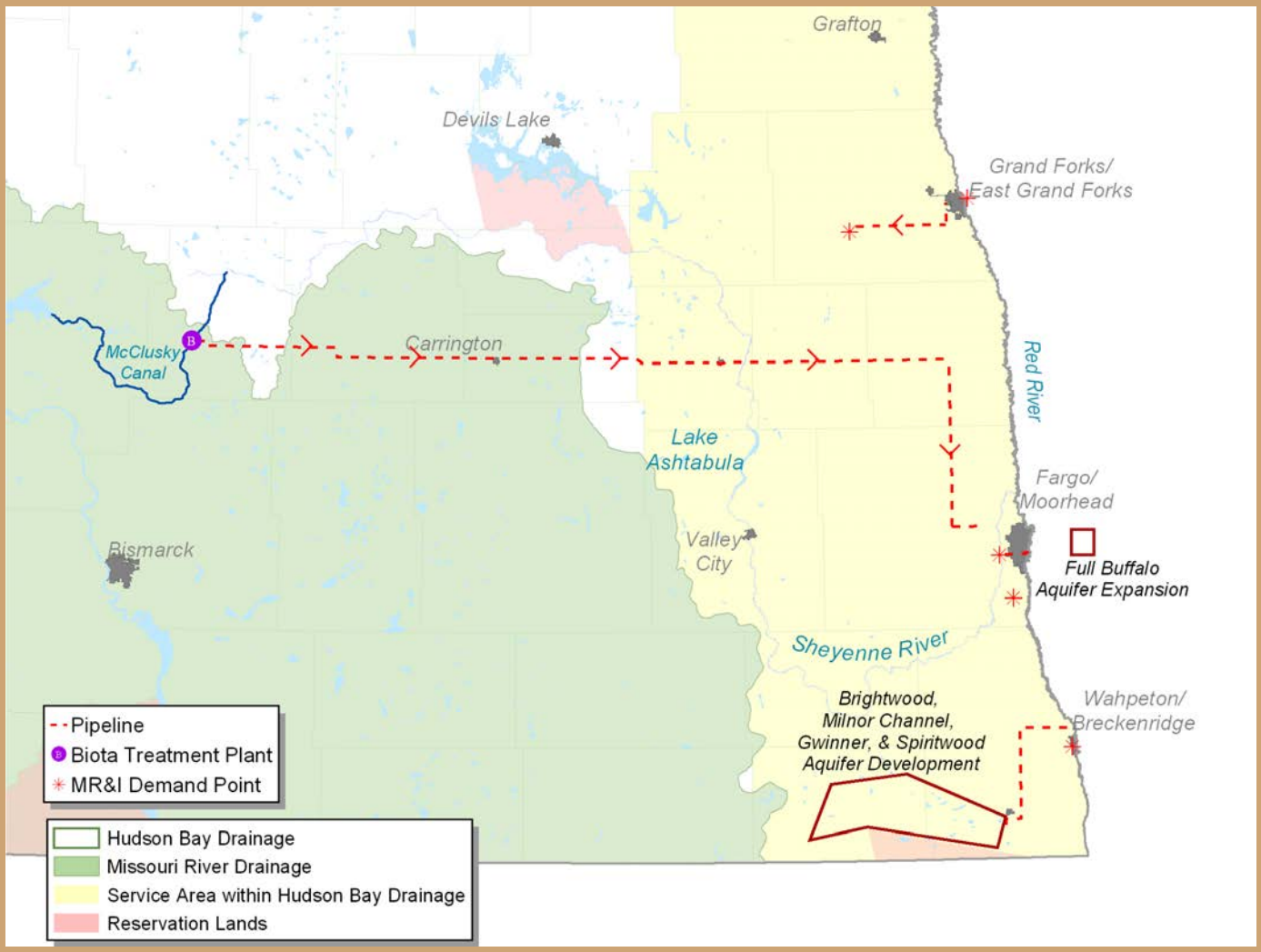
The advantages and disadvantages of this action alternative were identified by comparing the effects of this action alternative to those of the No Action Alternative.

GDU Import Pipeline Alternative

This alternative would supplement existing water supplies to meet future water needs by conveying water from the Missouri River via the McClusky Canal and a buried pipeline to the Red River Valley. The alternative includes 10 water supply features, including water conservation measures. The primary feature of the alternative would be an 85 cfs buried pipeline from McClusky Canal to the Fargo metropolitan area. The alternative would use the existing Principal Supply Works constructed as part of the GDU, so repayment of a portion of these original construction costs is included in the alternative's cost estimate.

The alternative would develop new groundwater sources in southeastern North Dakota to serve industries and expand use of the Buffalo Aquifer to serve Moorhead. The Cass Rural Water Users District and Grand Forks-Traill Water District would interconnect to Fargo and Grand Forks municipal systems. The Grafton intake would be relocated north on the Red River behind an existing lowhead dam to improve reliability during low river flow.

The alternative would include a biota water treatment plant adjacent to the McClusky Canal to reduce the risk of transferring invasive species into the Hudson Bay Basin. The In-filter DAF or a comparable, cost effective treatment process was identified for this alternative. The treatment process includes DAF pre-treatment, filtration, ultraviolet disinfection, chlorination and chloramines for residual management. The estimated construction cost of this alternative is $911.0 million, and the annual OM&R cost is $9.07 million.



