

RECLAMATION

Managing Water in the West

Executive Summary

Northwest Area Water Supply Project Final Environmental Impact Statement on Water Treatment



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

December 2008

Acronyms

EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FONSI	Finding of No Significant Impact
NEPA	National Environmental Policy Act
OM&R	Operation, Maintenance and Replacement
Project	Northwest Area Water Supply Project
Reclamation	Bureau of Reclamation
USGS	U.S. Geological Survey
UV	Ultraviolet
WTP	Water Treatment Plant



IN REPLY REFER TO:

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United States Department of the Interior

BUREAU OF RECLAMATION

Great Plains Region

P.O. Box 36900

Billings, Montana 59107-6900



DEC 5 2008

Subject: Distribution of the *Northwest Area Water Supply (NAWS) Project Final Environmental Impact Statement (FEIS) on Water Treatment*

Dear Ladies and Gentlemen:

The *NAWS Project FEIS on Water Treatment* is enclosed. The Executive Summary is provided in hardcopy format. The main report and supporting documents are in electronic format on a compact disk located on the inside back cover of the Summary.

This report was prepared by the United States Department of the Interior, Bureau of Reclamation, pursuant to Section 7 of the Dakota Water Resources Act of 2000, and the National Environmental Policy Act of 1969. In preparing the FEIS, Reclamation is representing the Secretary of the Interior.

Reclamation, with assistance from Federal and state agencies, tribes, and other cooperating agencies analyzed the environmental effects of four alternatives, including no action. Reclamation identified a preferred alternative in the FEIS. This alternative is composed of a combination of treatment processes evaluated in the Draft Environmental Impact Statement (DEIS). The preferred alternative includes chemical and ultraviolet disinfection of the source water within the Missouri River Basin. The water would be delivered across the drainage divide, through an existing pipeline, to the Minot water treatment plant. At the Minot water treatment plant the water would be softened and filtered to meet Safe Drinking Water Act Standards prior to being distributed to users in the service area.

The FEIS includes all comments received on the DEIS and responses to those comments. No decision will be made on the proposed action until at least 30 days after the filing of the FEIS. After a 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 Alicia Waters, Dakotas Area Office, Bureau of Reclamation, at 701-221-1206 or awaters@gp.usbr.gov.

Sincerely,

Michael J. Ryan
Regional Director

Enclosure

Executive Summary



CONTENTS

- 1 Cover Letter**
- 3 Introduction**
- 4 Background**
- 6 Proposed Action**
- 6 Purpose and Need**
- 6 Consultation and Coordination**
- 6 Purpose of the Final EIS**
- 7 Scope of the EIS**
- 10 Proposed Biota Water Treatment Plant Site**
- 11 Minot Water Treatment Plant**
- 12 Alternatives**
- 15 Identification of the Preferred Alternative**
- 17 Affected Environment**
- 17 Environmental Impacts and Mitigation**
- 20 Record of Decision**

Introduction

For many years, residents of northwestern North Dakota have experienced water supply problems. Existing ground water sources are of poor quality and the Souris River is a marginal source from both a quality and quantity standpoint. To resolve these problems, the Northwest Area Water Supply project (Project) is being constructed. This Project is a bulk water supply system that will serve the municipal and rural water needs of the Project area (Figure 1). The planning, design and construction of the Project is a cooperative effort between the Bureau of Reclamation (Reclamation) and the State of North Dakota. Reclamation provides technical and financial assistance to the State of North Dakota for the planning and development of municipal, rural water supply projects throughout the state.

The source water for this bulk water supply system is Lake Sakakawea, a U.S. Army Corps of Engineers reservoir impounded by the Garrison Dam on the Missouri River. The North Dakota State Engineer has issued a water permit for the Project with an authorized annual withdrawal of 15,000 acre feet. Water from Lake Sakakawea will be pumped 45 miles north to the city of Minot which will serve as a distribution point for city residents, as well as distributing water to other communities and rural water systems throughout the service area. Lake Sakakawea is located within the Missouri River basin while the majority of the communities and rural water systems to be served by the Project are located within the Hudson Bay basin. Figure 2 shows the Missouri River basin and the Hudson Bay basin, along with the location of the Project service area. The potential transfer of aquatic invasive species



Project construction pipe along North Dakota Highway 83 between Lake Sakakawea and Minot, North Dakota, in 2006.

between drainage basins was a key environmental issue identified during the development of the Project and evaluated as part of previous environmental studies. The Final Environmental Impact Statement (EIS) evaluated different water treatment processes to reduce the risk of a biological invasion occurring as a result of constructing and operating the Project.

Laws and regulations regarding the transportation or introduction of invasive plants and animals exist at the state and federal level. Most states, including North Dakota, have laws and regulations that prohibit the transportation or introduction of known invasive plants and animals. For example, in North Dakota the Game and Fish Department [North Dakota Century Code: 20.1-02-01 through 20.1-02-28] provides the Director of the Department with the authority

