APPENDIX K
Responses to Comments on the Draft Supplemental Environmental Impact Statement

Northwest Area Water Supply Project
Supplemental Environmental Impact Statement

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Northwest Area Water Supply Project
Responses to Comments on the
Final Supplemental Environmental Impact Statement

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Introduction

The Draft Supplemental Environmental Impact Statement (SEIS) was distributed to the public on June 20, 2014. The public comment period opened on June 27, 2014 and was originally set to close on August 11, 2014; however the comment period was extended 30 days at the request of Manitoba Conservation and Water Stewardship. The public comment period closed on September 10, 2014.

During the public comment period Reclamation hosted a public hearing in Minot, North Dakota on July 23, 2014. Notice of the public hearing was announced in the local media and published in the *Federal Register* (Vol. 79, No. 124) on June 27, 2014. Oral testimony presented at each of these hearings was documented in the hearing transcript. Written comments were also accepted by Reclamation at the hearing in addition to the letters and emails received throughout the entire comment period. These oral and written comments/letters/emails are collectively referred to as "letters." Responses have been prepared for each of these letters.

All comments received on the Draft SEIS were carefully considered and substantive comments were addressed in the Final SEIS. Some changes to the SEIS text in response to comments were editorial in nature, while other comments resulted in additional information being added to the SEIS, clarifying text added to existing text and most notably, a change in the biota WTP option included in the Final SEIS.

How Comments Were Addressed

Some comment letters made a single suggestion, while others expressed multiple suggestions. Reclamation carefully reviewed each comment and considered them individually and collectively. A general response was developed by Reclamation to respond to statements during the public hearing and in comment letters voicing support for and recognition of the purpose and need of the Project. To reduce repetition, repeated supportive statements and resolutions of support were grouped together and addressed with a consolidated response in the General Comment and Response below. Issues raised in those comment letters are referred back to this General Comment and Response. All specific substantive comments were addressed and in some instances the reader is also referred to a section or chapter in the Final SEIS or an appendix to the SEIS for further information.

The NEPA requires that the preparers of an EIS shall assess and consider all substantive comments on a draft EIS and state their response in the final statement. Substantive comments must be specifically identified and attached to the final EIS. Comments that simply express support or non-support of the project need not be displayed. Comments may be summarized and consolidated to condense the volume.

Some types of comments are acknowledged but do not require a response. These are:

- Comments expressing a position or a preference regarding one or more of the alternatives
- Comments offering an opinion or advice not relevant to the scope of the EIS.

Some types of comments may require a response, as directed by NEPA regulations (40 CFR Section 1503.4). These are:

- Modify alternatives including the proposed action.
- Develop and evaluate alternatives not previously given serious consideration.
- Supplement, improve, or modify analyses.
- Make factual corrections.
- Explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency's position, and if appropriate, indicate those circumstances which would trigger agency reappraisal or further response.
- Acknowledge the comment if it is simply offering an opinion or if it contains advice not pertinent to the EIS.

Public hearing transcripts and verbatim testimony are not included in the Final SEIS. Comments provided during the public hearing were summarized from the transcript and are addressed in this appendix.

This appendix displays all written comments with a numbered response to each substantive comment identified in each letter. The numbered responses appear at the end of each comment letter.

Each comment letter received has been assigned an identification number. This identification number is printed in the upper right hand corner of each letter. These identification numbers are used in the numbering of comments and corresponding responses in each letter. For example, if comment letter #5 has three substantive comments requiring a response, the comments and corresponding responses are numbered 5-1, 5-2, and 5-3. This appendix is organized with the letter, with the marked comments, followed by corresponding numbered responses for that particular letter. Then the next comment letter is presented, again followed by the corresponding numbered responses.

General Comment and Response

General Comment No. 1: Purpose and Need for the Project

Individual citizens, water user organizations and public officials at the national/state/county/local level provided comments in support of the Project as a means of providing a reliable high quality water supply to communities and rural water systems in northwestern North Dakota. These comment letters also emphasized the need for a project to help meet current water needs in the area, as well as the future needs, due to population growth and increasing water demands.

Response:

Reclamation agrees there is a need for a reliable high quality water supply within the Project area based on the analyses completed and documented in the *Water Needs Assessment Technical Report* (Reclamation 2012a). Information presented in the SEIS describes the water quantity and/or water quality needs of the communities and rural water systems and four action alternatives have been evaluated as a means of meeting the current and future water needs.

KEVIN CRAMER
NORTH DAKOTA

WASHINGTON D.C. OFFICE:
1032 LONGWORTH BUILDING
WASHINGTON, DC 20515
202-225-2611

BISMARCK OFFICE:
220 EAST ROSSER AVENUE
SUITE 328
BISMARCK, NORTH DAKOTA 58501
701-224-0355

CONGRESS OF THE UNITED STATES
HOUSE OF REPRESENTATIVES
WASHINGTON, DC 20515

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FARGO, NORTH DAKOTA 58103
701-356-2216

MINOT OFFICE:
315 MAIN STREET SOUTH, SUITE 203
MINOT, NORTH DAKOTA 58701
701-839-0255

GRAND FORKS OFFICE:
CENTER FOR INNOVATION FOUNDATION BUILDING
4200 JAMES RAY DRIVE, OFFICE 600
GRAND FORKS, NORTH DAKOTA 58202
701-738-4880

1

July 23, 2014

Northwest Area Water Supply Project Draft SEIS
Bureau of Reclamation
P.O. Box 1017
Bismarck, ND 58502-1017

To whom it may concern,

I write to offer my strong support for the Northwest Area Water Supply Project (NAWS) at today's public hearing. There has been a great amount of personal and government investment in the water infrastructure for those to the north of Lake Sakakawea. I believe the evaluation process has gone on long enough and is time for reliable, high quality water to be delivered to the citizens of western North Dakota.

The need for this project has long been demonstrated with original authorization in the Dakota Water Resources Act of 2000. Now with years of extensive growth brings a rapidly expanding number of water users which only raises the priority of this project. A no action alternative and an inbasin alternative have been adequately shown to be unacceptable while environmental concerns have been addressed. 1-1

I'm thankful for all the work being done to keep this project moving forward and encourage any interested or concerned citizens to join me in submitting their comments on the project to the Bureau by the August 11 deadline.

Sincerely,

Kevin Cramer
Member of Congress

Response 1-1 – Your statement(s) have been included as part of the record. Please refer to General Response No. 1.

North Prairie Rural Water District

3811 BURDICK EXPY. EAST
MINOT, ND 58701-5357
PHONE (701) 852-1886
FAX (701) 857-6703
TOLL FREE 1-800-536-3150

2

July 18th 2014

Miss Alicia Waters
Bureau of Reclamation
Po Box 1017
Bismarck ND 58502

RE: Draft SEIS Comment

Dear Miss Waters.

The North Prairie Rural Water District provides drinking water to over 10,000 people in Ward, McHenry and Mclean counties. NPRWD serves family farms, small towns, business and urban sub-divisions. While this service is broad it is not universal to each rural user. The trend over time will to increase the number of people we serve even with the rural farms that currently exist but do not yet have pipe to them.

North Prairie strongly supports continued development of the North West Area Supply project. North Prairie feels that due to the lack of ground water and surface water supplies within its service are that the NAWS project if vital to the long term health and safety of its users. 2-1

NPRWD strongly supports the Missouri River supply options as the only viable supply in the north western North Dakota area. The supply of water from the Missouri River is necessary to maintain growth and to provide a consistent supply for the long term utilization of the population of our area.

Best Regards,

Teresa Sundsbak
North Prairie Rural Water District

Response 2-1 – Your statement(s) have been included as part of the record. Please refer to General Responses No.1.

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

July 23, 2014

Mr. Damien Reinhart
U.S. Department of the Interior
Bureau of Reclamation
Po Box 1017
Bismarck ND 58502

NDSHPO REF.: 13-0565 Bureau of Reclamation "Class I Cultural Resource Inventory for the NAWS Lake Intake, Lake Intake Alternate, 2-5A, 2-4c, 2-4A, 2-3C, 2-4B and Minot Aquifer Pipe Collector and Feeder Water Transmission Pipeline Projects, Divide, Bottineau, Burke, McLean, Renville and Ward Counties"

Dear Mr. Reinhart:

We reviewed NDSHPO REF.: 13-0565 Bureau of Reclamation "Class I Cultural Resource Inventory for the NAWS Lake Intake, Lake Intake Alternate, 2-5A, 2-4c, 2-4A, 2-3C, 2-4B and Minot Aquifer Pipe Collector and Feeder Water Transmission Pipeline Projects, Divide, Bottineau, Burke, McLean, Renville and Ward Counties." We concur with your Class II (pedestrian) survey recommendations as outlined in your letter dated July 11, 2014. 3-1

Thank you for the opportunity to review to date. We look forward to further review. Please include the ND SHPO Reference number listed above in any further correspondence for this specific project. If you have any questions please contact Susan Quinnell, Review and Compliance Coordinator at (701) 328-3576 or squinnell@nd.gov

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)

Response 3-1 – Your statement(s) have been included as part of the record.

City of Westhope
P.O. Box 412
Westhope, North Dakota 58793

July 21, 2014

To Whom It May Concern

On July 7, 2014 the Westhope City Council held its monthly meeting. At this time we passed a resolution in support of the Supplemental Environmental Impact Statement on the NAWS project. This project needs to move forward toward its completion. In Westhope we have a sufficient water supply, but the quality is not good. The majority of the Westhope residents purchase water for drinking and for cooking. It would be nice to be able to provide our residents with a dependable and good water supply. 4-1

Thank you.