GDU Import Pipeline Alternative

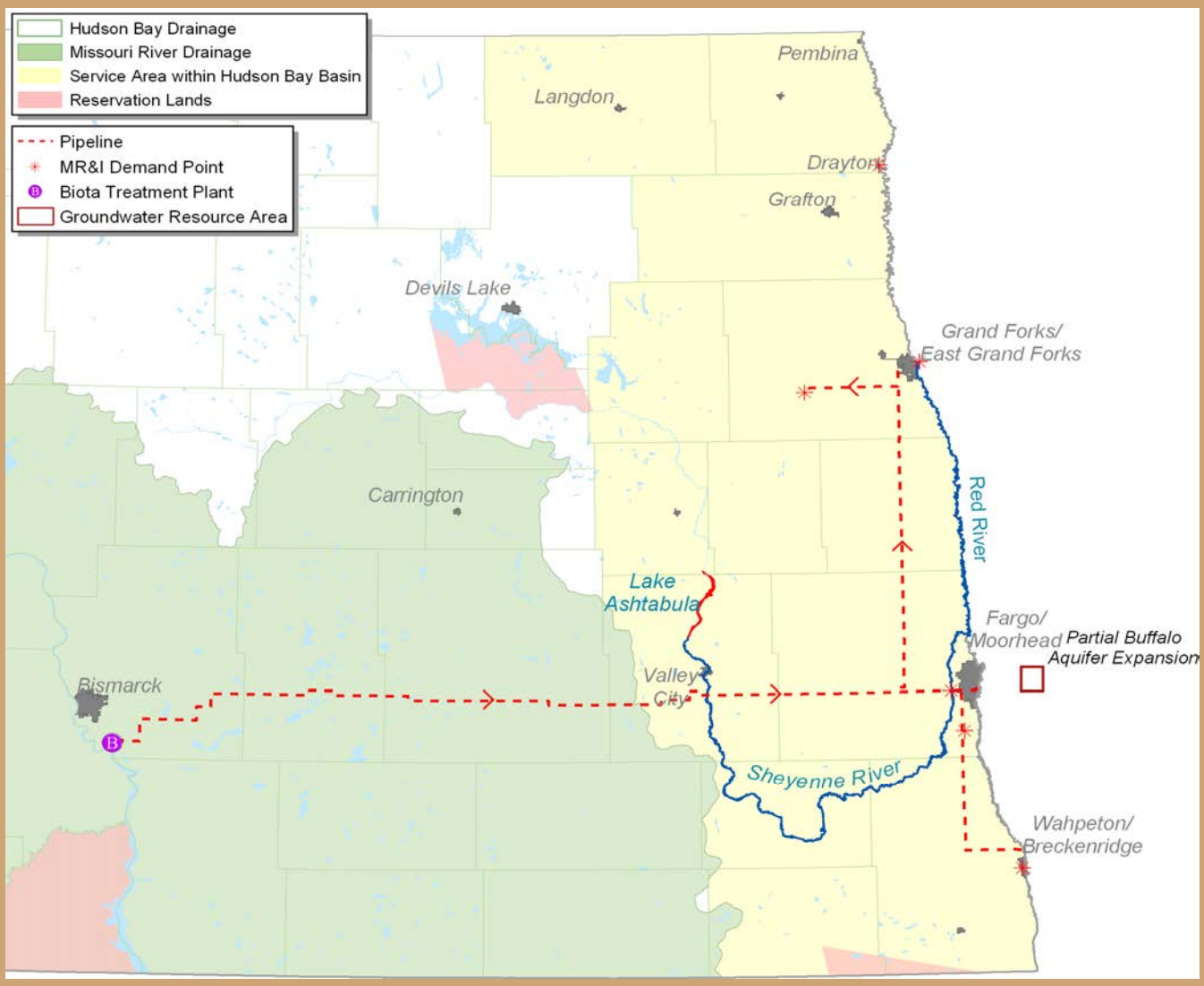
Advantages	Disadvantages
• Uses the Missouri River system, which is the largest and most reliable source of water in North Dakota. • Does not use technically challenging ASR features. • Water is conveyed directly to the Fargo area as a secondary supply when natural flow does not meet demand. This is an instantaneous supplemental water supply. • Delivers water treated to SDWA level, which could eliminate the need for new water treatment plants in the Fargo area. • Lake Ashtabula's Fish and Wildlife Conservation Pool is maintained. • Two aquifers, one in North Dakota and one in Minnesota, would benefit from decreased use. • Benefits fish and mussels in the Red River with augmented flows. • Beneficially affects riparian areas with improved flow during a 1930s-type drought at the Lisbon and West Fargo gages on the Sheyenne River and from Fargo to the Canadian border on the Red River.	• Second highest cost of action alternatives. • Does not deliver treated water directly to Grand Forks to address their water quality concerns. • Use of Missouri River water requires congressional authorization. • Biota water treatment plant is required. • Has the highest average annual diversion from the Missouri River system during the modeling period of record 1931-2001. • Fully uses groundwater sources in southeastern North Dakota, which benefits growth in the larger cities rather than rural communities. • Development of the Spiritwood, Gwinner, Brightwood, and Milnor Channel Aquifers to meet Project needs would limit future use of these groundwater sources for non-Project water users. • Decreases mussels habitat in the Sheyenne River during a drought. • May adversely affect historic properties.

The advantages and disadvantages of this action alternative were identified by comparing the effects of this action alternative to those of the No Action Alternative.

Missouri River Import to Red River Valley Alternative

This alternative would supplement existing water supplies to meet future water needs by conveying treated water in a buried pipeline from the Missouri River south of Bismarck directly to Fargo, Grand Forks, and Wahpeton areas. The alternative uses seven water supply features, including water conservation measures. The principal feature would be a 119 cfs buried pipeline from the Missouri River at Bismarck to Fargo with a 21 cfs buried pipeline spur to Grand Forks. The Missouri River water would be collected from a series of horizontal wells constructed in sediments underlying the Missouri River south of Bismarck. A buried pipeline from Fargo to the Wahpeton area would serve industries. The Cass Rural Water Users District and Grand Forks-Traill Water District would interconnect to Fargo and Grand Forks municipal systems. The Grafton intake would be relocated north on the Red River behind an existing lowhead dam to improve reliability during low river flow.

The alternative would include a biota water treatment plant adjacent to the Missouri River to reduce the risk of transferring invasive species into the Hudson Bay Basin. In-filter DAF or a comparable, cost effective treatment process was identified for this alternative. The treatment process includes DAF pre-treatment, filtration, ultraviolet disinfection, chlorination and chloramines for residual management. The estimated construction cost of this alternative is $1.065 billion, and the annual OM&R cost is $6.64 million.



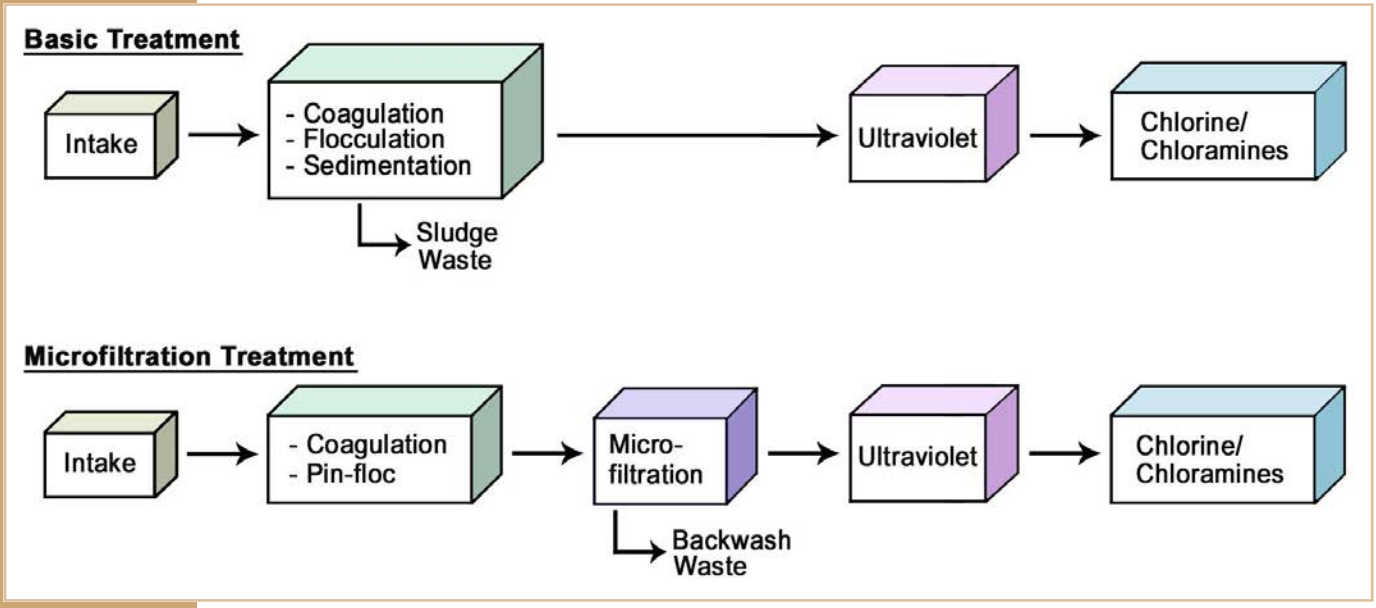
Missouri River Import to Red River Valley Alternative	
Advantages	**Disadvantages**
• Uses the Missouri River system, which is the largest and most reliable source of water in North Dakota. • Pipes 20 cfs of treated water to Grand Forks to address their water quality concerns. • Does not use limited groundwater resources in southeastern North Dakota or technically challenging ASR features. • Missouri River intake structure uses horizontal wells, further reducing the risk of transfer of invasive species. • Water is conveyed directly to Fargo and Grand Forks delivering an instantaneous supplemental water supply. • Provides SDWA compliant treated water. This could eliminate the need for new water treatment plant capacity in the service area. • Beneficially affects riparian areas during a 1930s-type drought with improved flows at the Lisbon and West Fargo gages on the Sheyenne River and from Grand Forks to the Canadian border on the Red River.	• Highest cost action alternative. • Use of Missouri River water requires congressional authorization. • Biota water treatment plant is required. • Decreases mussel habitat in the Sheyenne River during a drought. • May adversely affect historic properties.

The advantages and disadvantages of this action alternative were identified by comparing the effects of this action alternative to those of the No Action Alternative.