Executive Summary

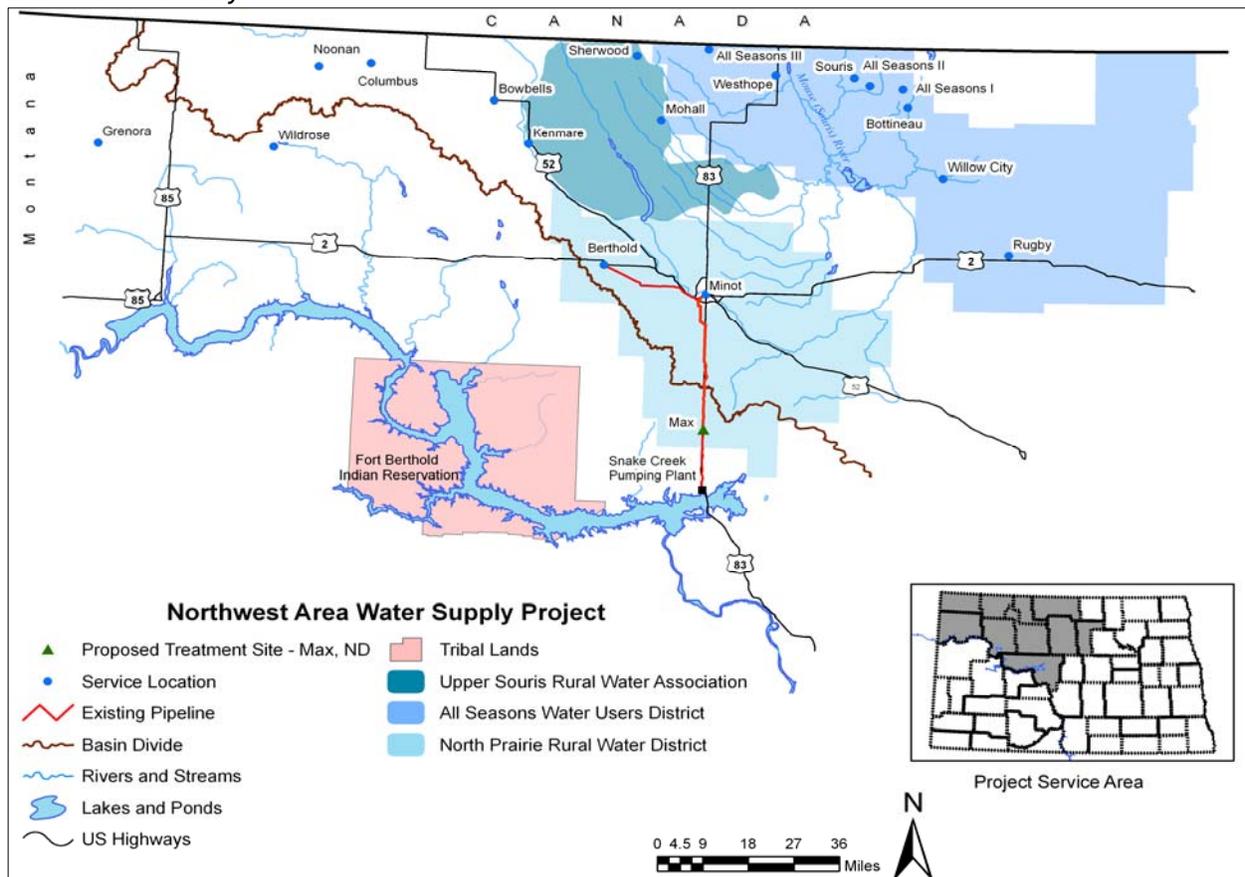


Figure 1. Project Service Area map.

to regulate the importation, introduction and transplanting of fish, fish eggs, and other aquatic animals into the waters of the state. However, the U.S. government has not developed water treatment standards, rules or regulations specifically for use in reducing the risk of transferring invasive species through projects that transfer water between basins. The U.S. Environmental Protection Agency (EPA) has published a final rule in the *Federal Register* (73 FR 33697) that would generally exempt interbasin water transfers from regulation under the National Pollutant Discharge Elimination System permitting program. In recognition of the fact that no standards have been established by the federal government, Reclamation used the best scientific information available to evaluate the potential risks associated with the transfer of invasive species and the most current information regarding water treatment technologies to develop the alternatives evaluated in this EIS.

Background

Project planning began after the passage of the Garrison Diversion Unit Reformulation Act in 1986. This Project is part of the State Municipal, Rural, and Industrial grant program authorized by that act. The program was established to treat and deliver drinking water to approximately 130 communities and rural residents throughout the state. Planning studies for this Project were initiated by the North Dakota State Water Commission in November 1987. During Project planning, environmental issues associated with the construction, operation and maintenance of the Project were evaluated as required by the National Environmental Policy Act (NEPA). The key environmental concern of this Project was the risk of transferring aquatic invasive species from the Missouri River basin to the Hudson Bay basin. A Final Environmental Assessment (EA) evaluated options to meet the



Figure 2. Project Service Area in relation to the Missouri River Drainage and the Hudson Bay Drainage.

water need of the service area, described the potential environmental impacts, and identified environmental commitments for these potential impacts. Based on the Final EA, Reclamation decided to proceed with the proposed Project and approved a Finding of No Significant Impact (FONSI) in September 2001. The FONSI established environmental commitments to avoid, minimize, or mitigate potential impacts resulting from the Project. To aid in implementing these environmental commitments an Impact Mitigation Assessment team was formed. The purpose of this team is to monitor the final design, construction, mitigation and operation of the Project. Potential environmental issues associated with this interbasin transfer of water for the Project have been evaluated at length during the planning of the Project.

Construction on the main water pipeline between Lake Sakakawea and the city of Minot

began in the spring of 2002. In October that same year, the Province of Manitoba, Canada filed a law suit against the Department of the Interior in U.S. District Court challenging the FONSI issued for the Project and requesting that federal funds and construction activities on the Project be halted.

The District Court issued two orders in 2005. The first order directed Reclamation to revisit the FONSI upon completion of further environmental analyses. The order stated that additional analyses should consider potential impacts associated with not fully treating the Missouri River water at its source, and potential impacts that could occur due to pipeline leaks and possible failure of water treatment systems. The second order denied the request for an injunction on construction work, thereby allowing construction on the distribution segments of the Project to continue.