Margo Helgerson

Margo Helgerson, Mayor

Response 4-1 – Your statement(s) have been included as part of the record. Please refer to General Response No. 1

CITY OF GLENBURN ND
RESOLUTION OF SUPPORT
FOR NAWS

Whereas, the City of Glenburn met at its July 10th 2014 meeting and discussed the support for the draft Supplemental Environmental Impact Statement on the NAWS project. 5-1

Now, Therefore, be it resolved by the City Council of the City of Glenburn, North Dakota, does hereby support the draft report and urge the completion of NAWS. The City believes NAWS will provide a dependable and sufficient water supply to our community.

Signed:

Eric Folstad	Mayor Title	July 10th, 2014 Date

I certify that the above resolution was adopted by the City of Glenburn on this 10th day of July, 2014.

Witnessed:

Donna Zeltinger	City Auditor Title	July 10th, 2014 Date

Response 5-1 – Your statement(s) have been included as part of the record. Please refer to General Response No. 1.

Kenmare
NORTH DAKOTA
Real People. Real Life.

July 23, 2014

Bureau of Reclamation
Alicia Waters
P.O. Box 1017
Bismarck, North Dakota 58502

Re: Northwest Area Water Supply Project
Draft Supplemental Environmental Impact Statement

Dear Ms. Waters:

The City of Kenmare is currently relying on the Northwest Area Water Supply Project (NAWS) to deliver potable water to the city. This project is of critical importance to the city as it provides a source of quality, safe drinking water to the residents and businesses. Prior to NAWS, the city relied on its own municipal water supply, consisting of wells that draw water from the Kenmare aquifer. The water from this aquifer is of poor quality and contains toxic levels of arsenic and high concentrations of organics and sodium that make treating the water very difficult and expensive. 6-1

To maintain compliance with the Arsenic Rule, the City of Kenmare evaluated multiple options, including constructing a new water treatment facility and purchasing water from NAWS. By far, the most cost-effective and sustainable solution for the City of Kenmare was purchasing water from NAWS.

At present, NAWS is capable of supplying barely enough water to satisfy the City's average demand. Rapid growth within the region due to energy production has increased the demand to the point where the City has implemented usage restrictions to conserve the critical resource that is NAWS water. In emergency situations, the City can blend small amounts of water from the municipal wells to satisfy peak or emergency demands, but that contingency is neither desirable nor sustainable.

The completion of the NAWS project is critical to the City of Kenmare and northwest North Dakota. The delivery of Missouri River water to the region will provide a dependable and sufficient supply of water for communities like Kenmare.

The City of Kenmare supports the Draft Supplemental Environmental Impact Statement and urges the Bureau of Reclamation and the North Dakota State Water Commission to complete the project as quickly as possible. Our communities are depending on it.

Sincerely,

Roger Ness

Roger Ness
Mayor

PO Box 816 | 5 NE 3rd Street | P 701-385-4232 | F 701-385-3292 | cityofkenmare@restel.net

Response 6-1 – Your statement(s) have been included as part of the record. Please refer to General Response No. 1.

Comment Sheet for the Northwest Area Water Supply Project Draft Supplemental Environmental Impact Statement

As part of the public hearing process, comments should be sent to Northwest Area Water Supply Project, Bureau of Reclamation, P.O. Box 1017, Bismarck, N.D., 58502-1017. Comments should be postmarked by October 12, 2010.

7

(Please Print Clearly)

Name Rodney Kremer

Organization and Address City of Burlington

PO Box 159

Burlington ND 58722

Phone (701) 852-5233 **FAX** 701-852-5928 **E-mail** cityburl@srt.com

Comments:

I am writing this letter to show my support of the Northwest Area Water Supply Project. My family lived in rural Burlington for 39 years and the last four we had rural water. Before that time, our water was never good. Ok at times at best, with water softeners and iron out attachments. When we got rural water, it was great to say the least. I remember one Christmas I spent the entire day in my basement working onthe well just to get it going in time for company to go home (with no water, no bathroom, etc) 7-1

Now, having said that, I assure you, I have no political or financial interest whatsoever in regard to NAWS. I am just one guy (of many) that likes and needs good quality water.

I don't understand the delays of this better quality of life effecting man, woman and child and livestock. Millions of taxpayers money having already been spent. What possible reason is there for any further delay? 7-2

Let's get it done! Thank you,

*Attach additional sheets if necessary.

Please mail your comments to the address on the back of this form, or FAX your comments to 701-250-4326, or e-mail your comments to awaters@usbr.gov. Thank you.

The names and comments of those making written or oral statements on this process will become part of a public record. You may request that your name and/or address be withheld from public release. Those requests will be honored to the extent permissible by law.

U.S. Department of the Interior
Bureau of Reclamation

Response 7-1 – This statement has been noted. Please refer to General Response No.1.

Response 7-2 - Reclamation will complete the Final Supplemental EIS and Record of Decision in accordance with the Council of Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act, the Dakota Water Resources Act and other applicable laws, regulations and Executive Orders. The ongoing litigation will also need to be resolved.

WARD COUNTY 1885

Ward County Water Resource

P.O. Box 5005 • Minot, ND 58702-5005 • 900 13th St. SE • (701) 839-6840
Fax (701) 838-3801 • E-mail: wardwater@srt.com

July 24, 2014

Ms. Alicia Waters
Bureau of Reclamation
P.O. Box 1017
Bismarck, ND 58502

RE: Northwest Area Water Supply Project Draft SEIS

Thank you for the opportunity to comment on the Draft Supplemental Environmental Impact Statement (SEIS) for the Northwest Area Water Supply (NAWS) Project.

The Ward County Water Resource District fully supports the proposed action as described in the Draft SEIS to construct a project that provides drinking water to local communities and rural water systems in northwestern North Dakota, including the City of Minot. Existing water supplies are not of sufficient quality or quantity to reliably meet current needs or projected growth for the 50-year planning period. Further unnecessary delays in implementing the project will inhibit growth in the region that is experiencing historic economic opportunities. 8-1

We believe the methods identified in the Draft SEIS to address project related transfer of aquatic invasive species reduce the risk to a much smaller potential than that through existing non-project pathways. We also note that cumulative effects of water withdrawals on Lake Sakakawea and the Missouri River are negligible.

Thank you again for allowing us to comment on the Draft SEIS. The Ward County Water Resource District looks forward to working with the Bureau of Reclamation and other cooperating federal, state, and local agencies to successfully implement NAWS as quickly and as efficiently as possible.

Sincerely,

Tom Klein

Tom Klein, Chairman
Ward County Water Resource District

Response 8-1 – Your statement(s) have been included as part of the record. Please refer to General Response No. 1. Reclamation will complete the Final SEIS and Record of Decision in accordance with the Council of Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act, the Dakota Water Resources Act and other applicable laws, regulations and Executive Orders. The ongoing litigation will also need to be resolved.

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

July 22, 2014

Ms. Alicia Waters
Bureau of Reclamation
P.O. Box 1017
Bismarck, ND 58502

Re: NAWS Project Draft SEIS
Divide, Burke, Renville, Bottineau, Williams, Mountrail, Ward, McHenry, Pierce and McLean Counties

Dear Ms. Waters:

This department has reviewed the information concerning the above-referenced project submitted under date of June 20, 2014, with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments: 9-1

1. All necessary measures must be taken to minimize fugitive dust emissions created during construction activities. Any complaints that may arise are to be dealt with in an efficient and effective manner. 9-2

2. Projects disturbing one or more acres are required to have a permit to discharge storm water runoff until the site is stabilized by the reestablishment of vegetation or other permanent cover. Further information on the storm water permit may be obtained from the Department's website or by calling the Division of Water Quality (701-328-5210). Also, cities may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.

3. Noise from construction activities may have adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Noise effects can also be minimized by ensuring that construction activities are not conducted during early morning or late evening hours.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota. 9-3

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

L. David Glatt, P.E., Chief
Environmental Health Section

LDG:cc

Response 9-1 – Your statement(s) have been included as part of the record.

Response 9-2 – Throughout chapter 4 and in Appendix F Reclamation has identified numerous Best Management Practices and environmental commitments to minimize or avoid construction related impacts.

Response 9-3 – Your statement(s) have been included as part of the record. Reclamation will continue to coordinate efforts with state agencies to ensure compliance with state laws and regulations.

Comment Sheet for the Northwest Area Water Supply Project Draft Supplemental Environmental Impact Statement

As part of the public hearing process, comments should be sent to Northwest Area Water Supply Project, Bureau of Reclamation, P.O. Box 1017, Bismarck, N.D., 58502-1017. Comments should be postmarked by ~~October 12, 2010~~. Sept 2014.

10

(Please Print Clearly)

Name Penny Nostdahl

Organization and Address City of Bottineau
115 10th St W. Suite #3
Bottineau ND 58318

Phone (701) 228-3232 **FAX** 701-228-2543 **E-mail** cityhall@utma.com

Comments:

City of Bottineau needs good Quality & Quantity water. We have been signed up for over 25 yrs. Working in the City Office, I hear many complaints on our water first hand. Our Community is expanding & needs are changing. Please Consider Our needs. Thank you!

10-1

*Attach additional sheets if necessary.
Please mail your comments to the address on the back of this form, or FAX your comments to 701-250-4326, or e-mail your comments to awaters@usbr.gov. Thank you.
The names and comments of those making written or oral statements on this process will become part of a public record. You may request that your name and/or address be withheld from public release. Those requests will be honored to the extent permissible by law.

U.S. Department of the Interior
Bureau of Reclamation

Response 10-1 – This statement has been noted. Please refer to General Response No.1.