Biota Water Treatment Plant

Each of the Missouri River import alternatives would use an In-filter DAF or a comparable, cost effective treatment process to reduce the risk of transfer of invasive species from the Missouri River Basin to the Hudson Bay Basin. The GDU Import to Sheyenne River and GDU Import Pipeline Alternatives each would have a biota water treatment plant located adjacent to the McClusky Canal, three miles north of McClusky, North Dakota. The Missouri River Import to Red River Valley Alternative would have a biota water treatment plant located beside the Missouri River south of Bismarck, North Dakota.

A full range of treatment alternatives has been considered in the EIS process, as required by NEPA. Reclamation has worked cooperatively with EPA during the course of the EIS to identify treatment processes that would greatly reduce risks of transfer of invasive species and meet proposed treatment goals for risk reduction. The DEIS evaluated Basic and Microfiltration treatment options. Basic Treatment was identified as the preferred treatment process that used multiple barriers but did not include filtration.

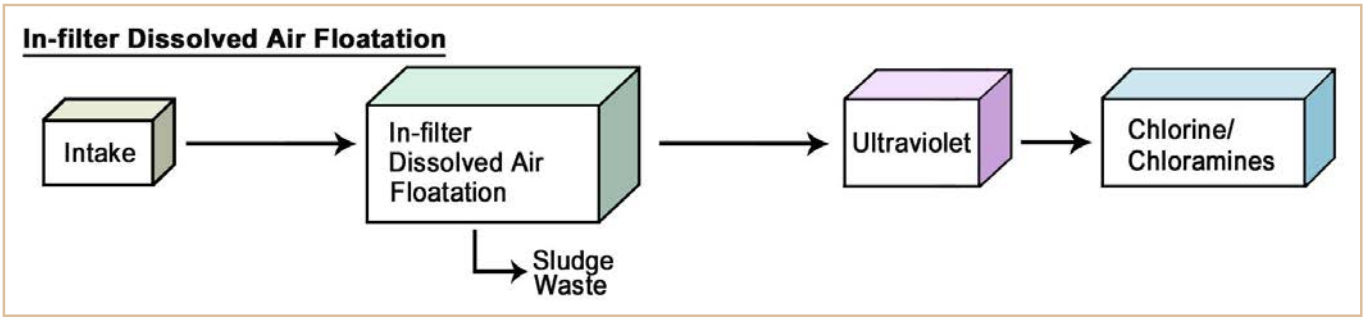


filtration.

In response to EPA's comments and comments from the Province of Manitoba, Reclamation evaluated an additional treatment process in the SDEIS, In-filter DAF. The In-filter DAF treatment process was used for the GDU Import to Sheyenne River Alternative in the SDEIS; however, no specific cost estimate for this process had been developed. Therefore, the cost estimate in the SDEIS for In-filter DAF was based on

Microfiltration. In the FEIS cost estimates for Basic Treatment and Microfiltration were updated, and a new cost estimate for In-filter DAF was developed. After further evaluation and in consultation with EPA, the Department of State, Province of Manitoba, and Canada; Reclamation iden-tified the In-filter DAF treatment, or a comparable, cost effective treatment, as the treatment process for the preferred alternative.

To clarify the elements of each treatment process, Basic Treatment includes coagulation, flocculation, sedimentation, ultraviolet disinfection, chlorination, and chloramines. Microfiltration uses coagulation,



pin-floc, microfiltration, ultraviolet disinfection, chlorination, and chloramines.

The third water treatment option, In-filter DAF, was recommended by Manitoba Water Stewardship in their comments on the DEIS (Dwight Williamson, letter of June 30, 2006). The In-filter DAF option includes DAF, media filtration, ultraviolet disinfection, chlorination, and chloramines.

Examples of Invasive Species of Concern

Gizzard Shad

Worker Cleaning Water Intake Pipe Clogged by Zebra Mussels

Summary of Costs for Each Alternative

The cost estimates in the FEIS should only be used to compare alternatives. All of the alternatives used the same assumptions and unit prices, so they are directly comparable from a cost standpoint.

The table summarizes estimated construction, OM&R, and annualized costs for each of the alternatives. Construction costs cover supplying bulk water to the Red River Valley service area. Annual OM&R costs include all annual costs for the water supply features. The annualized costs are a method of combining construction costs and annual OM&R costs into one composite value for comparison purposes. The total annualized costs are the annual equivalent of a capital cost added to the annual OM&R cost.

This analysis assumed a repayment period of 45 years (2005 – 2050) with an interest rate of 5%. For example, annual payments of $25,728,000 would have to be made to pay off the construction costs of the North Dakota In-Basin Alternative at a cost of $457,292,000. The $25,728,000 annual payment plus the annual OM&R cost of $5,604,000 equals the total annualized cost of $31,332,000.

Alternative	Construction Cost (2005 Dollars)[1]	Annual OM&R Cost[1]	Annualized Construction Cost[1]	Total Annualized Cost[1]
No Action	$24,307,000	$1,023,000	$1,368,000	$2,391,000
North Dakota In-Basin	$457,292,000	$5,604,000	$25,728,000	$31,332,000
Red River Basin	$415,438,000	$6,676,000	$23,373,000	$30,049,000
GDU Import to Sheyenne River [2]	$659,833,000	$4,896,000	$37,123,000	$42,019,000
GDU Import Pipeline [2]	$910,539,000	$9,072,000	$51,229,000	$60,301,000
Missouri River Import to Red River Valley [2]	$1,064,551,000	$6,635,000	$59,893,000	$66,528,000

[1] Values are rounded to the nearest $1,000. [2] Biota water treatment plant costs updated to 2007 dollars.

The cost estimates should only be used for comparative purposes when evaluating the differences between alternatives. Following a ROD, Reclamation would assess the proposed Project from a Project-funding standpoint. At that time Reclamation would develop feasibility-level design and construction cost estimates. It is only these updated and detailed estimates that Reclamation would use to seek appropriations from Congress.

Affected Environment

The Missouri River System Has the Capacity to Store 73.4 Million ac-ft of Water

Exceedances of Water Quality Standards in the Red River are Rare

Fish Diversity in the Red River is High

Resources that could be affected by the Project's proposed alternatives are located throughout the geographic scope of the Project. The existing conditions of these resources are described in chapter three of the FEIS. Resources identified in scoping or that would be potentially affected by the Project are:

Surface Water Quantity

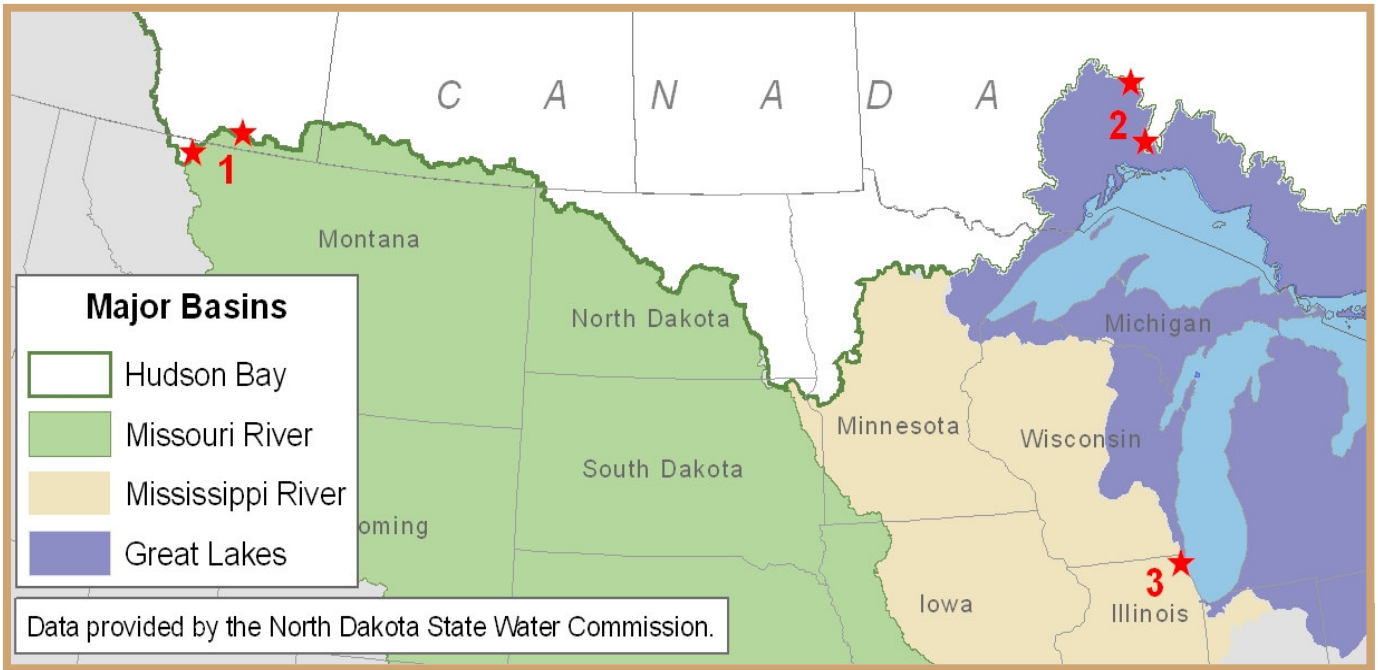
The extremely flat topography and hydrology of the Red River Valley is characterized by rivers that generally fluctuate between high flow in the spring and low flow by late summer. Approximately 90% of MR&I water demands in the Red River Valley service area currently are met by surface water, which USGS streamflow gage records reveal to be unreliable during severe droughts. In contrast, the Missouri River Mainstem Reservoir System has a capacity to store 73.4 MAF of water. There is sufficient water in the Missouri River system to meet all existing MR&I water demands.

Surface Water Quality

In general, the waters of the Sheyenne, Red, and Missouri Rivers are suitable for most designated uses. At most locations exceedances of water quality standards are rare, and when these occur, are often naturally caused.

Groundwater

Aquifers that would be affected by one or more features of the Project are the Brightwood, Milnor Channel, Gwinner, Spiritwood, West Fargo North, and West Fargo South Aquifers in North Dakota and the Buffalo, Moorhead, Otter Tail Surficial, and Pelican River Sand-Plain Aquifers in Minnesota.



1 Milk River and St. Mary River Diversions (650 cfs)
Purpose: Irrigation
Connections: Missouri River Basin and Hudson Bay Basin
Biota Transfer Controls: No

2 Ogoki River Diversion (4,275 cfs) and Long Lake Diversion (1,375 cfs)
Purpose: Hydroelectric Power Generation
Connections: Hudson Bay Basin to Great Lakes Basin
Biota Transfer Controls: No

3 Chicago Sanitary and Shipping Canal (3,200 cfs)
Purpose: Sewage dilution, navigation, and hydroelectric power generation
Connections: Great Lakes Basin to Mississippi River Basin
Biota Transfer Controls: Electric barrier, additional controls proposed.

Map of Major Existing Water Transfers Between the Hudson Bay Basin and the Missouri River, Mississippi River, and Great Lakes Basins

Aquatic Communities

Fish diversity in the Red River is high compared to other streams in the region. There are 77 native and 7 introduced species of fish in the Red River and its tributaries. Over 156 fish species have been documented in the Missouri River, including many species that have been introduced into the mainstem reservoirs and riverine reaches.

Risks of Invasive Species

In addition to untreated ballast water importing invasive species into the Great Lakes, currently numerous interbasin water transfers have been constructed in the U.S. and Canada. Petch (1985) inventoried interbasin water transfers in the western U.S. The report identified 111 conveyances that exported an average of 12 million ac-ft of water per year from 1972 to 1982. Three notable projects and a number of smaller ones transfer untreated water between the Hudson Bay Basin and the Missouri River, Mississippi River, and Great Lakes Basins. The concern is that plants, algae, microorganisms, and disease agents that live in the Missouri River Basin could be potentially invasive if introduced to the Hudson Bay Basin by the Project or by existing pathways.

Natural Resource Lands

Natural resource lands consist of wetlands, grasslands, woodlands, and riparian areas. The U.S. Fish and Wildlife Service estimated that

there are 953,258 acres of wetlands in the Project counties. Remnants of native grasslands can be found throughout North Dakota and Minnesota. Woodlands in the affected environment are usually associated with rivers and streams such as the Sheyenne and Red Rivers. Riparian areas are transitional areas between river and upland communities where vegetation is influenced by water and include wetlands, grasslands, and woodlands. Riparian areas associated with the Sheyenne and Red Rivers provide not only important habitat for fish and wildlife, but also for flood control, streambank stabilization, and water quality improvement.

Wildlife, including Federally Protected Species and Species of Special Concern

The U.S. Fish and Wildlife Service, as required by the ESA, provided a list of endangered, threatened, and candidate species that are or may be present in the Project area. North Dakota does not have a state endangered species law or a specific list of endangered species; however, North Dakota does have species of special concern. Minnesota has a state endangered species law and subsequent list and regulations. Canadian listed species are considered as species of special concern.

Protected Areas, State, and Federal Lands

Protected areas, state, and federal lands could be affected by the Project. These include state parks, natural areas registry sites, sites found on the Natural Heritage Inventory, nature preserves, state wildlife management areas, U.S. Fish and Wildlife Service lands, Corps lands, U.S. Forest Service lands, and state public lands.

Historic Properties

An inventory of previously recorded cultural resources in the Project area revealed that relatively little of the area has been surveyed for cultural resources. Cultural resources are the physical remains of a site, building, structure, object, district, or property of traditional religious and cultural importance to Native Americans.

Indian Trust Assets

Indian trust assets are defined as legal interests in property held in trust by the United States for Indian tribes or individuals. The types of Indian trust assets that could be affected by the Project are trust lands; hunting, fishing or gathering rights; and water rights. Twenty-nine tribes have reservations within the Project Area.

Social and Economic Conditions

Indicators of regional economic conditions in the Red River Valley include the value of agricultural and nonagricultural production, household income, farm income, employment, and recreation.

Environmental Justice

Environmental justice addresses the fair treatment of people of all races and incomes with respect to federal actions that affect the environment. Fair treatment implies that no group of people living in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands should bear a disproportionate share of negative impacts from an action. The impacts of an action can be considered disproportionately distributed if the percentage of total impacts imposed on a specific group is greater than the percentage of the total population represented by that group. A group can be defined by race, ethnicity, income, community, or some other grouping.

Impact analyses were done to determine the effects of the Project on these resources. The results are summarized in chapter four of the EIS.

Summary of Environmental Impacts

The No Action Alternative assesses the consequences to resources during a 10-year drought when compared to the existing environment. Consequences of the No Action Alternative were described previously in the alternatives section of this Executive Summary.

The action alternatives are compared to the No Action Alternative to estimate the impacts on each resource. This table summarizes the effects to resources for each alternative when compared to the No Action Alternative. These effects are quantified and described in chapter four of the FEIS. The table identifies whether each alternative has a beneficial, adverse, or minimal effect on a resource when compared to the No Action Alternative.