Proposed Action

Reclamation proposes to construct a biota water treatment plant (WTP) for the Project to treat the source water from Lake Sakakawea before it is transferred into the Hudson Bay basin. Four treatment alternatives, a no action alternative and three action alternatives, have been developed to further reduce the risk of a Project-related biological invasion from the Missouri River basin to the Hudson Bay basin. As part of this proposed action, Reclamation would implement construction methods and operational measures to further reduce the risk of a Project-related biological invasion that may occur as a result of an interruption in the treatment process and breach in the buried pipeline to the Minot WTP.

Purpose and Need

The purpose of the proposed action is to adequately treat the Project water from the Missouri River basin (Lake Sakakawea) to further reduce the risk of a Project-related biological invasion into the Hudson Bay basin. Reclamation has conducted further environmental analyses on the issue of invasive species transfer between the two drainage basins.

Consultation and Coordination

In 2006, Reclamation began a public involvement program to provide the public, organizations, and government agencies a variety of methods to learn about and participate in the development of the EIS. The program included a scoping notice,

public scoping meetings, and a Summary of Public Scoping report. Information provided to the public regarding this EIS was also posted on the website www.usbr.gov/gp/dkao.

Reclamation invited other government agencies and entities to assist with the preparation of the EIS. A cooperating agency team was established to provide data, assist in review and contribute to the preparation of the EIS by reviewing preliminary chapters. Cooperating agencies include the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Three Affiliated Tribes, North Dakota State Water Commission, Garrison Diversion Conservancy District, and the city of Minot.

In December 2007, Reclamation released the Draft EIS for public review and comment. The public was encouraged to provide written comment or participate in the public hearings hosted by Reclamation in February 2008 at three locations in North Dakota. The public comment period closed on March 26, 2008. Comment letters and public hearing transcripts on the Draft EIS were also available on the website.

Purpose of the Final Environmental Impact Statement

Reclamation has prepared the Final EIS to provide decision makers and the public with Reclamation's final analysis of the environmental effects of the alternatives and the proposed action. The Final EIS includes responses to substantive comments received

on the Draft EIS. Comments were received from reviewing tribes, state and federal agencies, organizations and interested and potentially affected members of the public. Revisions to the Draft EIS have been incorporated based on the comments received. However, these revisions do not substantively change the impact analysis or results presented in the Draft EIS.

There are seven primary changes from the Draft EIS:

- 1) Information presented in chapter two describes how waste streams from the Minot WTP would be handled.
- 2) The cost estimate for the No Action Alternative was revised based on updated information provided in a comment letter.
- 3) Cost estimates for each alternative evaluated were indexed to 2008 dollar values.
- 4) The Preferred Alternative was identified and the associated cost estimate provided.
- 5) Additional information in chapters three and four discusses the potential impacts to waters in the United States portion of the Hudson Bay basin.
- 6) Additional information included in chapters three and four describes the potential impacts associated with biological invasions. However, these are not necessarily Project-related impacts since numerous competing non-Project pathways could produce the same impact.
- 7) Appendix C contains responses to the comments received on the Draft EIS.



Above: Missouri River

Scope of the EIS

The scope of this EIS focuses on evaluating environmental impacts associated with the proposed biota water treatment alternatives. To further reduce the risk of a Project-related biological invasion from the Missouri River basin to the Hudson Bay basin, Reclamation evaluated a range of biota water treatment technologies and the environmental impacts associated with the construction of a biota WTP. Reclamation enlisted the services of the Department of the Interior's lead scientific agency, the U.S. Geological Survey (USGS) to evaluate the risk of transferring invasive species between these basins including a failure analysis associated with the long-term operation and maintenance of Project biota treatment facilities.

This EIS focuses on evaluating environmental impacts associated with the proposed biota water treatment alternatives.

Findings and environmental commitments in the Final EA (Houston Engineering, Inc. et al. 2001) and FONSI (Reclamation 2001) are incorporated by reference into this EIS, with the exception of the potential impacts and environmental commitments associated with the treatment of Missouri River water and operation and maintenance of a biota WTP and related features. The design features and operational measures described in the Interbasin Biota section of the FONSI will be reviewed and revised as necessary in accordance with the biota water treatment alternative selected in a Record of Decision on the basis of information presented in the EIS.

Actions and Issues Addressed in the EIS

Statements and concerns regarding a variety of environmental issues were received during the public scoping period. Reclamation considered the comments and determined that the following issues and actions are most relevant to the proposed action and would be evaluated.

Risk of Transferring Invasive Species

There are many existing pathways through which invasive species may be transferred between basins. Although the Project-related risk of invasive species is specifically related to an interbasin water transfer, alternate and competing pathways exist. Non-Project pathways must be considered to assess the relative risk of biological invasions due to the import of Missouri River water by the Project.

Natural pathways that aid in the spread of invasive species include animal transport, wind dispersal, major floods that temporarily link basins and storms (e.g., tornadoes).

Pathways are the means by which species are transported from one location to another.

Human activity also provides pathways for dispersal of aquatic species from one basin to another. According to the EPA, human activities have increased the frequency by orders of magnitude by which non-native plants, animals and pathogens are introduced to new areas.