City of Bottineau
115-6th Street West, Suite #3
Bottineau, ND 58318
Phone: 701-228-3232
Fax: 701-228-2543
cityhall@utma.com
www.bottineau.govoffice.com

Be it hereby resolved that the City Council of the City of Bottineau, ND is in full support of the Northwest Area Water Supply Project. (NAWS) This resolution was adopted by the City Council on 8-4-14 due to the fact that our community is in need of good quality & quantity water for our residents. 11-1

Attest:

Nostdahl

Penny J Nostdahl, City Auditor

Ben Aufforth, Mayor

Response 11-1 – This statement has been noted. Please refer to General Response No.1.

Comment Sheet for the Northwest Area Water Supply Project Draft Supplemental Environmental Impact Statement

As part of the public hearing process, comments should be sent to Northwest Area Water Supply Project, Bureau of Reclamation, P.O. Box 1017, Bismarck, N.D., 58502-1017. Comments should be postmarked by October 12, 2010.

12

(Please Print Clearly)

Name Sandra Jensen

Organization and Address City of Bottineau

115-6th St. W, Ste #3

Bottineau, ND. 58318

Phone (701) 228-3232 **FAX** 701-228-2543 **E-mail** wtrbills@utma.com

Comments:

I Personally Support the NAWS Project. The city of Bottineau signed up for NAWS during the Conception of the project, as many towns did at that time. The belief being, that there would be an abundance of clean water for any water connected to the project.

12-1 The unfortunate reality is that the process has been slow. The City of Bottineau had to build a water treatment plant while waiting. So much time has passed that they are looking at updating or replacing said treatment plant - as it looks like NAWS will not be here for many years.

12-2 The 2010 Population for the City of Bottineau was 2211 - we are higher than that now. We has recently added two residential additions, one on the west end of town (108 lots), and one on the East end of town (52-plus-has to finish platting his lots) We have large Companys and Corporations looking at us for possible future locations for their businesss. Our City is growing - quite frankly - over night. Our population was forcasted to grow, I believe, by Vision West, to 10,000 by 2020, because of the local Oil Impact. Granted - we are not producing Sweet Crude, but Sour; However, We are seeing the the drilling Companies, their Crews and their families in town. They are Renting / Buying homes, cars, groceries and Utilities - like water!

Supply vs Demand could become a future problem. There is a definite cost to building new, larger treatment Plants and drilling wells. NAWS would be a welcome relief to what could become an overwelming need for the Consumption of clean water.

Thank You for Your Time.

Sandra

*Attach additional sheets if necessary.

Please mail your comments to the address on the back of this form, or FAX your comments to 701-250-4326, or e-mail your comments to awaters@usbr.gov. Thank you.

The names and comments of those making written or oral statements on this process will become part of a public record. You may request that your name and/or address be withheld from public release. Those requests will be honored to the extent permissible by law.

Response 12-1 – This statement has been noted.

Response 12-2 – Reclamation recognizes the increasing need for water throughout the Project area as documented in the SEIS as well as in the *Water Needs Technical Report* (Reclamation 2012a).

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
GREAT PLAINS REGION
DAKOTAS AREA OFFICE

Northwest Area Water Supply Project
Draft Supplemental Environmental Impact Statement

SUMMARY OF PUBLIC HEARING TRANSCRIPT

Taken at
Comfort Inn – Meeting Room
1515 22nd Avenue SW
Minot, North Dakota
July 23, 2014

Before Mr. Buck Feist and Mr. Sterling Rech - Hearing Officers

The following comments were received as verbal statements during the public hearing as recorded in Minot, North Dakota, on July 23, 2014. These comments were provided by interested parties in response to the draft Supplemental EIS distributed by Reclamation for public review on June 20, 2014.

MR. MCLOUD (representing Senator Heitkamp)

The need for NAWS Project is real. Since construction began in 2002, the need and urgency for it has only increased. 13-1

The preferred alternative adequately addresses the concerns raised by our neighbors to the north and goes to great lengths to mitigate the risk of any potential transfer of biota.

The preferred alternative puts the rest of the misguided claims by those downstream of the project that it will result in significant cumulative depletions from the Missouri River system that will impact their use of the river.

In the end, this project is about moving water from an abundant source to a place of great need. It has been studied, studied, and studied again. The time is now to move forward on this critical project and to bring it to its final conclusion.

MR. LOKKEN (representing West River Water and Sewer District)

We are restricted in the amount of water we can currently use, and we are also restricted in the quality that we have. Our board and our body of West River Water and Sewer users have consistently supported NAWS and hope to see its completion. 13-2

MS. VELK (representing Senator Hoeven)

Our communities have faced ever-increasing demands on our utilities and infrastructure, straining our capacity to ensure access to vital resources such as electricity, water, and roads. 13-3

It is my hope that this process moves forward in a timely manner, allowing for completion of the NAWS Project in the most cost-effective manner possible and ensuring the continued health and prosperity of our communities in northwestern North Dakota.

MR. JONASSON (representing the City of Minot)

The SEIS provides further evidence of the pressing need that we have for reliable water to provide to our neighboring communities in northwest North Dakota. 13-4

I greatly encourage you to move forward the alternative that's outlined in the Supplemental Environmental Impact Statement as quickly as possible so that the remaining pipelines and improvements to our water treatment plants can be completed so we can continue to get the communities of North Dakota the quality and quantity of drinking water they need.

MR. BARNEY (representing the City of Minot)

The need for reliable, high-quality drinking water in the northwest part of the State of North Dakota, identified when the project was first conceived more than 25 years ago, continues to grow ever more urgent as the State's population expands and existing water supplies continue to decline. 13-5

The Draft SEIS demonstrates that the NAWS Project can be designed in a way to maximize the effectiveness of the project while presenting extremely low risk, if any, to the environment.

The City Council of the City of Minot, North Dakota, declares support for the Northwest Area Water Supply Project and for the Northwest Area Water Supply Draft Supplemental Environmental Impact Study.

The time to move forward and complete this project is now, and the results of this Supplemental Environmental Impact Study and proposed action should be accepted so that the project may recommence immediately.

MR. SEYMOUR (representing Minot Area Chamber of Commerce)
I support what has just been said by our mayor, Mayor Barney, 100 percent.

MR. SCHEMPP (representing the NAWS Advisory Committee)
We've always recognized that a dependable, plentiful supply was necessary for this area. And with the growth that has taken place now, it's even more necessary. 13-6

You, basically, made our case on page 4 3 of the Supplemental Environmental Impact Statement when you said, "The Project is needed because the existing water supplies are not of sufficient quality or quantity to reliably meet current needs or projected growth in the Project Area during the 50-year planning period."

We think it's time for a decision to be issued that makes it plain, understandable, reasonable, fair, and can be solved by anybody who has the ability to read it that the project is needed and is necessary.

MR. SANDO (representing the North Dakota State Water Commission)
Today, population growth in this state has exacerbated our water supply challenges. And this project is needed now more than ever to address the increasingly dire and drastic water supply needs. 13-7

This document confirms the pressing need for reliable, high-quality drinking water in this area, and it demonstrates that the NAWS Project is designed in a way to maximize the effectiveness of the project while presenting extremely low risk, if any, to the environment.

The interim water supply does not meet the full needs of the region and is not sustainable, as the City of Minot's groundwater source continues to decline. We need a long-term, reliable solution.

MR. ISSINDORF (representing the Bottineau County Water Resource Board)
After twenty-seven years and many state engineers, Bottineau County still does not have good water. We need a good record of decision coming from you, gentlemen, and your committee. We need it easy to understand and easy to implement. Give us our water. 13-8

MR. SCHAEFER (representing All Seasons Water Users District)
We totally support NAWS 100 percent. We totally support the Supplemental EIS alternative as described.

MR. HAGER (representing Upper Souris Water District)
We are really supportive of the alternative discussed here tonight. And first, we want to be thankful to the City of Minot for supplying on an interim basis the water that we have.

We're not meeting the current needs that we have right now. And, as we all know, in this area of North Dakota, the population projection has increased, so the water needs are projected to increase. So we're wholeheartedly in support of the NAWS Project.

13-9

Response 13-1 – These statements have been noted. Please refer to General Response No. 1.

Response 13-2 – These statements have been noted. Please refer to General Response No. 1.

Response 13-3 – These statements have been noted. Please refer to General Response No. 1. Reclamation will complete the Final SEIS and Record of Decision in accordance with the Council of Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act, the Dakota Water Resources Act and other applicable laws, regulations and Executive Orders.

Response 13-4 – These statements have been noted. Please refer to General Response No. 1. Reclamation will complete the Final SEIS and Record of Decision in accordance with the Council of Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act, the Dakota Water Resources Act and other applicable laws, regulations and Executive Orders.

Response 13-5 – These statements have been noted. Please refer to General Response No. 1. Reclamation will complete the Final SEIS and Record of Decision in accordance with the Council of Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act, the Dakota Water Resources Act and other applicable laws, regulations and Executive Orders.

Response 13-6 – These statements have been noted. Please refer to General Response No. 1.

Response 13-7 – These statements have been noted. Please refer to General Response No. 1.

Response 13-8 – These statements have been noted. Please refer to General Response No. 1.

Response 13-9 – These statements have been noted. Please refer to General Response No. 1.

SOUTHWEST WATER AUTHORITY

Our Vision: People and Business Succeeding with Quality Water Our Mission: Quality Water for Southwest North Dakota

August 21, 2014

Ms. Alicia Waters
Bureau of Reclamation
P.O. Box 1017
Bismarck, ND 58502

Dear Ms. Waters:

On behalf of Southwest Water Authority (SWA), a political subdivision which manages, operates and maintains the Southwest Pipeline Project (SWPP), I am writing to express our continued support for the Northwest Area Water Supply (NAWS) Project and access to Lake Sakakawea water. I ask you to continue to work towards completion of the NAWS Project and that it remain a top priority of the Bureau of Reclamation.