Summary of Environmental Impacts That Could Result From Construction of the Action Alternatives and/or a 1930s-Type Drought as Compared to No Action

Resource List	North Dakota In-Basin	Red River Basin	GDU Import to Sheyenne River	GDU Import Pipeline	Missouri River Import to Red River Valley
B– Beneficial Effect **A** – Adverse Effect **m** – Minimal Effect **T** – Temporary Adverse Effect[1] **na** – Not Applicable					
Water Quantity					
MR&I Water Supply	B	B	B	B	B
Lake Ashtabula	B	B	B	B	B
Sheyenne River	B	m	B	m	m
Red River	m	m	B	m	m
Missouri River	na	na	m	m	m
Flooding and Erosion					
Sheyenne River	m	m	m	m	m
Red River	m	m	m	m	m
Water Quality					
Lake Ashtabula	T	m	m	m	m
Sheyenne River	T	m	m	m	m
Red River	T	T	T	T	m
Missouri River	m	m	m	m	m

Resource List	North Dakota In-Basin	Red River Basin	GDU Import to Sheyenne River	GDU Import Pipeline	Missouri River Import to Red River Valley
B – Beneficial Effect **A** – Adverse Effect **m** – Minimal Effect **T** – Temporary Adverse Effect[1] **na** – Not Applicable					
Groundwater					
North Dakota Aquifers					
Brightwood, Gwinner and Milnor Channel	A	A	na	A	na
Hankinson	A	A	na	A	na
Horace	B	B	B	B	B
Page-Galesburg	na	na	na	na	na
Sheyenne Delta	m	m	B	m	m
Spiritwood	A	A	na	A	na
Wahpeton Buried Valley	B	B	B	B	B
West Fargo North	B	B	B	B	B
West Fargo South	B	B	B	B	B
Minnesota Aquifers					
Buffalo	m	m	na	A	na
Moorhead	B	B	B	B	B
Otter Tail Surficial	na	A	na	na	na
Pelican River Sand-Plain	na	A	na	na	na
Aquatic Communities					
Lake Ashtabula	B	B	B	B	B
North Dakota Game and Fish Aquatic Flow Recommendations	m	m	B	m	m
Sheyenne River Fish	B	m	B	m	m
Sheyenne River Mussels	B	m	B	A	A
Red River Fish	m	m	B	B	m
Red River Mussels	B	B	B	B	B
Missouri River	na	na	m	m	m
Risk of Transferring Invasive Species	m	m	m	m	m
Natural Resource Lands					
Construction Impacts to Wetlands, Woodlands, Native Prairie	T	T	T	T	T
Riparian Wetlands, Woodlands, Grasslands	B	m	B	B	B
Wildlife	m	m	m	m	m
Federal and State Protected Species	m	m	m[2]	m	m
Protected Areas	B	B	B	m	m
Historic Properties	A[3]	A[3]	A[3]	A[3]	A[3]
Indian Trust Assets					
Trust Lands, Hunting, Fishing, & Gathering Rights, Water Rights	m	m	m	m	m
Social and Economic Issues					
Drought	B	B	B	B	B
Construction and OM&R	B	B	B	B	B
Project Repayment	m	m	m	m	m
Red River Valley Recreation	B	B	B	B	B
Missouri River Hydropower, Navigation, Recreation	na	na	m	m	m
Environmental Justice	m	m	m	m	m

[1]Temporary adverse effects are impacts that can be mitigated. See Appendix L.1 for environmental mitigation by resource. [2]Potential impacts to federal and state protected species could be both beneficial and minimally adverse and were quantified by comparing No Action to the action alternatives under the NEPA. Under the ESA, Reclamation determined that the proposed action may affect but is not likely to adversely affect listed species (see Appendix G.1), because the adverse impacts were found to be insignificant and discountable. The U.S. Fish and Wildlife Service has concurred with Reclamation's determinations in the biological assessment. [3]Adverse effects to historic properties are anticipated but consultation is in progress and effects have not been determined.

Issues, Concerns, and Potential Impacts

Three population projections were considered recognizing that it is difficult to accurately project population changes through 2050.

Fargo Xeriscaping Water Conservation Demonstration Project Under Construction

Comments received on the DEIS and SDEIS identified issues and concerns of particular importance to this Project and are presented below along with potential impacts to key resources. The potential impacts are direct, indirect, and cumulative from the proposed actions and are evaluated in chapter four. For detailed comments and responses, see responses in Appendix M.1 and documents in M.2.

Purpose and Need for the Project – General

Summary Comment

Some comment letters raised concerns about the purpose and need for the Project. Comments recommended that residents of the Red River Valley should "live within their means" from a water source standpoint. Comments suggested that future water demand estimates were inflated by unrealistic population projections and excessive industrial water demands. Comments observed that if future water demands were smaller, there would be less of a need for the Project.

Summary Response

The Red River, which is the primary source of water for the service area, was dry for approximately five consecutive months during the 1930s drought. Hydrologic modeling of current (2005) Red River Valley water demands predicts that the present water supplies would be inadequate during such a drought, which would cause severe economic impacts. Water demands in the region are projected to increase through 2050, and a 1930s-type drought in the future

New Home Construction in Fargo, North Dakota

would have even more devastating economic consequences without the Project (chapter four, "social and economic issues" section). A benefit/cost analysis in Appendix K.2 reflects a benefit/cost ratio over 1 for all action alternatives considered in the FEIS.

In response to comments on the DEIS, the water demands were revisited and extensive consultation with the water users was conducted, which resulted in the determination that the Scenario One water demands were reasonable. The higher Scenario Two water demands were eliminated from consideration in the SDEIS (chapter one, "purpose and need" section). In addition, independent population reports confirm Reclamation estimates as being reasonable.

Population Projections for the Project

Summary Comment

Many comment letters raised the concern that Project population projections were too high resulting in excessive water demands, increased water shortage during droughts, and an enhanced need for the Project.

Summary Response

In addition to Reclamation's population projection report, an independent report by Northwest Economic Associates estimated population growth 6.9% less than Reclamation. This is not a significant difference. The Minnesota State Demographic Center reached that same conclusion. As stated in their letter, "Despite my various criticisms, I should note that the "best estimate" projection is only about 26,000 more than the more conventional "trend migration" projection after 50 years, a difference of less than 5 percent. This is not a huge difference in the world of population projections." In addition, in response to a comment, Reclamation reviewed a 2006 Fargo-Moorhead Metropolitan Council traffic study that included independently developed population projections for the Fargo-Moorhead metro area. The report's 2035 population estimates were 1.5% lower than the Reclamation report, again demonstrating the Reclamation population projections are reasonable.

Water Conservation

Summary Comment

Some comment letters suggested that Reclamation should revise the *Water Conservation Potential Assessment* report prepared for the Project and estimate higher water conservation savings.

Summary Response

Reclamation reviewed 16 supply and demand management conservation measures in the *Water Conservation Potential Assessment*. The report developed reasonable, sustainable, and cost effective conservation measures based upon sound science and engineering. A review of historic water use in North Dakota by USGS shows that North Dakota has the lowest per capita water use, as compared to the other 10 Missouri River Basin states. This demonstrates successful conservation measures are already in use and limits implementation of additional measures without economic impacts (see Appendix A.1).

A *water shortage* is defined as the difference between the water demand and how much water is available on a daily, monthly, or annual basis.

Drought Contingency Measures

Summary Comment

Some comment letters suggested that drought contingency measures should be included in future water demand estimates in addition to water conservation measures.

Summary Response

Drought contingency measures do not reduce water shortages. Rather, these are implemented to reduce water demands in certain water use sectors during water shortages. The EIS discloses that water users could implement drought reduction measures of 7.5% without experiencing severe economic losses (Appendix A.1).

Global Climate Change

Summary Comment

The effects of climate change should be evaluated in the EIS, including the effects of such a change on the viability of water sources in the Red River and Missouri River Basins.

Summary Response

Current climate models are inconclusive in regard to projected changes in streamflow in the Northern Great Plains (chapter four, "climate" section). Depending upon which model is used, average annual runoff in both the Missouri River and the Red River could either increase or decrease during the next 50 years as a result of climate change. There is even greater uncertainty regarding the occurrence of extreme events, such as an extended drought.

Climate - 1930s Drought

Summary Comment

Some comment letters suggested that a drought more severe than the 1930s should be used to evaluate Project alternatives while other comment letters suggested the historic drought of the 1930s was too severe and would not be repeated through the planning period of 2050.