This Project will deliver treated water from the Missouri River basin into the Hudson Bay basin through a buried water pipeline. Each treatment alternative evaluated includes treatment processes which would further reduce the risk of a Project-related biological invasion from one basin to another. Additional safeguards included in the construction of the buried pipeline between Lake Sakakawea and Minot, North Dakota reduce the risk of a biological invasion even further. An interruption of the treatment process at the biota WTP and breach in the buried pipeline to the Minot WTP could provide an additional pathway for introducing invasive aquatic species into the Hudson Bay basin.

Federally Listed Threatened and Endangered Species

The U.S. Fish and Wildlife Service identified threatened and endangered species that may be found in the Project area and could be potentially affected. Endangered species (least tern, whooping crane, peregrine falcon, black-footed ferret, gray wolf, and pallid sturgeon) and threatened species (piping plover and bald eagle) were evaluated in the Final EA (Houston Engineering, Inc. et al. 2001). The analysis concluded that there would be no adverse effects to federally listed

threatened or endangered species as a result of the Project. Following this determination in 2001, the U.S. Fish and Wildlife Service identified critical habitat for the piping plover in 2002. A portion of this designated critical habitat is in McLean County and therefore was evaluated in this EIS. Three species have been removed from the federal list since the publication of the FONSI. They are the peregrine falcon delisted on August 25, 1999, the gray wolf on March 12, 2007, and the bald eagle on August 8, 2007. On September 29, 2008, the U.S. District Court for the District of Columbia overturned the U.S. Department of the Interior's decision to remove the gray wolf from federal Endangered Species Act protections. The U.S. Fish and Wildlife Service is in the process of determining the most appropriate course of action.

Historic Properties

The proposed action must comply with federal legislation concerning historic properties within the area of consideration for the federal action. Reclamation needs to determine if there are any impacts to historic properties that are currently listed or eligible for listing on the National Register for Historic Places.

Indian Trust Assets

Reclamation has a trust responsibility to protect and maintain rights reserved by or granted to American Indian tribes or Indian individuals by treaties, statutes, and executive orders. Indian Trust Assets are defined as legal interests in property held in trust by the United States for Indian tribes or individuals. Examples of things that may be trust assets include lands, minerals, hunting and fishing rights, and water rights.

Social and Economic Conditions

Current regional economic conditions in the Project area were identified to determine

potential impacts associated with the construction and operation maintenance and replacement (OM&R) of each alternative. The indicators used to evaluate the economic conditions in the Project area included the value of regional output for non-agricultural industries, the value of agricultural production, household income and net farm income.

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 should bear a disproportionate share of negative impacts from an action. Reclamation evaluated this based on race and income levels within the Project area.

Actions and Issues Outside the Scope of the EIS

Other comments received during the public scoping process included concerns regarding a variety of issues that Reclamation determined to be outside the scope of analysis. Reclamation made this determination based on the proposed action as defined in the EIS, legal constraints and available scientific data regarding other environmental issues. Information in chapter one provides more detailed explanation of why the following actions and issues are outside the scope of the EIS.

- Evaluation of potential consequences to Canada
- Missouri River water depletions
- Other water sources
- Global climate change

Proposed Biota WTP Site

The proposed location for the biota WTP alternative is approximately 28 miles south of Minot near Max, North Dakota (see Figure 3). This location is south of the drainage divide between the Missouri River and Hudson Bay basins. The 41 acre site is located in the S½SW¼ of section 10, T.150.N. R.83.W. in McLean County. The land was purchased by the State of North Dakota as part of the Project. Construction of the water pipeline between Lake Sakakawea and the city of Minot was completed in 2008 and will connect at the proposed biota WTP site as shown in Figure 3.