Water infrastructure is crucial to all of North Dakota. Many parts of the state are still in need of a long-term, reliable source of drinking water. The NAWS Project has the opportunity to increase, not only the quality of life of the people, but it is also vital to the economic and social future in northwest North Dakota. For them to succeed it is critical to provide water supply reliability for municipal, rural and industrial uses. In 2018, the temporary contracts to supply groundwater from the City of Minot to the surrounding communities will run out. By using Missouri River water, the NAWS Project would greatly benefit these communities and rural residents by providing a high quality and long-term, reliable source of water. 14-1

The SWPP is an example of how successful a regional water system can be. Today we proudly serve Missouri River water to more than 58,000 residents in southwest North Dakota, including

31 communities, 5,350 rural service locations, 28 contract workers, 32 raw water customers, three crew camps, two rural water systems and two raw water depots. We are successful because of Missouri River water from Lake Sakakawea. The expansion of the SWPP continues as we reach out to our rural customers, as the rural residents in Oliver, Mercer and Morton counties are currently under construction. Many of these residents and those still waiting in north Dunn County have signed up for water as long as 30 years ago.

The southwest region is being impacted just as the NAWS service area is with explosive population growth due to the economic boom the state of North Dakota is seeing. Missouri River water is vital to all our citizens both now and in the future. It is the supply of quality water necessary for current and future generations. It is needed to serve those who live and work in the region to support economic vitality, quality of life and energy independence for our state and country.

At SWA, we understand the necessity for an adequate supply of quality water and that it is the lifeblood of any community. We strongly support the NAWS Project to be completed as quickly as possible. NAWS is necessary to become the reliable source of water in the northwest region of North Dakota the residents deserve and need. 14-2

Sincerely,

Mary Massad
Manager/CEO
Southwest Water Authority

cc: Todd Sando, P.E., State Engineer, North Dakota State Water Commission
Michelle Klose, P.E., Assistant State Engineer, North Dakota State Water Commission
Tim Freije, P.E., Northwest Area Water Supply Project Manager, North Dakota State Water Commission

Response 14 -1 – This statement has been noted. Please refer to General Response No. 1.

Response 14-2 – Reclamation will complete the Final SEIS and Record of Decision in accordance with the Council of Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act, the Dakota Water Resources Act and other applicable laws, regulations and Executive Orders. The ongoing litigation will also need to be resolved.

RESOLUTION NO. 2014-01

RESOLUTION SUPPORTING THE NORTHWEST AREA WATER SUPPLY PROJECT

15-1

WHEREAS, the City of Sherwood, is in need for reliable and high quality drinking water ; and

WHEREAS, the draft SEIS provides evidence of the pressing need for reliable, high quality drinking water and how any potential environmental impacts can be managed and mitigated successfully. The draft SEIS demonstrates that the NAWS project can be designed in away to maximize the effectiveness of the project while presenting extremely low risk, if any, to the environment; and

NOW, THEREFORE, BE IT RESOLVED NOW, that the City Council of the City of Sherwood, North Dakota, declares support for NAWS project and for the NAWS draft SEIS.

Passed and adopted this 11th day of August, 2014.

APPROVED:

Garrett Volk

Garrett Volk, Mayor

ATTEST:

Janet Krause

Janet Krause, City Auditor

Response 15 -1 – These statements have been noted. Please refer to General Response No. 1.

COMMENTS ON THE
U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

JULY 2014

NORTHWEST AREA WATER SUPPLY PROJECT DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

Prepared by

Gary L. Pearson, D.V.M.
1305 Business Loop East
Jamestown, North Dakota

September 3, 2014

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INTRODUCTION

The U. S. Department of the Interior, Bureau of Reclamation's July 2014 *Northwest Area Water Supply Project, North Dakota, Draft Supplemental Environmental Impact Statement* (Draft SEIS) states that:

> "The Garrison Diversion Unit's MR&I [Municipal, Rural and Industrial water supply] grant program was authorized by the U. S. Congress on May 12, 1986, though the Garrison Diversion Unit Reformulation Act of 1986. This act authorized the appropriation of $200 million of federal funds for the planning and construction of water supply facilities throughout North Dakota. . ." (Draft SEIS, p. 1-4)

and:

> "The [Northwest Area Water Supply] Project was authorized by the Garrison Diversion Unit Reformulation Act of 1986 and the Dakota Water Resources Act of 2000 as part of the [Garrison Diversion Unit's] Municipal, Rural and Industrial (MR&I) Grant Program." (Draft SEIS p. 1-1)

Although the Northwest Area Water Supply (NAWS) Project is a Federal project, authorized by Federal legislation and with up to 75 percent of the costs paid by Federal funding (Draft SEIS p. 4-176):

> "The planning, design and construction of the Project is a cooperative effort between Reclamation and the State of North Dakota. Reclamation is providing technical and financial assistance for the planning and construction of this Project. **The North Dakota State Water Commission (SWC)** is the Project sponsor and **has worked extensively** with the communities and rural water systems to **develop a plan** that would meet their water needs." (Emphasis added) (Draft SEIS p. 1-1)

What this means is that NAWS is a Federal project that will be funded largely by Federal tax revenues, but it is being designed by the North Dakota State Water Commission with only "technical and financial assistance for the planning and construction" from the Bureau of Reclamation.

The Draft SEIS states that:

> ". . . this SEIS updates the estimated future Project water needs and examines a full range of reasonable alternatives to meet this future need. Other analyses presented in the prior EA and EIS were updated, and the potential effects of global climate change were evaluated." (Draft SEIS p. 1-7)

Therefore, comments by Pearson (2001, Attachment 1)) on the prior Environmental Assessment and comments by Pearson (2006, Attachment 2) and Pearson and Conrad (2008 and 2009, Attachments 3 and 4) on Draft and Final Environmental Impact Statements on Water Treatment for the Northwest Area Water Supply Project are incorporated in and attached to these comments on the July 2014 Northwest Area Water Supply Project Draft Supplemental Environmental Impact Statement.

The following comments are not intended to provide a point-by-point critique of the NAWS Project Draft SEIS, but rather to determine whether, 28 years after the Project was authorized and 17 years after its environmental impact analysis was initiated, the U. S. Bureau of Reclamation has finally produced an Environmental Impact Statement for the Northwest Area Water Supply Project that meets the requirements of the National Environmental Policy Act.

NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE

As a Federal project, NAWS is subject to the requirements of the National Environmental Policy Act (NEPA) (P.L. 91-190) (Draft SEIS pp. 1-1, 1-4, 4-111), including, for all major Federal actions affecting the environment, the preparation (Sec. 102[2][C]) of a "detailed statement by the responsible official" describing:

1. The environmental impact of the proposed action,
2. Any unavoidable adverse effects that cannot be avoided if the action is implemented,
3. Alternatives to the proposed action,
4. The relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity, and
5. Any irreversible and irretrievable commitment of resources if the action is implemented.

The Draft SEIS states that:

> "An Environmental Assessment (EA) (SWC et al. 2001) and Finding of No Significant Impact were completed for the Project in 2001 (Reclamation 2001)." (Draft SEIS p. 1-4)

In commenting on the Bureau's 2001 decision to prepare an Environmental Assessment (EA) and Finding of No Significant Impact instead of initiating a full Environmental Impact Statement (EIS) for the NAWS Project, Pearson pointed out that:

1. The decision to prepare an EA and to sign a Finding of No Significant Impact for the NAWS Project is not compatible with the recommendations of the International Joint Commission regarding the interbasin transfer of Missouri River water to the Hudson Bay Basin.

2. The decision to prepare an EA and to sign a Finding of No Significant Impact for the NAWS Project violates Section 102(2)(D) of the National Environmental Policy Act, which requires agencies to develop alternatives to proposed actions which involve unresolved conflicts concerning alternative uses of available resources.

3. The decision to prepare an EA and to sign a Finding of No Significant Impact for the NAWS Project violates Council on Environmental Quality guidelines for the preparation of Environmental Impact Statements under NEPA.

4. The decision to prepare an EA and to sign a Finding of No Significant Impact for the NAWS Project violates Section 102(2)(C) of NEPA, which requires a detailed statement on the environmental impacts of the project.

5. The EA and Finding of No Significant Impact for the NAWS Project are inadequate and unacceptable vehicles for evaluating, establishing and documenting compliance with the Boundary Waters Treaty of 1909.