Summary Response

The Meridian Environmental Technology, Inc. (2004) report and several peer-reviewed scientific studies present credible scientific data suggesting that a 1930s-type drought could occur in the Red River Valley before 2050. The best available data for hydrologic modeling needed to design the Project are the river gage flow data for the Sheyenne and Red Rivers from the 1930s (see EIS chapter three "Red River Basin surface water quantity" section and Appendix B.1). Therefore, the hydrologic modeling for this Project used these flow gage data from the 1930s to size the alternatives to meet the water shortages (Appendix B.1).

Garrison Diversion Representing the State of North Dakota

Summary Comment

A question was raised as to whether the Governor of North Dakota had the authority to appoint Garrison Diversion to be the EIS co-lead, and if this appointment violated state law. Comments also raised a concern about a conflict of interest of the Project proponent, Garrison Diversion, representing the State of North Dakota in preparing the Project EIS.

Summary Response

The Governor of North Dakota has the authority to designate Garrison Diversion to represent the state in preparing the EIS. As the chief executive of the state, the Governor is responsible for administering state business, pursuant to the North Dakota Constitution, Article 5, Section 7. Chief executives act by discharging their duties through the "instrumentality or agency of others" [(State ex rel. Peterson v Olson, 307 N.W.2d 528, 533 (N.D. 1981))].

Garrison Diversion is defined as an instrumentality of the state for the purpose of working with Reclamation on GDU related activities (Letter Opinion 2004-L-56, August 31, 2004.) The Governor specifically reserved matters of policy for the purposes of the EIS to be addressed by the State Engineer (see the memorandum of understanding appended to the FEIS as a supporting document). North Dakota's role as a state co-lead was appropriately delegated to Garrison Diversion.

There is no conflict of interest in Garrison Diversion's involvement in the EIS process. At the initiation of the EIS process, the Garrison Diversion directors resolved to review all alternatives without bias and without favoring a predetermined alternative. A project proponent can assist in the preparation of an EIS. Even if a proponent evidences a clear preference for a particular project alternative, the EIS process is deemed without bias or conflict so long as the lead federal agency evaluates the EIS and takes responsibility for its objectivity within the NEPA guidelines [40 CFR Section 1501.6(a)(2)]. Reclamation has done so.

Missouri River Import Alternatives vs. In-Basin Alternatives

Summary Comment

Some comment letters suggested in-basin alternatives were inadequately analyzed, which gave Missouri River import alternatives an advantage in the EIS environmental effects analyses.

Summary Response

The EIS evaluated a full range of alternatives, including three in-basin alternatives that would not use the Missouri River as a water supply source. The EIS also considered a number of other in-basin water sources, which were investigated and documented in the "alternatives considered but eliminated" section in chapter two of the EIS. Chapter three of the EIS discussed potential groundwater sources in the Red River Valley in North Dakota and Minnesota. Reclamation entered into an agreement with USGS to assess predicted water use from Minnesota aquifers. The Minnesota State Planning Office, Environmental Quality Board, and Minnesota Department of Natural Resources staff also participated in the study.

Missouri River Near Bismarck, North Dakota

Missouri River Depletions – Drought, Endangered Species, and Tribal Concerns

Summary Comment

Many comments focused on the Missouri River depletion analysis. Specific areas of concern included accounting for a 1930s-type drought, sedimentation, and how the Project depletions would affect the different Missouri River uses and resources including navigation, hydropower, water supply, federally listed species protected under the ESA, and tribal water rights.

Summary Response

In response to comments on the DEIS, Reclamation and North Dakota contracted with the Corps to complete an analysis of impacts to Missouri River uses and resources during a

1930s-type drought (1930-1941). This depletion analysis included MR&I needs, and other reasonably foreseeable uses of the Missouri River, which encompassed the future growth of the water use.

In response to comments on the SDEIS about sedimentation, additional study by the Corps (2007) analyzed the effects of forecasted depletions and sedimentation on the Missouri River Mainstem Reservoir System. The Corps' 2007 analysis found that, in general, most of the effects of the water withdrawals for the Project on Missouri River uses and resources would be relatively small, because the volume of water that would be withdrawn would be minor. The impacts are discussed in FEIS chapter four and in the Corps' (2006; 2007) reports *Red River Valley Water Supply Project, Analysis of Missouri River Effects*, which are attached to the FEIS as supporting documents.

New Zealand Mudsnail

Purple Loosestrife

Regarding species protected under the ESA, Reclamation has completed a biological assessment on the preferred alternative (Appendix G.1). The biological assessment finds that the preferred alternative, the GDU Import to the Sheyenne River Alternative, is not likely to adversely affect any federally listed species, including the least tern and piping plover. The U.S. Fish and Wildlife Service has concurred with these determinations.

Regarding potential impacts to Indian water rights, the EIS does not attempt to determine, regulate, or quantify any currently unquantified water rights that tribes are, or may be, entitled to by treaty or law. If tribes quantify their reserved water rights on the Missouri River and put the water to use, the volume of water available for other users in the basin may or may not be affected (Appendix J). The quantification of Indian water rights is outside the scope of the EIS.

Risks of Invasive Species

Summary Comment

Numerous comments focused on the risk of biological invasions associated with the Missouri River import alternatives. Comments stated that Basic Treatment (pretreatment with ultraviolet disinfection and without filtration) would not be adequate to meet the requirements of the Boundary Waters Treaty. Another frequent comment was that the risks and consequences of biological invasions were underestimated in the risk analyses conducted by USGS.

Summary Response

Three of the action alternatives propose to use water from the Missouri River as an additional source of Project water. The DEIS evaluated two

treatment methods designed to reduce the risk of invasive species transfer (Basic Treatment and Microfiltration). In response to comments on the DEIS, an additional treatment method, In-filter DAF, was evaluated in the SDEIS and FEIS. All of the treatment methods would be effective in removing or inactivating a broad range of organisms, including all of the potentially invasive species evaluated in the EIS.

In-filter DAF or a comparable, cost effective treatment process was identified as a feature of each of the Missouri River import alternatives considered in the FEIS. All alternatives evaluated in the SDEIS and FEIS include a multiple barrier treatment process with disinfection and filtration that would meet the treatment goals proposed by the Province of Manitoba (see chapter two, "biota water treatment plants" section). Ultimately, the determination of adequate treatment will be made prior to construction by the Secretary of the Interior, in consultation with the Secretary of State and the Administrator of EPA, as required by DWRA.

Reclamation and North Dakota do not concur that USGS underestimated the risks and consequences of biological invasions in their analysis. The risk analysis was based on the best available scientific information and was extensively peer-reviewed by technical experts both within and outside of USGS.

Cumulative Effects to Groundwater

Summary Comment

The primary concern raised about using groundwater as a Project water source relates to cumulative effects from existing use, Project use, and potential for future non-Project use.

Summary Response

Reclamation and North Dakota took a hard look at North Dakota and Minnesota aquifer data. The best available information was used, including the USGS investigations appended to the FEIS. Groundwater is a feasible option, but it could be the most technically challenging. All aquifer withdrawals would be done in compliance with state and federal permit regulations. The permitting process would adequately address potential interference of Project wells with existing wells and with surface waters.

Water Quality

Summary Comment

Water quality was raised as an issue because of the Boundary Waters Treaty of 1909.

Summary Response

There have been historic exceedances of the water quality standards for several analytes, and the results of water quality modeling indicate that future exceedances are likely to occur under No Action, as well as the action alternatives (FEIS chapter four "surface water quality" section). However, the standard used to determine if there would be a significant adverse impact to water quality in the Sheyenne and Red Rivers was whether there would be a change in beneficial use of the water.

Beneficial use is an intended or established use of the water, such as irrigation, domestic, industrial, recreation, or maintaining the aquatic environment use. Water quality modeling by USGS (Nustad and Bales 2006) generally showed that the action alternatives and No Action Alternative would have similar impacts, and all alternatives would have temporary and minimal effects. There is no evidence to suggest that any action alternative would cause a permanent change in beneficial use, in comparison to the No Action Alternative.