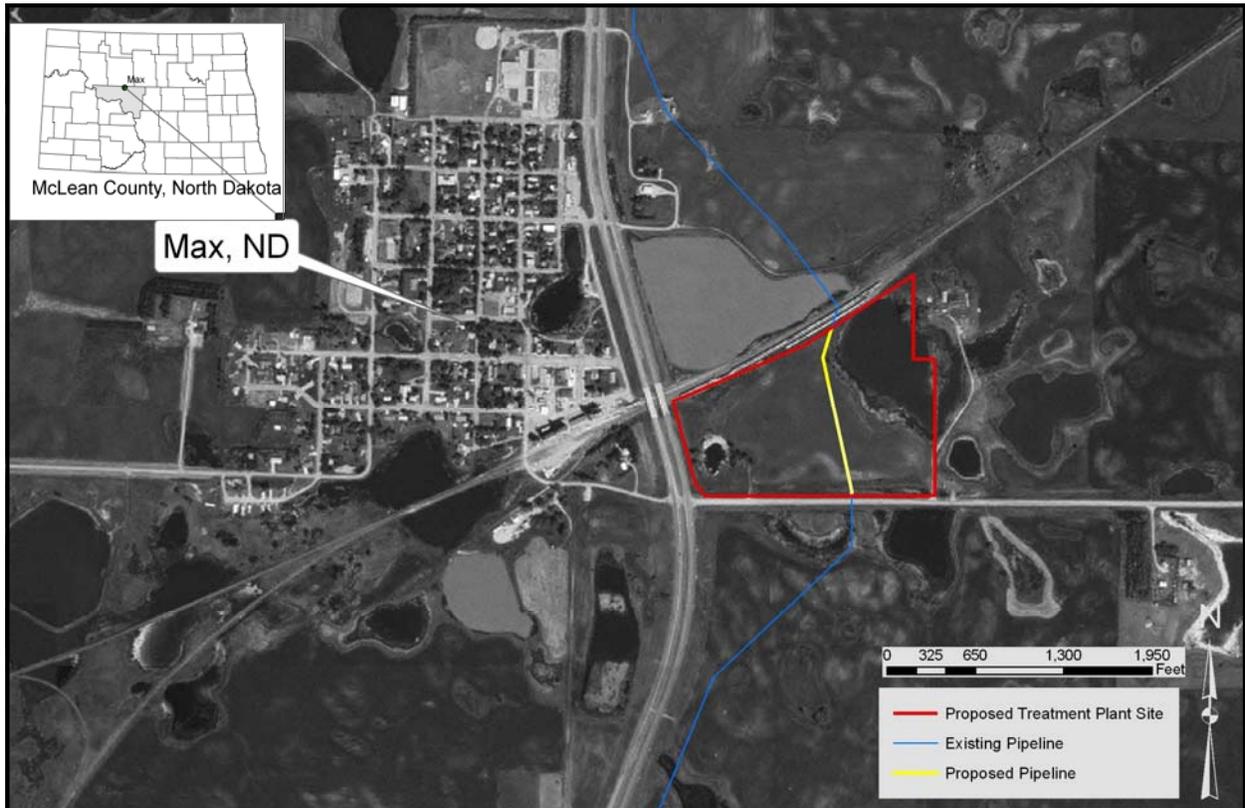


Figure 3. The above map illustrates the proposed location for the biota water treatment plant. The proposed biota water treatment plant site is identified in red in the above map.

Minot Water Treatment Plant

As determined in the Final EA and FONSI, the existing WTP for the city of Minot, North Dakota would be used as a feature of the Project. The Minot WTP would be upgraded to meet the capacity requirements for the Project and to comply with requirements of the Safe Drinking Water Act.

Currently, the WTP treats groundwater from the Sudre and Minot Aquifers to drinking water standards with a lime softening and filtration process. As part of the Project, the proposed upgrades to the WTP would include modifications to existing treatment processes and expansion of the plant's capacity to 26 million gallons per day.

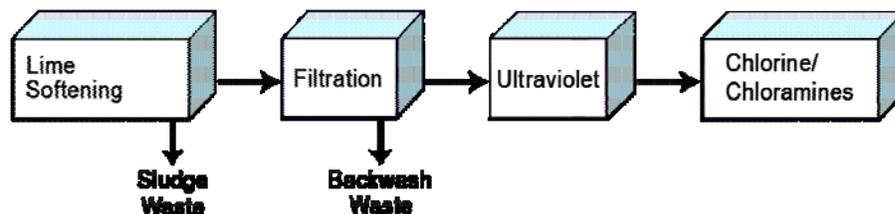
The proposed upgrades would occur in three stages at an estimated total cost of \$31.1 million. The use of the existing WTP would provide an additional reduction in the potential risk of a Project-related biological invasion from the Missouri River basin to the Hudson Bay basin.

Following the treatment processes proposed in the alternatives, the water would be transferred across the basin divide in the existing pipeline to the Minot WTP. There it would be softened and filtered, as shown in the diagram below, prior to being distributed to water users throughout the Project service area.



Above: Example of a drinking water treatment plant.

Each of the alternatives evaluated assumes that the existing Minot WTP would be upgraded, with one exception. An exception would be made for the three action alternatives which include ultraviolet (UV) disinfection as part of the treatment processes at the biota WTP within the Missouri River basin. For these alternatives, it would not be necessary to include a duplicate process of UV disinfection at the Minot WTP.



Alternatives

Four biota water treatment alternatives are evaluated in the EIS. Alternatives evaluated include a No Action Alternative and three action alternatives.

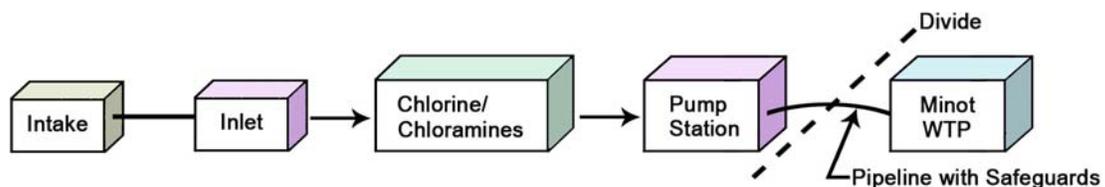
A no action alternative is required in an EIS [40 CFR Section 1502.14(d)]. Guidance from the Council of Environmental Quality states that a no action alternative can be defined as a continuing action of the current management direction. Based on this guidance, the No Action Alternative is based on the selected action alternative identified in the FONSI (Reclamation 2001).

Each alternative is composed of three main biota WTP features; the inlet structure, the biota treatment process, and the booster pump station. The same inlet structure and treated water pumping features are common to all alternatives with different levels of biota treatment occurring in-between these two features. The different levels of biota treatment evaluated in the alternatives may involve the addition of chemicals to the water to inactivate organisms, while other levels of biota treatment involve processes to inactivate organisms as well as the addition of filtration which physically removes them from the water.

The alternatives evaluated are No Action, Basic Treatment, Conventional Treatment and Microfiltration.

No Action Alternative

The selected action alternative in the FONSI (Reclamation 2001) is included as the No Action Alternative of this EIS. The No Action Alternative would include chemical disinfection of raw Missouri River water prior to transfer into the Hudson Bay basin to reduce the risk of a Project-related biological invasion. Additional safeguards included in the construction of the buried pipeline further reduce the risk of a Project-related biological invasion. UV disinfection would be provided along with softening and filtration at the existing Minot WTP.