(Pearson 2001, Attachment 1)

The "SWC et al. 2001" citation in the Draft SEIS is for:

> North Dakota State Water Commission (SWC), North Dakota Garrison Diversion Conservancy District, Bureau of Reclamation. 2001. NAWS Northwest Area Water Supply Project Final Environmental Assessment. Prepared by Houston Engineering, Inc., American Engineering P.C., Montgomery Watson, and Bluestem Incorporated. (Draft SEIS p. 6-18)

As was noted in comments on the scoping of the subsequent NAWS Project Draft Environmental Impact Statement on Water Treatment (Pearson 2006, Attachment No. 2), Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act state that any Environmental Impact Statement prepared pursuant to the requirements of NEPA:

> ". . . shall be prepared directly by or by a contractor selected by the lead agency. . . It is the intent of these regulations that the contractor be chosen by the lead agency, or by the lead agency in cooperation with cooperating agencies, or where appropriate by a cooperating agency **to avoid conflict of interest**. Contractors shall execute a disclosure prepared by the lead agency. . . specifying that they have no **financial or other interest in the outcome of the project**." (Emphasis added)

However, as the National Wildlife Federation pointed out in comments on the subsequent 2007 Northwest Area Water Supply Project Draft Environmental Impact Statement on Water Treatment:

> "The EA for the NAWS project was prepared by private contractors for the North Dakota State Water Commission, the Garrison Diversion Conservancy District, and the Bureau of Reclamation. Both the North Dakota State Water Commission and the Garrison Diversion Conservancy District have mandates under North Dakota statutes to promote and pursue the diversion of water from the Missouri River into the Hudson Bay Basin of North Dakota.
> . . .
>
> The EA was prepared for the State Water Commission, the Garrison Diversion Conservancy District and the Bureau of Reclamation by Houston Engineering, Inc., American Engineering P.C., Montgomery Watson and Bluestem Incorporated, all of which have long histories of contractual relationships with the North Dakota State Water Commission, the Garrison Diversion Conservancy District, and others with vested interests in Missouri River diversion and which, consequently, have clear financial interests in the outcome of the NAWS project.
>
> In order to avoid these clear conflicts of interest and institutional and contractual biases in the Environmental Impact Statement for the NAWS project, the Bureau must (1) prepare the EIS itself, (2) exercise sole authority in selecting any contractors, and (3) assure that

any contractors are free of historical or current financial or contractual relationships with the State Water Commission, the Garrison Diversion Conservancy District, or others with vested interests in the NAWS project and/or Missouri River diversion." (Pearson and Conrad 2007, Attachment 3)

In comments on the scoping of the Draft EIS for the NAWS Project, Pearson also pointed out that:

1. Instead of concluding that, because the risks of transfer of invasive species from the Missouri River Basin to the Hudson Bay Basin under NAWS are determined to be low, the impacts of biota transfer need not be considered, the EIS must provide a detailed discussion of the environmental impacts of such low probability/high consequence events.

2. The EIS must include a detailed analysis of the cumulative impacts of the NAWS project on the Missouri River in terms of current authorized and proposed or anticipated future withdrawals from the river under a full range of conditions, including the operation of the Red River Valley Water Supply Project during prolonged droughts in the Missouri and Red River basins.

3. The EIS must consider alternatives to supplying Missouri River water under the NAWS Project.

(Pearson 2006, Attachment 2)

These comments were endorsed by the National Wildlife Federation and Friends of the Earth. (Blackwelder and Conrad 2006)

The Draft SEIS states that:

> "In October 2002, the Province of Manitoba, Canada, filed a legal challenge in the U. S. District Court for the District of Columbia claiming that the EA on the Project was inadequate under NEPA [citation omitted]. A court order issued in February 2005 remanded the case to Reclamation for completion of certain environmental analysis. . ." (Draft SEIS p. 1-5)

Although not mentioned in the Draft SEIS, it is relevant to note that, in her February 3, 2005, Memorandum Opinion, United States District Court Judge Rosemary M. Collyer, said:

> "Although it will not order production of an EIS, the Court notes that Manitoba has raised the specter of **significant environmental consequences that deserve serious consideration**. . ." (Emphasis added)

and specifically pointed out that:

> "Federal Defendants argue that the risks of leakage are low and, therefore, that no further study is necessary. They repeatedly provide varied estimates that more than ninety-nine percent of biota will be disinfected under NAWS. While facially compelling, the argument ignores the fact that certain biota have been identified that may be impervious or highly-resistant to the planned treatment. Therefore, **even a low risk of leakage may be offset by the possibility of catastrophic consequences should leakage occur.**

> **Without some reasonable attempt to measure these consequences instead of bypassing the issue out of indifference, fatigue, or through administrative legerdemain, the Court cannot conclude that BOR took a hard look at the problem**." (Emphasis added)

In its April 2006 *Reclamation Managing Water in the West* brochure on Public Scoping of the Northwest Area Water Supply Project Environmental Impact Statement, the Bureau's Dakotas Area Office stated that:

> "The Bureau will prepare an Environmental Impact Statement on the Northwest Area Water Supply (NAWS) Project. . . This Federal action is subject to the requirements of the National Environmental Policy Act (NEPA)." (Bureau of Reclamation 2006)

As the National Wildlife Federation pointed out in its comments on the Bureau's 2007 Draft Environmental Impact Statement on Water Treatment:

> "When the Bureau made the decision to 'prepare an Environmental Impact Statement on the Northwest Area Water Supply Project. . . subject to the requirements of the National Environmental Policy Act,' it made a commitment to do exactly that, i.e., prepare a detailed statement on the environmental impacts of the NAWS Project, alternatives to the NAWS Project, and any irreversible and irretrievable commitments of resources resulting from the construction and/or operation of the NAWS Project." (Pearson and Conrad 2008, Attachment 3)

However, instead of preparing an adequate Environmental Impact Statement that addressed the potentially significant environmental impacts of the NAWS Project and discussed alternatives that would avoid its objectionable features, the Bureau attempted to circumvent the court's Memorandum Opinion and Order and the requirements of the National Environmental Policy Act by preparing a Draft EIS limited to the narrow issue of:

> "**water treatment alternatives** that would further reduce the risk of transferring invasive species from the Missouri River drainage to the Hudson Bay drainage through the construction and operation of the Project." (Emphasis added) (Bureau of Reclamation, 2007)

In its comments on the 2007 NAWS Project Draft Environmental Impact Statement on Water Treatment, the National Wildlife Federation identified and documented three fundamental deficiencies in the Bureau's NEPA analysis of the NAWS Project:

1. The Draft EIS contained no discussion of the potentially catastrophic consequences of the introduction of invasive species from the Missouri River Basin into either the Canadian or U. S. portions of the Hudson Bay Basin by the NAWS Project.

2. The Draft EIS continued to consider only alternatives for treating Missouri River Water delivered to the Hudson Bay Basin by the NAWS Project, and it failed to consider any alternatives to the delivery of Missouri River water to the Hudson Bay Basin. Consequently, not only did the Draft EIS cover such a small portion of the overall NAWS Project as to preclude a proper discussion of alternatives, but it also precluded consideration of alternatives that would avoid all of the NAWS Project's objectionable features.

3. The Draft EIS failed to address the Secretary of the Interior's responsibilities under the Winters Doctrine to protect and preserve Tribal water rights to the Missouri River, or to consider that the Federal Government has had to make substantial financial compensation payments to Tribes when the Secretary failed to fulfill that responsibility in the past.

(Pearson and Conrad 2008, Attachment 3)

The Draft SEIS states:

> "In February 2009, the Department of Justice notified the court that Reclamation had completed the Final EIS and ROD (Record of Decision). Shortly thereafter, the Province of Manitoba filed a supplemental complaint contending that the Final EIS was insufficient. Additionally, the State of Missouri filed a complaint against the Department of the Interior and the U. S. Army Corps of Engineers (Corps) in the same U. S. District Court. The State of Missouri alleged that Reclamation's Final EIS was insufficient and that the Corps failed to complete a separate NEPA analysis for the Project. The court issued an order remanding the case to Reclamation for further environmental review with respect to two specific issues: (1) cumulative impacts of water withdrawals on Lake Sakakawea and the Missouri River; and (2) consequences of transferring potentially invasive species into the Hudson Bay Basin. . ." (Draft SEIS p. 1-5)

The National Wildlife Federation summarized its January 11, 2009, comments on the Northwest Area Water Supply Project Final Environmental Impact Statement on Water Treatment by stating:

> "Because the *Northwest Area Water Supply Project Final Environmental Impact Statement on Water Treatment* fails to (1) describe the potentially significant environmental impacts of the project, (2) consider alternatives to the project, (3) discuss cumulative impacts to the Missouri River, or (4) address substantively and relevantly the Secretary of the Interior's responsibility under the Winters Doctrine to protect Tribal water rights to the Missouri River, and because the NAWS FEIS (5) is based on fundamental misrepresentations of U. S. District Court for the District of Columbia's February 3, 2005, ruling and (6) reflects serious conflicts of interest and an absence of independent objectivity in the NAWS NEPA process, the Secretary of the Interior should withdraw the NAWS FEIS, remove the Bureau of Reclamation from the NEPA process, and appoint an independent, professional entity to begin the NEPA process anew to produce a credible and complete EIS for the NAWS project that complies with the requirements of the National Environmental Policy Act, Council on Environmental Quality regulations, the Boundary Waters Treaty of 1909 and other relevant Federal laws." (Pearson and Conrad 2009, Attachment 4)

It is instructive to note in this context that the U. S. District Court did not simply "remand the case to Reclamation for further environmental review," as is demonstrated by statements in the court's March 5, 2010, Memorandum Opinion such as:

> "Reclamation overlooks that the Court found its EA to have been inadequate and ordered it to 'revisit its finding of no significant impact.'"

> "In other words, contrary to Reclamation's characterization, the Court did not hold that interbasin transfer was the *only* environmental impact of the Project requiring further

> analysis. Reclamation reads too much into the fact that the Court did not previously find the EA to be deficient in this respect."
>
> "In its haste, Reclamation also failed to do what the Court has specifically ordered it to do: analyze 'the possibility of leakage and the potential *consequences* of the failure to fully treat the Missouri River water at its source. . .'"
>
> "The agency cannot avoid taking a 'hard look' at water transmission risks from a pipeline breach simply because the potential for a breach does not vary much under the agency's proposed alternatives, particularly when the EIS was so severely limited in scope to areas outside the Hudson Bay Basin."
>
> "It may be that the risk of a breach is low given the pipeline's construction, but that is not an excuse for Reclamation to refuse entirely to analyze the *consequences*. When the *degree* of potential harm could be great, *i.e.*, catastrophic, the *degree* of analysis and mitigation should also be great."
>
> "Reclamation recognized that Manitoba had fairly challenged the failure of the EA to grapple with the consequences of biota transfer; it decided to complete an EIS. It then lost its way and overread this Court's opinion to 'bless' the EA, including, incredibly, Reclamation' conclusion that its original preferred alternative was sufficient and its addition of UV treatment was merely generous. . . This conclusion so misreads the Court's opinion that it is rather breathtaking."

and the court's conclusion that:

> "The Court is acutely aware that Reclamation and North Dakota have built miles of pipeline and that the citizens of the area want the Project completed. These facts do not excuse Reclamation's failure to follow the law. This case demonstrates the adage that it is better to do something right the first time. Reclamation has wasted years by cutting corners and looking for short cuts. It has yet to do what NEPA demands: take a 'hard look' at the environmental consequences of the Project."