Preferred Alternative

Sheyenne River

As a result of due consideration and evaluation of technical, hydrologic, and design aspects; water permitting; and environmental impacts, Reclamation and the state of North Dakota have each identified the GDU Import to Sheyenne River Alternative as the preferred alternative (see chapter two). The Missouri River is a more reliable water source than the Red River (North Dakota In-Basin Alternative) and Minnesota groundwater (Red River Basin Alternative) based on the results of USGS studies. The GDU Import to Sheyenne River Alternative is the least costly of the three Missouri River import alternatives. To address concerns raised by the Province of Manitoba, a multiple barrier treatment process with disinfection and filtration that would meet the treatment goals proposed by the Province was identified for this alternative to reduce the risk of transfer of invasive species.

Environmental Mitigation

Reclamation and the state of North Dakota will address the environmental consequences disclosed in this FEIS with environmental commitments to avoid, minimize, or mitigate adverse effects. Environmental commitments to address impacts are presented in chapter four by resource and in Appendix L.1. Recognizing that the details of such impacts cannot be fully identified until the final engineering design stage, many of these environmental commitments are general in nature. An adaptive management plan will be developed to monitor and implement environmental mitigation measures.

Wetlands Will Be Avoided by Pipeline Construction Where Possible or Be Mitigated

Essential to addressing environmental commitments is the formation of an Impact Mitigation Team. This team is expected to be comprised of Reclamation, Garrison Diversion, federal and state agencies, and tribes as well as other entities. The purpose of this team is to ensure that Project activities are completed concurrently and in compliance with all environmental commitments in NEPA documents, such as the FEIS and ROD (Record of Decision). This team will also address other relevant and current state and federal environmental rules and regulations, including the ESA.

Consultation and Coordination

As explained in chapter five of the FEIS, Reclamation and North Dakota established a public involvement program early in the process. The program was designed to provide the public and agencies with a variety of methods to learn about, participate in, and comment on the Project. The program included a scoping notice, multiple public scoping meetings, a website, and periodic newsletter. A DEIS was distributed for public comment, and public hearings were held in various locations in North Dakota and Minnesota. In response to numerous comments on the DEIS, a SDEIS was prepared, and public hearings were held in Bismarck, Fargo, Fort Yates, and New Town, North Dakota. Coordination with federal and state agencies and tribes occurred throughout the NEPA process.


Red River Valley
Water Supply Project
Environmental Impact Statement

Fall 2004 NEWSLETTER Issue 4

Purpose of the Project

The purpose of the Red River Valley Water Supply Project is to meet the comprehensive water quality and quantity needs of the Red River Valley. The needs are defined as municipal, rural and industrial supplies; water quality; aquatic environment; recreation; and water conservation measures. The Bureau of Reclamation is preparing an engineering report that estimates the future water needs in 2050 and identifies options to meet those needs. Reclamation and the Garrison Diversion Conservancy District are jointly preparing an environmental impact statement for the project. This project is authorized by the Dakota Water Resources Act of 2000.

Need for the Project

Development of an affordable, reliable water supply for the Red River Valley is a subject of great interest to local residents, government agencies and entities concerned with water supply management and development. Although rivers in eastern North Dakota such as the Red and Sheyenne are prone to flooding, there were periods of extremely low flows during the 1930s and 1980s droughts. For example, from June 30, 1934, through November 25, 1934, there was zero flow for nearly five consecutive months in the Red River at Fargo, North Dakota. This was followed by ten days of low flow and then two more months of zero flow until mid-February 1935.

Red River 1936

Recently a climate study to investigate the frequency of droughts in the Red River Basin by Meridian Environmental Technology, Inc. concluded the Red River Valley will probably experience an extreme drought in the next 50 years. Valley City, Fargo, Moorhead, Grand Forks, East Grand Forks, Grafton, and Drayton use the Sheyenne and/or Red Rivers as primary water sources.

In this issue

RECLAMATION

Newsletters Reported Progress on the EIS

The Project Website Address is: www.rrvwsp.com

What Comes Next

The flowchart on the facing page displays the projected sequence of events for fulfillment of the sections of DWRA that pertain to the Project. The chart has two components - one for the needs and options study and another for analysis of effects on the environment along with subsequent implementation of the proposed Project.

The needs and options part has been completed and documented with a report that developed and refined the Project's proposed action. This report is final and will be submitted to Congress as part of a Project package.

The FEIS responds to all substantive public comments on both the DEIS and SDEIS. The FEIS is available to the public prior to a final decision on implementation of the proposed action. There will be a minimum 30 day period between availability of the FEIS and issuance of a ROD. Comments on the FEIS may be offered to Reclamation and North Dakota for consideration.

Following release of the FEIS the Secretary of the Interior, in consultation and coordination with the state of North Dakota in coordination with affected local communities, will select an alternative for implementation [DWRA Section 8(d)(1)]. The NEPA process is then completed with the issuance of a ROD. The Project may then follow one of two pathways:

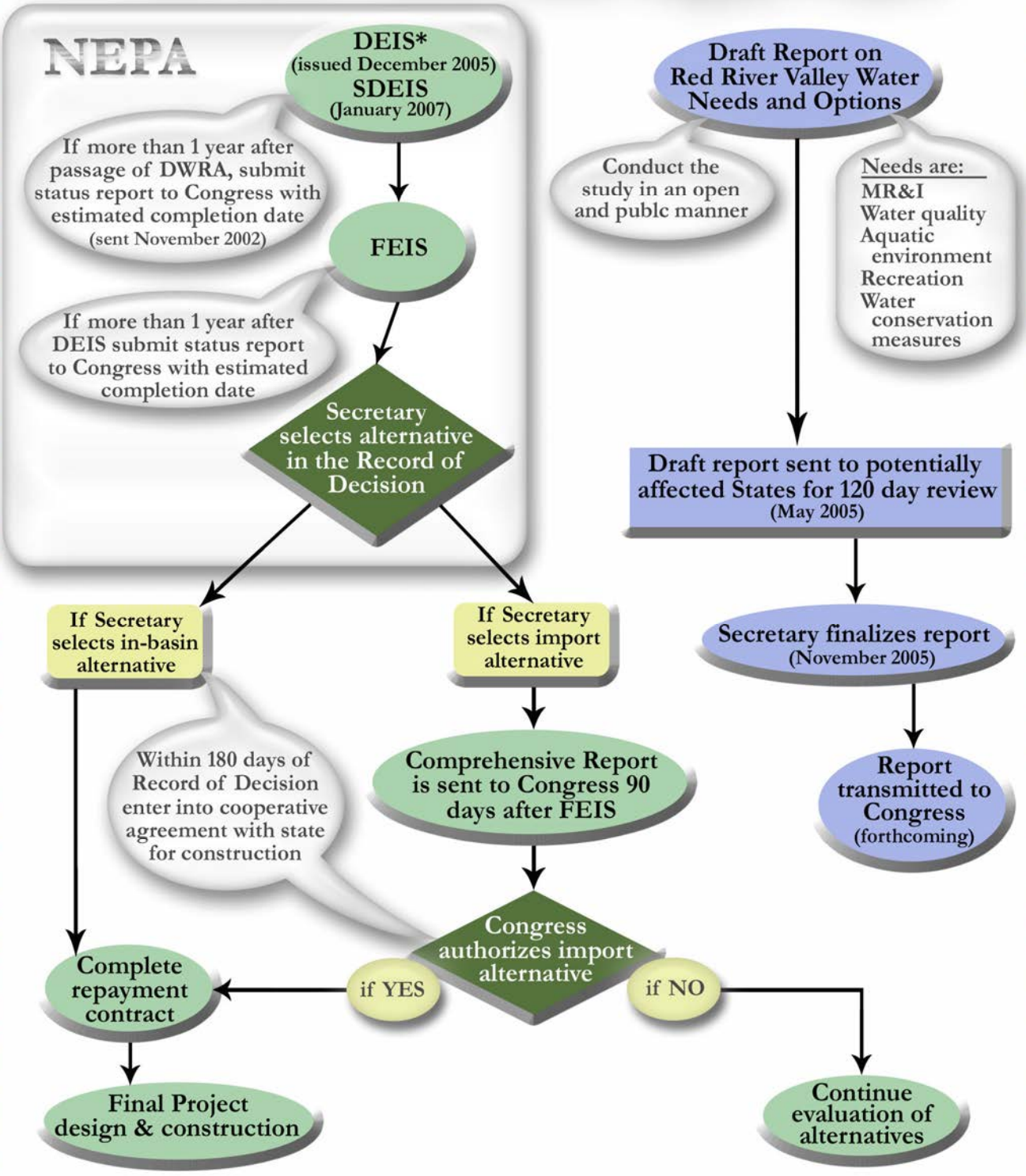
- If an import alternative is selected, a Comprehensive Report that identifies the proposed alternative, environmental issues, effects on Minnesota and Missouri River states, and compliance with the Boundary Waters Treaty will be sent to Congress. A Missouri River import alternative would necessitate authorization by Congress prior to implementation.