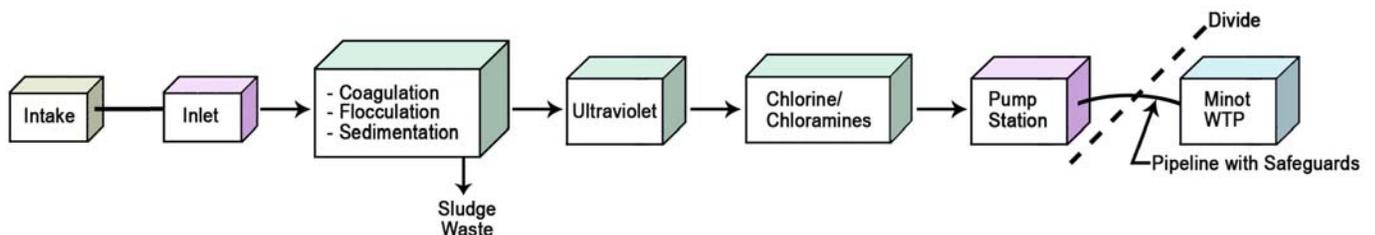
Basic Treatment

This treatment alternative would include a pre-treatment (coagulation, flocculation, sedimentation) process followed by chemical and UV disinfection prior to the water crossing the drainage divide.

The purpose of the pre-treatment process is to reduce raw water turbidity which can influence the effectiveness of the disinfection processes. Softening and filtration is provided at the existing Minot WTP.



Above: Example of a sedimentation basin used in basic treatment.

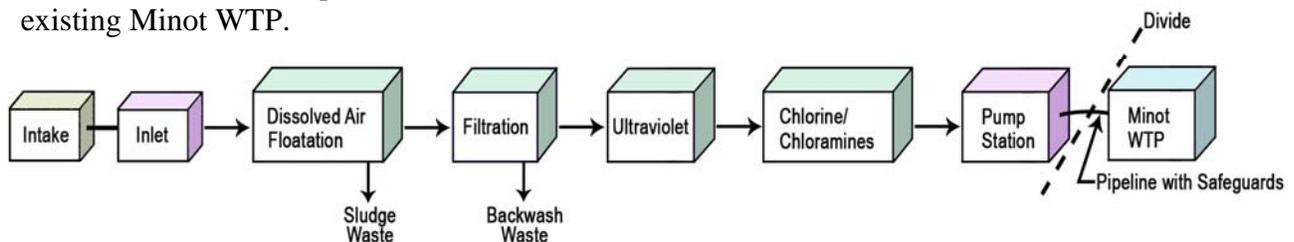


Conventional Treatment

This treatment process would include a pre-treatment process of Dissolved Air Flotation followed by media filtration and disinfection using UV and chemicals (chlorine and chloramines) within the Missouri River basin. The pre-treatment process is designed to reduce the raw water turbidity resulting in a more effective filtration process. The media filtration process is designed to remove particles and biological components from the water, thereby further increasing the effectiveness of the disinfection process as well. Softening and filtration would be provided at the existing Minot WTP.



Above: Dissolved Air Flotation water treatment system in Kelowna, British Columbia, Canada.

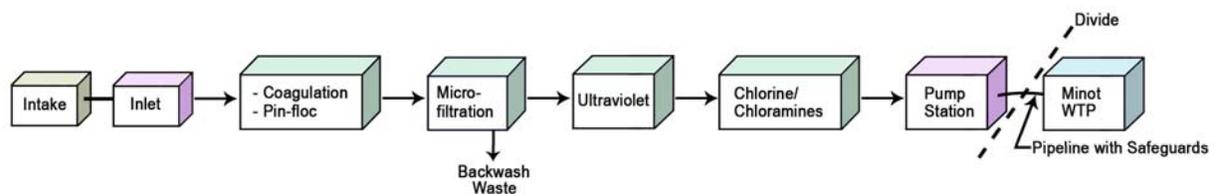


Microfiltration

This treatment alternative would include pre-treatment (coagulation, pin floc) followed by membrane filtration and chemical and UV disinfection processes prior to the water crossing the drainage divide. As described in the previous alternative, the pre-treatment process is designed to reduce the raw water turbidity resulting in a more effective filtration processes. However, the membrane filtration process designed for this alternative would remove smaller particles in the water compared to the media filtration process included in the Conventional Treatment Alternative. Softening and filtration would be provided at the existing Minot WTP.



Above: Microfiltration water treatment plant in Kenosha, Wisconsin.



Alternative Costs

To compare the alternatives, Reclamation estimated the total construction cost along with the OM&R cost for each alternative. Construction and annual OM&R costs associated with each alternative are shown in table 1. The construction cost estimates include contingency (21% +/-) and non-contract costs (25% +/-) to account for unforeseen changes, engineering fees and contract administration. The annual OM&R cost estimates include labor, chemical costs and energy costs required to operate the biota WTP in an average year. Reclamation received comments on the Draft EIS regarding updated cost information for the No Action Alternative which includes the inlet and booster pump station. These features are also included as part of each of the action alternatives evaluated. Costs for each alternative presented in the Final EIS reflect the updated costs of these common features. All alternative costs have been updated to reflect 2008 price levels.

Table 1 lists the biota treatment alternatives in the order of their relative treatment inactivation/removal capability which is presented in more detail in chapter two of the Final EIS. The No Action Alternative provides the lowest level of biota treatment and the Microfiltration Alternative provides the highest level of biota treatment. As would be expected, the cost of biota treatment increases with increased inactivation and removal efficiency.