The Draft SEIS now claims that:

> "Reclamation has conducted new analysis [sic] to comply with the court's order to take a hard look at the cumulative impacts of water withdrawal on the water levels of Lake Sakakawea and the Missouri River and the consequences of biota transfer into the Hudson Bay basin, including impacts in Canada." (Draft SEIS p. 1-7)

It should also be noted that four years after the explicit determination in the U. S. District Court's March 5, 2010, Memorandum Opinion that:

> "One final point must be addressed. **Reclamation asserts that** it has no duty to take a 'hard look' at the consequences of biota transfer in Canada because **NEPA does 'not require assessment of environmental impacts within the territory of a foreign country'** and 'therefore this type of evaluation is considered outside the scope of the EIS.' 2009 AR 2008_172 at 20. However, the Council on Environmental Quality 'has determined that agencies must include analysis of reasonably foreseeable transboundary effects of proposed actions in their analysis of proposed actions in the United States.' [citations omitted]. NEPA requires agencies to consider reasonably foreseeable

> transboundary effects resulting from a major federal action taken within the United States [citation omitted]. Accordingly, when analyzing the consequences of biota transfer in the Hudson Bay Basin, Reclamation must include in its analysis the impact in Canada." (Emphasis added)

the Bureau of Reclamation still defiantly asserts that:

16-1

> "**NEPA does not require federal agencies to carry their impact analyses into the sovereign territories of foreign governments**." (Emphasis added) (Draft SEIS p. 1-7)

but then condescendingly states:

> "However, in order to comply with the court's decision, Reclamation has done so in this particular case." (Draft SEIS p. 1-7)

Unfortunately, as the following comments demonstrate and document, this intransigent institutional attitude continues to undermine the objectivity and credibility of the current Northwest Area Water Supply Project Draft Supplemental Environmental Impact Statement.

THE PREFERRED NORTHWEST WATER SUPPLY PROJECT ALTERNATIVE

In its prior Environmental Impact Statements for the NAWS Project, the Bureau did not consider any alternatives **to** the transfer of Missouri River water to the Hudson Bay Basin, but considered only alternatives **for** the transfer of Missouri River water to the Hudson Bay Basin (Bureau of Reclamation 2007, 2008). The Preferred Alternative identified in the Bureau's 2008 NAWS Final Environmental Impact Statement on Water Treatment included withdrawing an average of 12,000 acre-feet per year of water from the Missouri River at Lake Sakakawea and transporting it 15 miles by pipeline to a Biota Water Treatment Plant at Max, North Dakota, located in the Missouri River Basin, where free chlorine treatment would be followed by the addition of ammonia to form chloramines and by ultra violet disinfection (Bureau of Reclamation 2008). The water would then be transported another 30 miles by pipeline across the Continental Divide into the Hudson Bay Basin and to the Minot Water Treatment Plant where it would be treated to Safe Drinking Water Standards with lime softening, filtration and chlorine and chloramines (Bureau of Reclamation 2008). The chlorine/chloramine treatment was designed to control invasive species by providing 3-log (99.9%) inactivation of *Giardia* and 4-log (99.99%) inactivation of viruses (Bureau of Reclamation 2008). However, because:

> ". . . chemical disinfection alone does not provide protection against organisms, such as *Cryptosporidium*, which are resistant to disinfectants like chlorine . . . the Preferred Alternative will also include UV disinfection designed to achieve a 3-log inactivation of *Cryptopsoridium* and other similar types of organisms." (Bureau of Reclamation 2008)

The current NAWS Project Draft SEIS states that:

> ". . . the preferred alternative for the Project has been identified as the Missouri River and Groundwater Alternative. This alternative would include Modifications to the Snake Creek Pumping Plant as the intake option and Chlorination with UV Inactivation as the Biota WTP option." (Draft SEIS pp. 2-60, 2-61).

and, like the Preferred Alternative selected in the 2008 NAWS Project Final Environmental Impact Statement on Water Treatment:

> "This option would be designed to provide 3-log inactivation of *Giardia* and 4-log inactivation of viruses. . . As described in the Chlorination treatment Option, chemical disinfection alone does not provide protection against organisms, such as *Cryptosporidium*, that are resistant to disinfectants like chlorine. This option would also include UV disinfection to achieve a 3-log inactivation of *Cryptosporidium* and other similar types of organisms." (Draft SEIS pp. 2-48, 2-49)

Therefore, the $207,000,000 Preferred Missouri River and Groundwater Alternative identified in the 2014 Draft SEIS (pp. 2-60, 2-61) has not been changed in any substantive way from the Preferred Alternative identified in the 2008 NAWS Project Final Environmental Impact Statement on Water Treatment to reduce the **risk** of the transfer of invasive species from the Missouri River Basin to the Hudson Bay Basin by the NAWS Project. 16-2

ENVIRONMENTAL IMPACTS IN CANADA

The Draft SEIS states that:

> Reclamation has conducted **new analysis** [sic] to comply with the court's order to take a hard look at. . . the **consequences** of biota transfer into the Hudson Bay basin, including impacts in Canada." (Emphasis added) (Draft SEIS p. 1-7)

and:

> "In compliance with an order by the U. S. District Court for the District of Columbia, this SEIS includes a hard look and **analysis** of potential impacts of Project alternatives on **natural and economic resources within Canada's Hudson Bay basin**." (Emphasis added) (Draft SEIS p. 4-1)

<u>Affected Environment</u>

The Hudson Bay Basin is the largest ocean watershed in Canada, it covers an area of 1,490,000 square miles, all but a small portion of which is located in Canada, and it extends over five Canadian provinces, including Alberta, Saskatchewan, Manitoba, Quebec and the Northwest Territories – equivalent to half the size of the United States. The Hudson Bay Basin includes Lake Winnipeg, Lake Manitoba and Lake of the Woods and it is drained by the vast Nelson, Churchill and Saskatchewan river systems with their additional thousands of lakes. The Hudson Bay Basin comprises one of the largest and, in many places, most pristine aquatic ecosystems remaining on North America. 16-3

How does the Draft SEIS describe this 1.5 million square-mile Hudson Bay Basin ecosystem for which it purports to analyze the environmental impacts of introducing up to 29,100 acre-feet of water per year (Draft SEIS p. 4-78) from the 529,350 square-mile Missouri River Basin draining nearly one-sixth of the area of the United States, including all or portions of ten states?

It doesn't.

In Chapter Three – Affected Environment, the Draft SEIS states that:

> "The affected environment is the geographic area containing resources that could be **affected by new construction** required to implement Project alternatives." (Emphasis added) (Draft SEIS p. 3-1)
>
> "The affected environment for other resources would be broader. For example, impacts on socioeconomic resources potentially would extend to communities throughout the Project Area, and the **potential impacts from aquatic invasive species (AIS) could extend into Canada**." (Emphasis added) (Draft SEIS p. 3-1)

The Draft SEIS states that:

> "The Project Area covers parts of three ecoregions: Northwestern Glaciated Plains, Northern Glaciated Plains, and Northwestern Great Plains (Figure 3-1)." (Draft SEIS p. 3-1)

Figure 3-1 is a map of 10 counties in northwestern North Dakota north of the Missouri River that ends at the Canadian Border (Draft SEIS p. 3-2).

In describing water resources in Chapter 3 – Affected Environment, the Draft SEIS states that:

> "The affected environment for water resources includes major features in the Hudson Bay and Missouri River basins that could be affected by the proposed alternatives, as follows:
>
> - Hudson Bay basin
>
> - Souris River (also referred to as the Mouse River by North Dakota statute)
> - Minot and Sundre Aquifers
>
> - Missouri River basin
>
> - Missouri River
> - Lake Sakakawea
> - Audubon Lake"
>
> (Draft SEIS p. 3-3)

The Draft SEIS does not explain how the reader – or the court – is supposed to believe that Reclamation has taken a "hard look" at the environmental impacts of the NAWS Project in Canada when it does not describe the 1.5 million square-mile Hudson Bay Basin ecosystem where those impacts would occur and upon which its analysis ostensibly is based. 16-4

<u>Risk of Transfer of Invasive Species Into the Hudson Bay Basin</u>

Water Transfer Rule

The Draft SEIS states that:

> ". . . there are no standards for treatment of interbasin water transfers to control invasive species, and the EPA has published a final rule in the Federal Register (73 FR 33694) that

> generally exempts interbasin water transfers from regulation under the National Pollutant Discharge Elimination System permitting system." (Draft SEIS p. 4-97)

However, *Greenwire* reported on March 31, 2014, that:

> "A federal judge on Friday sent U.S. EPA's controversial 'water transfer' rule back to the agency to reconsider, holding that the agency overstepped its legal authority. EPA's 2008 rule exempted government agency transfers between different bodies of water – if they didn't involve industrial, municipal or commercial use – from obtaining a national discharge permit.
>
> . . .
>
> U.S. District Judge Kenneth Karas of the Southern District of New York ruled that EPA's 'justification does not hold water.'" (Snider and Jacobs 2014)

The Draft SEIS, which was released three months later, does not address the potential implications of the NAWS Project being subject to the requirements of the National Pollutant Discharge Elimination System requirements of the Clean Water Act. 16-5

Level of Risk

The Draft SEIS states that:

> "Conveyance risk is different for water diversion projects than for the pathways described above. For instance, large, untreated diversions characterized by high flow rates and annual volume transfers are expected to exhibit greater AIS [Aquatic Invasive Species] transfer risk than those with lower volumes and equipped with biota treatment facilities and sophisticated control and response systems, such as the Missouri River alternatives being considered in this SEIS." (Draft SEIS p. 4-97)

thus acknowledging that the risk of transfer of biota is a function of the volume of water transferred and the level of treatment provided.