- If an in-basin alternative is selected, the Project may be implemented under DWRA.

Future events or actions following the ROD may change the possible pathways and outcomes shown in the flowchart. However, the flowchart indicates the most current and expected course of events at this time.

DAKOTA WATER RESOURCES ACT

Red River Valley Water Supply Project



* Reclamation and Garrison Diversion, on behalf of the State of North Dakota, determined that it was appropriate to publish a SDEIS as part of the NEPA process.

Record of Decision

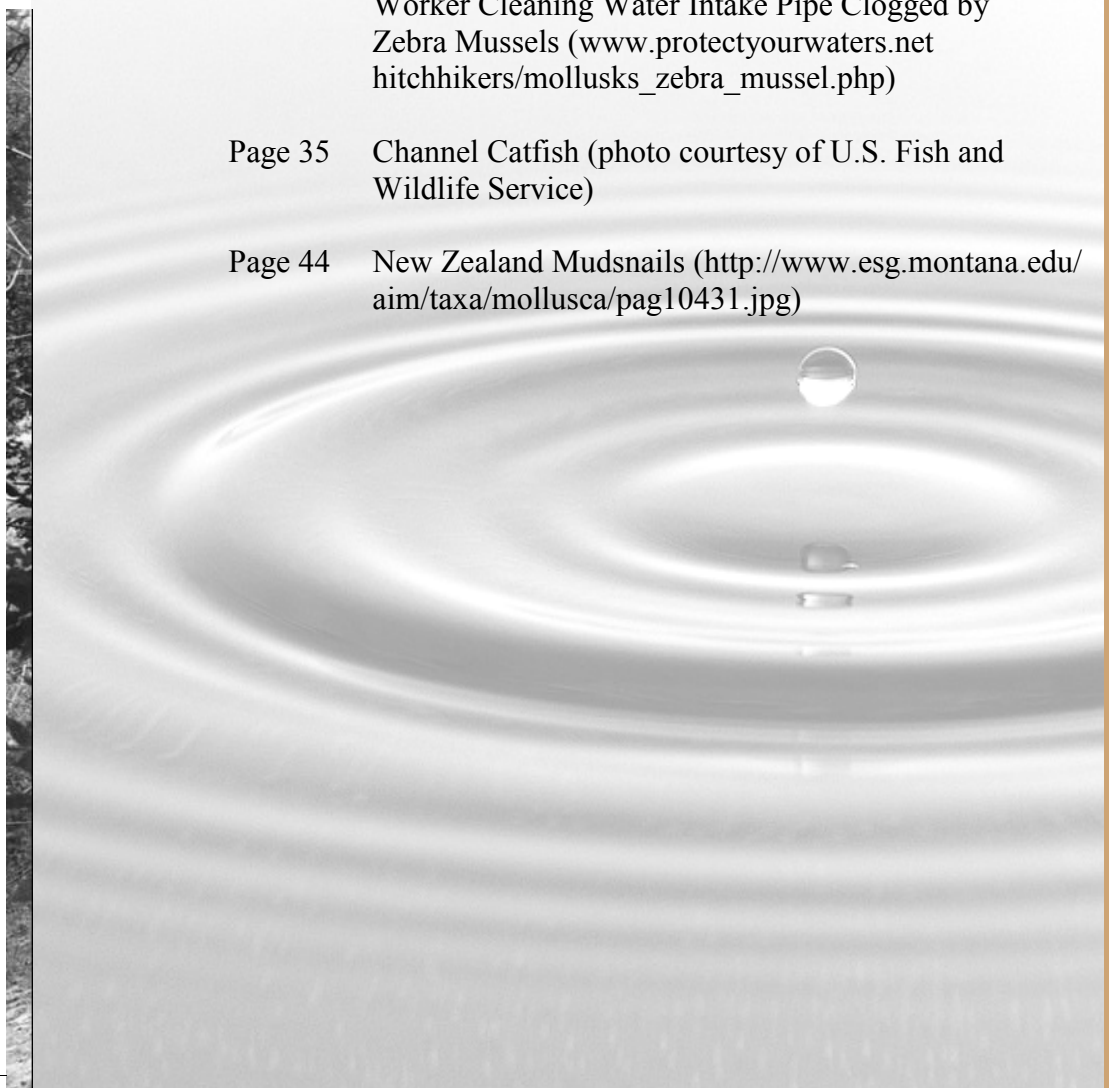
No final decisions regarding the proposed action have been made by the Secretary of the Interior at the time of publication of the FEIS. Accordingly, it is important for the reader to understand that mere identification of a federally preferred alternative or biota treatment process does not indicate that the Secretary has made any final decisions with respect to the proposed action identified in the FEIS. Any final decisions by the Secretary with respect to the proposed action will be included in a ROD.

No sooner than 30 days after the EPA has published the notice of availability for the FEIS, Reclamation will issue a ROD. Significant comments received and issues raised in the FEIS will be identified in the ROD. The Secretary's selected alternative and the alternatives considered in the FEIS will be disclosed. Alternative(s) considered environmentally preferable will also be identified. Factors considered with respect to the alternatives and how these considerations entered into the decision will be discussed. Reclamation will include environmental commitments, means to avoid or minimize environmental harm, and any monitoring or enforcement activities to ensure that environmental commitments will be met, if an action alternative is selected.

Sheyenne River 1987

Photograph Labels and Credits

Cover	Grand Forks Water Intake Pipe into the Red Lake River in August 28, 1910 (photo courtesy of the city of Grand Forks)
Page 2	Piping Plover (photo by C. Perez, Service, http://www.fws.gov/plover/)
Page 8	Sampling Mussels (photo courtesy of North Dakota Game and Fish Department)
Page 13	Sheyenne River Valley (http://www.byways.org)
Page 33	Gizzard Shad (http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=492)
	Worker Cleaning Water Intake Pipe Clogged by Zebra Mussels (www.protectyourwaters.net hitchhikers/mollusks_zebra_mussel.php)
Page 35	Channel Catfish (photo courtesy of U.S. Fish and Wildlife Service)
Page 44	New Zealand Mudsnails (http://www.esg.montana.edu/aim/taxa/mollusca/pag10431.jpg)



Acronyms

ASR	Aquifer Storage and Recovery
CFR	Code of Federal Regulations
Corps	U.S. Army Corps of Engineers
DEIS	Draft Environmental Impact Statement
DWRA	Dakota Water Resources Act
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
Garrison Diversion	Garrison Diversion Conservancy District
GDU	Garrison Diversion Unit
MR&I	Municipal, Rural, and Industrial
NEPA	National Environmental Policy Act
OM&R	Operation, Maintenance, and Replacement
Project	Red River Valley Water Supply Project
Reclamation	Bureau of Reclamation
ROD	Record of Decision
SDEIS	Supplemental Draft Environmental Impact Statement
USGS	U.S. Geological Survey
UV	Ultraviolet Disinfection

TECHNICAL ACRONYMS

ac-ft	acre feet
cfs	cubic feet per second
TDS	total dissolved solids