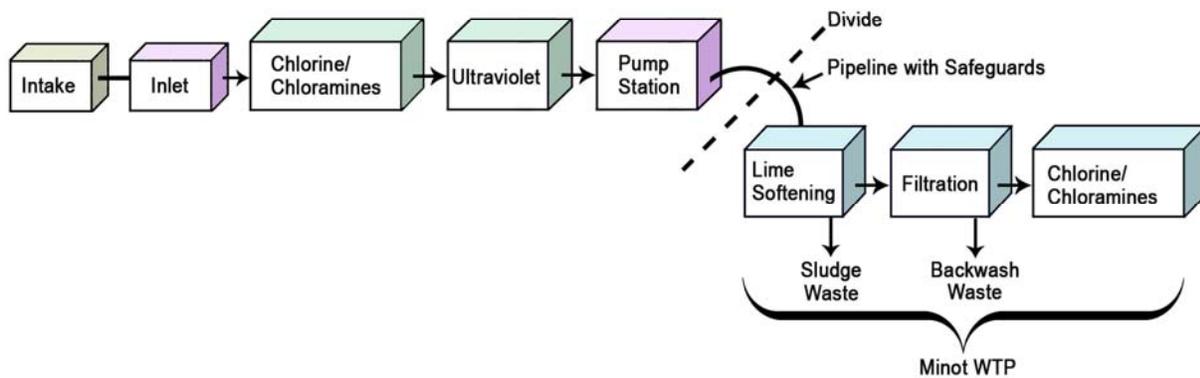
Table 1 – Construction and Annual OM&R Costs for Each Alternative.

Alternative	Construction Costs (2008 dollars)	Annual OM&R Costs (2008 dollars)
No Action	\$11,500,000	\$271,000
Basic Treatment	\$70,000,000	\$1,905,000
Conventional Treatment	\$76,000,000	\$1,910,000
Microfiltration	\$92,000,000	\$2,212,000

*Costs in the table are rounded.

Identification of the Preferred Alternative

The Preferred Alternative has been identified by Reclamation as a combination of treatment processes evaluated in the EIS. This combination of treatment processes includes the chemical disinfection process evaluated as part of the No Action Alternative and the UV disinfection process evaluated as part of the action alternatives. The upgraded Minot WTP would treat the water as previously described, excluding the UV disinfection process which would be included at the biota WTP instead.



Cost estimate information for the treatment processes included in the Preferred Alternative was provided to Reclamation by the North Dakota State Water Commission. Reclamation used these data to estimate the construction cost of this alternative, just as with the other alternatives. The total construction cost for the Preferred Alternative is approximately \$17.5 million including contingencies, and non-contract costs. The annual OM&R cost is estimated at approximately \$306,000.

Construction Cost = \$17.5 million
Annual OM&R = \$306,000

Several factors were considered in the process of identifying the Preferred Alternative. The effectiveness of the chemical and UV disinfection processes, combined with the safeguards designed and constructed in the existing pipeline between Lake Sakakawea and the Minot WTP, would result in a very low risk of a Project-related biological invasion from the Missouri River basin to the Hudson Bay basin. Information presented in the EIS summarizes Reclamation's efforts to evaluate the risk of a biological invasion between these two basins and the venues through which this may occur. Supporting documents on the enclosed CD also discuss in detail the level of treatment that can be achieved through the various treatment processes evaluated in the alternatives.

Using this information and the estimated costs associated with the alternatives, Reclamation made the following determinations:

1. The Preferred Alternative includes treatment processes which are capable of reducing the Project-related risks of a biological invasion even further than what can be achieved by the No Action Alternative, which the Secretary for the Department of the Interior's, has already been determined to be an adequate level of treatment.
2. The safeguards designed and constructed into the existing water pipeline, along with the natural terrain that generally lacks surface drainage, provide a very low risk of a failure in the pipeline resulting in the transfer and establishment of any of the potentially invasive species evaluated in the EIS.
3. The comparison of the estimated costs of each alternative and the level of risk reduction which can be achieved for these costs demonstrates that the Preferred Alternative is a means of achieving the most cost effective treatment for the Project.

The Preferred Alternative provides the most effective treatment, in terms of treatment effectiveness and costs, to adequately reduce the risk of a Project-related biological invasion. This conclusion is also supported by the EPA and the North Dakota Department of Health as stated in their comment letters dated February 15, 2008 and March 25, 2008 respectively. Each of these agencies suggested combining the treatment processes from the No Action Alternative (chemical disinfection) with the UV disinfection process included in each of the action alternatives.

Affected Environment

The area evaluated in the EIS is the site of the proposed biota WTP near Max, North Dakota (see Figure 3). Prior to this site being purchased by the State of North Dakota for the Project the land was used as cropland; but the soils are not classified as prime or unique farmland. A palustrine, emergent, seasonally flooded wetland about 7 acres in size is located along the northeast boundary of the site. Several small (less than 1 acre) palustrine, emergent, temporarily flooded and a small seasonal wetland are also located within the site area.

Each of the alternatives evaluated has a biota WTP, including a pump station, which would be constructed at this site. Each biota WTP and pump station would have a unique design footprint; therefore, the potential impacts of each alternative may vary.

Environmental Impacts and Mitigation

The potential impacts considered are direct, indirect, and cumulative effects that may result from the proposed action and alternatives. Potential environmental impacts associated with a Project-related biological invasion between the Missouri River basin and the Hudson Bay basin are evaluated in chapter four. The alternatives under consideration have a wide range of estimated costs and would therefore have a wide variety of potential impacts on the regional economy. Regional social and economic impacts associated with the construction and operation of a biota WTP were evaluated. Potential impacts to the resources evaluated and mitigation measures identified for these resources are briefly described in the following paragraphs.