It is instructive to note in this context that the biota treatment process for the Preferred Missouri River and Groundwater Alternative identified in the Draft SEIS is not modified from the Preferred Missouri River Alternative identified in the prior 2008 NAWS Project Final Environmental Impact Statement on Water Treatment, but the volume of Missouri River water to be transferred into the Hudson Bay Basin has been increased from an average of 12,000 acre-feet per year (Bureau of Reclamation 2008, p. 2-5) to an average of 13,600 acre-feet per year (Draft SEIS p. 4-65, Appendix D p. D-25), and the maximum transfer has been nearly doubled from 15,000 acre-feet per year (Bureau of Reclamation 2008 p. 2-5) to 29,100 acre-feet per year (Draft SEIS p. 4-65, Appendix D p. D-25). This is an increase of 13% to 94% from the volumes upon which the Bureau's previous risk analysis was based. 16-6

Thus, not only does the Draft SEIS's Preferred Missouri River and Groundwater Alternative do nothing to reduce the risk of biota transfer, but by increasing the volume of the water transfer, it actually increases the risk. To put this increased risk in perspective, it is helpful to consider that, with an annual transfer of 12,000 acre-feet of water, 99.99% biota treatment efficacy would be equivalent to 1.2 acre-feet of untreated Missouri River water being transferred into the Hudson Bay Basin annually, and 13,600 acre-feet of water being transferred with 99.99% biota treatment 16-7

efficacy would be equivalent to 1.36 acre-feet of untreated water being transferred. Or in a worst case scenario, 29,100 acre-feet of water being transferred with 99.9% biota treatment efficacy would be equivalent to 29.1 acre-feet per year of untreated Missouri River water being transferred into the Hudson Bay Basin. That would be equivalent to 9,483,690 gallons – more than 14 Olympic size pools – per year of untreated Missouri River water being transferred into the Hudson Bay Basin by the NAWS Project. And that's with the project's biota treatment and water conveyance systems working perfectly.

16-8

The Draft SEIS does not address the effect of increasing the volume of Missouri River water transferred with the NAWS Project by up to 94% on the risk of introducing invasive species into the Hudson Bay Basin.

Risk Assessment

The Draft SEIS states that:

> "For this [risk assessment] analysis, qualitative and quantitative risk assessment methodologies, available information, and data gaps were reviewed. The lack of comprehensive AIS abundance and distribution data in adjacent hydrologic basins precluded the development of a sensitivity analysis, which would have relied on biota concentration as an integral input variable. Therefore, **a qualitative assessment** was selected as the best and most practical approach to evaluate the risk of AIS interbasin transfer. The current known North American distribution of **representative AIS** in the Missouri River basin, Hudson Bay basin, and adjacent and neighboring drainage basins was further documented and is an important component of the current risk analysis." (Emphasis added) (Draft SEIS p. 4-95)

It is important to note that:

> "Potential influence from the Project is limited to the **increased or incremental** transfer risk associated with the action alternatives **compared to the condition under No Action**." (Emphasis added) (Draft SEIS p. 4-96)

This means that the risk analysis presented in the Draft SEIS is not based on the actual risk of biota transfer presented by the NAWS Project, but rather on the **increased** risk presented by the Project, and that **incremental** increase is influenced by how the baseline risk without the Project is determined. For purposes of illustration, if the qualitative risk of biota transfer by the Project were 9 on a scale of 1 to 10, and the baseline risk were determined to be 2, then the incremental risk would be 7. But if the baseline risk were determined to be 8, then the same biota transfer risk of 9 would become an incremental risk of 1. Therefore, even seemingly small over- or under-statements of the risks of biota transfer can significantly skew the incremental risk analysis.

It is instructive to note in this context that the risk analysis presented in the Draft SEIS includes a number of statements acknowledging the high degree of uncertainty of the analysis, but then emphasizing the high baseline risk of biota transfer without the Project while downplaying the risk of biota transfer by the NAWS Project. For example:

> "Due to the high degree of uncertainty associated with individual effects from infection and the nexus with population-scale effects, potential impacts related to AIS introduction are extremely difficult to estimate or predict." (Draft SEIS p. 4-95)

"Information is also limited regarding the increased probability of AIS establishment due to the Project." (Draft SEIS p. 4-96)

"The successful establishment of invasive organisms via one of these natural non-Project pathways may have a low probability. However, in the long term, even low probability events, such as AIS establishment, exhibit some probability of eventually occurring." (Draft SEIS p. 4-97)

"The successful introduction of AIS in the Hudson Bay basin is much more likely to be caused by a high-probability pathway, such as those that involve relatively large transfers of untreated water that occur repeatedly (such as the discharge of bilge water or live well contents from recreational or commercial boats)." (Draft SEIS p. 4-97)

"Uncertainty limits the ability to assign unique transfer risk probabilities to any of these biota transfer pathways." (Draft SEIS p. 4-97)

"Transfers to the Hudson Bay basin likely have occurred in the past and are likely to continue to occur in the future via existing transfer pathways from adjacent neighboring hydrologic basins in the absence of the Project." (Draft SEIS pp. 4-97, 4-98)

"The probability of a transfer related to these [Missouri River] alternatives and the subsequent establishment of AIS in the Hudson Bay basin would be extremely low because such an episode would require a cascade of highly unlikely events, including, but not limited to a biota treatment interruption coupled with a concomitant pipeline failure within a contributing drainage area, and the release of AIS-containing water. Furthermore, an organism introduced to a subsurface soil (e.g., from a ruptured buried water transmission pipeline that is automatically isolated due to pressure loss) would have to travel through the soil and then through a contributing drainage area (within the Hudson Bay basin) to a surface waterbody in the Hudson Bay basin, find an appropriate host organism and successfully establish itself in the receiving waters." (Draft SEIS p. 4-98)

"Uncertainty limits the ability to assign unique transfer risk probabilities to any of these biota transfer pathways. . . However, based on a qualitative assessment of the basin linkages and competing pathways, the risk of AIS transfer by the Missouri River alternatives is considered to be extremely low compared to non-Project pathways." (Draft SEIS p. 4-102)

". . . the implementation of either of these alternatives, which include the use of Missouri River water, would add an additional pathway for AIS to enter the Hudson Bay basin and therefore would increase the risk of these species becoming established in the basin. Each of the biota treatment options would reduce the risk." (Draft SEIS p. 4-108)

"Aquatic ecosystems are complex and local conditions are variable, which confounds the ability to identify responsible invasive species introduction pathways." (Draft SEIS p. 4-109)

"Biological invasions are extremely complex, and it is difficult to predict which species will become established and compromise control and eradication attempts." (Draft SEIS p. 4-109)

> "In addition, it is conservative to assume that a system failure would result in the release of AIS-containing water, a transfer of this AIS-containing water to the Hudson Bay basin, and successful establishment of a sustainable population of an AIS in the Hudson Bay basin. However, the actual likelihood of a system failure is highly unlikely, and the probability of an associated transfer of water containing AIS is even more unlikely. The transfer of AIS to the Hudson Bay basin would not guarantee success of that organism in the receiving waters and the resulting potential to infect hosts and cause impacts. Specific spatial and temporal conditions in the Hudson Bay basin may be required for successful AIS establishment, but the precise conditions are not well understood and, therefore, contribute additional uncertainty to an impact analysis." (Draft SEIS p. 4-110)
>
> "AIS biota transfer pathways associated with the Missouri River alternatives would contribute to the existing and reasonably foreseeable non-Project biota transfer pathways to result in a potential cumulative risk of transferring AIS between the Missouri River and Hudson Bay basin. Current non-Project and reasonably foreseeable pathways pose a combined risk in the absence of Project alternatives. In comparison to the non-Project pathways, the risk contributed by the Missouri River alternatives is very low considering the built-in engineering and management controls. Moreover, the biota treatment options have been designed to treat a broad range of AIS life history categories to further minimize the potential risks. Additionally, an adaptive management plan would be implemented that would monitor the effectiveness of the control system and include provisions for modifying the control system if the risk changed significantly." (Draft SEIS p. 4-111, 4-112)

These statements demonstrate that the risk analysis provided in the Draft SEIS is based on the premise that non-Project transfers of invasive biota into the Hudson Bay Basin are "reasonably foreseeable" and certain, but the risks of the NAWS Project transferring invasive biota into the Hudson Bay Basin are too complex and too uncertain to define, but nevertheless are inconsequential compared with the risk posed by non-Project pathways and they can be addressed after-the-fact if problems arise. The premise neglects to consider several points. 16-9

First, despite having been separated since the retreat of the Wisconsin Glacier, and despite the existence of many of the non-Project pathways identified in the Draft SEIS (e.g., natural interbasin connections, aquatic pathways, animal transport and weather related phenomena [Draft SEIS p. 4-97]), the Hudson Bay Basin and the Missouri River Basin have maintained distinct differences in their flora and fauna for 10,000 years, including many of the 37 Aquatic Invasive Species listed in Draft SEIS Appendix E pp. 11-35. Clearly, the interbasin transfer of biota by natural means is not inevitable. 16-10

Second, the Draft SEIS provides information on 37 current potential Aquatic Invasive Species and states that its risk analysis is based on representative species (Draft SEIS p. 4-45). However, despite noting that 15 new invasive species arrive in Canada every decade (Draft SEIS, Appendix E p. 112), the risk analysis does not address the probability of new invasive species appearing in the Missouri River Basin, other than to say that an adaptive management plan would be implemented to monitor the effectiveness of the control system (Draft SEIS p. 4-111, 4-112). Of course, implementing adaptive management after invasive species have been introduced is the quintessential 'closing the barn door after the horse is gone.' 16-11

Third, the Draft SEIS neglects to consider that the statement that:

16-12

> "The successful introduction of AIS in the Hudson Bay basin is much more likely to be caused by a high-probability pathway, such as those that involve relatively large transfers of untreated water or that occur repeatedly. . ." (Draft SEIS p. 4-97)

describes the NAWS Preferred Missouri River Groundwater Alternative, which would involve the continuous transfer of the equivalent of up to 9.5 million gallons of untreated Missouri River water into the Hudson Bay Basin every year (pages13- 14 above).