Above: Proposed Biota Water Treatment Plant Site at Max, North Dakota.

Risk of Transferring Invasive Species

The risk of transferring invasive species through the construction and operation of any of the proposed alternatives would be low to very low for all potentially invasive species identified. The risk of a Project-related transfer of an invasive species is very low compared to other existing and competing pathways.

To further reduce risks of biological invasions associated with an interruption in the biota water treatment process and breach of the buried pipeline to the Minot WTP, a framework for evaluating the condition of water system components and a long-term monitoring program would be part of the operation and maintenance of the Project facilities. Mitigation measures included in the FONSI (Reclamation 2001) related to risks of interbasin biota transfer are superseded by the environmental mitigation measures on the following page.

Environmental mitigation measures include:

- A computerized supervisory control data acquisition system will be designed to monitor the entire operation of the biota WTP.
- Standby power units would be located at the biota WTP to ensure continuous monitoring in case of a temporary or total power outage.
- All waste streams from the biota WTP will be retained and disposed at an approved disposal site within the Missouri River basin.
- For the No Action, Preferred and Basic Treatment alternatives, all waste streams from the Minot WTP will be treated to inactivate disinfectant resistant pathogens, or transported to an appropriate disposal facility in the Hudson Bay basin, or transported for disposal within the Missouri River basin.
- Water quality monitoring of the raw water source will be implemented prior to final design to determine how seasonal changes in water quality may affect the biota WTP design.
- A long-term monitoring plan for the biota WTP will be developed to assess treatment efficacy.
- An emergency response plan will be developed for the biota WTP with special emphasis on preventing potential transfer of invasive species in the event of a plant malfunction.
- Reclamation will assume ultimate responsibility for the construction and OM&R of the biota WTP.
- Reclamation will coordinate with the State of North Dakota through the State Water Commission, to assure adequate operation, maintenance, and replacement of the delivery system biota transfer control measure features including isolation valves.
- Reclamation will develop an adaptive management plan, in accordance with the U.S. Department of the Interior Policy guidance (Order 3270) and the report *Adaptive Management, The U.S. Department of the Interior Technical Guide* (Williams, B.K. et al. 2007). The plan will be implemented to assess control system efficacy and make modifications to the control system if the risk changes significantly.

Federally Listed Threatened and Endangered Species

The critical habitat designated for the piping plover in McLean County is not adjacent to the proposed site of the biota WTP and therefore would not be affected by the proposed action. A determination of “no effect” on federally protected species has been made and no further or formal consultations with the U.S. Fish and Wildlife Service is necessary.

During the construction of any features associated with the No Action Alternative or the action alternatives, Reclamation would require that all permanent and temporary power or communication lines associated with the construction area be buried where practical. If not possible, the lines would be designed and located to avoid raptor collisions and/or electrocutions. The Impact Mitigation Assessment team will review the location of the proposed biota WTP and pump station to determine if additional field surveys are needed to determine the occurrence of listed species. If threatened or endangered species are encountered during construction, Reclamation would immediately consult with the U.S. Fish and Wildlife Service.

Historic Properties

The determination of no historic properties affected for the No Action Alternative as recorded in the Final EA and FONSI is still a relevant determination. In terms of the other action alternatives evaluated in the EIS, the exact location of the proposed treatment facility may or may not fall within the area previously surveyed at the Class III level. If one of the action alternatives is selected, Reclamation commits to reviewing the Class III survey during the final design phase to

determine if additional surveys are warranted based on consultation with the State Historic Preservation Officer. If unanticipated cultural resources are encountered during construction, all ground disturbing activities in the immediate area of the resource will be stopped until Reclamation can consult with the State Historic Preservation Officer and appropriate Tribes and evaluate the resource.

Indian Trust Assets

Reclamation has determined there would be no effect on Indian Trust Assets resulting from the proposed action. There are no trust lands or hunting, fishing and gathering rights issues in the proposed action area. However, cumulative effects concerns related to the amount of water that potentially would be available for other projects if tribes quantified their water rights to the Missouri River are noted. This quantification could affect Project water users and other Missouri River water users with permits junior to Indian water rights.

Social and Economic Conditions

The alternatives evaluated have a wide range of estimated costs; therefore, they have a wide variety of potential impacts on the regional economy. Each of the alternatives would have a positive effect on the local and regional economy. These impacts are the result of facility construction expenditures, annual OM&R expenditures and any potential increase in local commercial and domestic activities that is directly related to improved water treatment.

Environmental Justice

No environmental justice issues were identified in the Final EA and FONSI. Additionally, none of the alternatives considered would disproportionately affect low income or minority populations. There are other areas within North Dakota in need of water supply improvements. Some of these areas include Indian reservations and low income rural populations. It is unknown what level of future funding at the state and/or federal level would be available for this Project and other municipal rural and industrial water supply projects.

environmental commitments, means to avoid or minimize environmental harm, and any monitoring or enforcement activities to ensure that environmental commitments will be met.

Record of Decision

No final decision regarding the proposed action has been made at the time of publication of the Final EIS. Final decisions with respect to the proposed action will be included in the Record of Decision. In accordance with NEPA, there will be a minimum 30-day period between the availability of the Final EIS and the issuance of a Record of Decision. Following this 30-day period, Reclamation's Great Plains Regional Director will determine the appropriate final action. The NEPA process will be completed with the approval of a Record of Decision.

The Record of Decision will also include the significant comments received and issues raised in the Final EIS. The selected alternative and the alternatives considered in the Final EIS will be discussed. 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 identify all