Finally, the statement that:

> "The long-term operation and maintenance of a water diversion, including withdrawal, treatment, and transmission also is characterized by **uncertainty, which reduces an accurate estimation of the potential for system failures** capable of facilitating biota release and transfer [citation omitted]." (Emphasis added) (Draft SEIS p. 4-111)

confirms but does not address the International Joint Commission's (IJC) concern regarding the transfer of Missouri River water into the Hudson Bay Basin:

16-13

> "that even with the best engineering talent available and with the best operating practices possible, the very complexity of the system, the immensity of the physical features, the large number of human beings involved in carrying out the responsibility, and the **possible mechanical failures**, what cannot happen, will happen. The Commission believes that it must advise the two Governments to **be conservative and proceed very cautiously with new and untried engineering works, the failure of which might seriously affect the equilibrium of a large natural system such as the Hudson Bay Drainage Basin that has been achieved over centuries**. . ." (Emphasis added) (International Joint Commission, 1977)

Consequences of Transfer of Invasive Species into the Hudson Bay Basin

The design and conclusions of the biota transfer risk assessment presented in the Draft SEIS are legitimate matters for discussion. However, as with the International Joint Commission, the U. S. District Court has also expressed concern about the potentially serious environmental consequences of even low risk events. For example, as the court pointed out in its February 3, 2005, Memorandum Opinion:

> "Therefore, even a low risk of leakage may be offset by the possibility of catastrophic consequences should leakage occur [citation omitted]. Without some reasonable attempt to measure these consequences instead of bypassing the issue out of indifference, fatigue, or through administrative legerdemain, the Court cannot conclude that BOR took a hard look at the problem."

and it its March 5, 2010, Memorandum Opinion:

> "The *consequences* of the release of foreign biota should a breach occur – or even from the normal 5% leakage expected from any pipeline [citation omitted] might be catastrophic and should inform Reclamation's course of action. It may be that the risk of a breach is low given the pipeline's construction, but that is not an excuse for Reclamation to refuse entirely to analyze the *consequences*. When the *degree* of potential harm could be great, *i.e.*, catastrophic, the degree of analysis and mitigation should also be great."

It is relevant to note in this context that (1) 5% leakage of the 29,100 acre-feet maximum annual transfer of Missouri River water into the Hudson Bay Basin under the NAWS Project (Draft SEIS p. 4-65) would be 1,455 acre feet, and (2) the U. S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration reported on November 1, 2013, that a September 2013 oil pipeline rupture near Tioga, North Dakota, that spilled 20,600 barrels of oil was caused by a "strong electrical discharge," possibly a lightening strike (MacPherson 2013).

The Draft SEIS states that:

> "Reclamation has conducted new analysis [sic] to comply with the court's order to take a hard look at. . . the consequences of biota transfer into the Hudson Bay basin, including impacts in Canada." (Draft SEIS p. 1-7)

However, instead of addressing the potential catastrophic consequences of a low risk breach in an objective manner, the Draft SEIS continues to dismiss the consequences with statements such as: 16-14

> ". . . the impacts of implementing these [Missouri River] alternatives would be essentially the same as described for the No Action Alternative because AIS pathways already exist, and the impacts of establishment would vary according to which AIS was involved and not the source of introduction. (Refer to Appendix E for additional detail.) Thus, the Missouri River Alternatives would neither cause new types of impacts nor cause more severe impacts than would occur under the existing pathways." (Draft SEIS p. 4-109)

It is relevant to recall in this regard the statement in the U. S. District Court's March 5, 2010, Memorandum Opinion that:

> "The agency cannot avoid taking a 'hard look' at water transmission risks from a pipeline breach simply because the potential for a breach does not vary much under the agency's proposed alternatives. . ." (Emphasis added)

But even Reclamation's analysis of the impacts of the No Action Alternative is limited to abstract and conjectural statements such as:

> "There have been instances in which a species with no invasion history has caused very large impacts, such as the invasion of San Francisco Bay by the Asian overbite clam, and ensuing large-scale changes in phytoplankton blooms and trophic dynamics [citation omitted]. Conversely, impact predictions made from the establishment of a species in one ecosystem may not apply to other ecosystems. For example, predictions made in the 1990s that the green crab would decimate the West Coast shellfish, based on its impacts in New England and elsewhere, have not materialized [citation omitted]." (Draft SEIS p. 4-109)

> "Due to the high degree of uncertainty associated with individual effects from infection and the nexus with population-scale effects, potential environmental impact related to AIS introduction are extremely difficult to predict." (Draft SEIS p. 4-95)

> "As noted previously, a Project-related invasion would require a series of extremely low-probability events, beginning with an AIS-containing water release from the underground transmission pipeline. Implementation of the adaptive management plan would further reduce the already low potential for the Missouri River alternatives to result in AIS

transfer and establishment in the Hudson Bay basin, but this potential cannot be completely eliminated. As noted above, however, although the *risk* of an AIS transfer could increase, *impacts* would be comparable to those of No Action because numerous pathways already exist, and the Missouri River alternatives would not create new or more severe impacts. Thus, no unavoidable adverse impacts would result from their implementation." (Italics in original) (Draft SEIS p. 4-111)

"The potential *impacts* from Project-related AIS introductions and establishment in the Hudson Bay basin would be comparable to those that would occur under the No Action Alternative because numerous pathways for AIS transfer already exist and these alternatives would not create new types of impacts or increase the severity of impacts that could result form AIS transfer under current pathways." (Italics in original) (Draft SEIS p. 4-112)

Potential Environmental Consequences

The slightly over three page (Draft SEIS pp. 4-104, 4-105, 4-106, 4-107) discussion of "*Potential Environmental Consequences*" is similarly characterized by abstract statements such as:

"AIS could affect an aquatic ecosystem by infecting native species (a direct impact) or by causing community shifts (an indirect impact). Impacts resulting from the spread and establishment of introduced species may depend on the mode and severity of infection within preferred hosts and the potential for adverse effects on populations." (Draft SEIS p. 4-104)

"The impacts of fish pathogens and parasites on individuals and populations are highly dependent on both environmental and biological factors [citation omitted]." (Draft SEIS p. 4-104)

"Case histories of historical aquatic invasions indicate that it is difficult to predict the impacts of species introductions due to site-specific environmental conditions that directly influence the outcomes [citation omitted]." (Draft SEIS p. 4-104)

"Viruses are not exclusive to infecting farm-raised fish because viruses such as infectious pancreatic necrosis (IPNV), infectious salmon anemia virus (ISAV), and viral hemorrhagic septicemia (VHSV) have **caused significant mortality of wild fish in natural habitats** [citations omitted]. VHSV, in particular, has caused severe impacts in the Great Lakes due to its potential to cause mortality to a variety of host fish species [citation omitted]. The spread of viruses depends upon a suite of criteria, including host density, habitat features and virulence [citation omitted]. . . Because no large aquaculture facilities have been identified in the Hudson Bay basin, the **spread of viruses via farmed fish would likely be minimal**. . ." (Emphasis added) (Draft SEIS pp. 4-104, 4-105)

"Bacterial fish pathogens and associated large-scale ecological impacts are not well characterized in the published literature. . . Impacts on wild fish, including declines in fish stocks, are possible; however, there is uncertainty regarding the influence of infection on reproduction and recruitment and how that translates to effects at the population level." (Draft SEIS p. 4-105)

> "The primary barrier to whirling disease risk and success in the Hudson Bay basin is the general lack of susceptible salmonid hosts in these receiving waters. . . Ecological receptors of concern that may exhibit at least some vulnerability to whirling disease may include brook trout, brown trout, Chinook salmon, lake trout, whitefish, rainbow trout and shortjaw cisco [citation omitted]. However, studies regarding the sensitivity of lake whitefish and lake trout, **two** of the most common salmonids in the Hudson Bay basin have been largely **inconclusive**." (Emphasis added) Draft SEIS p. 4-106)

> "In addition, there is considerable uncertainty regarding the potential effects of fungal pathogens on wild fish individuals and populations because they are primarily of interest as pathogens of aquaculture facilities." (Draft SEIS p. 106)

> "Native invertebrates such as the mapleleaf mussel could be adversely affected by direct competition from quagga and zebra mussels." (Draft SEIS p. 4-106)

> "The introduction of quagga mussels could have an effect on plankton biomass diversity. The presence of mussels could also lead to increased abundance of cyanobacter, which pose unique challenges to the aquatic environment."[1] (Draft SEIS p. 4-107)

> "New Zealand mudsnails could cause ecosystem-level disruptions in waterbodies within the greater Hudson Bay basin. Impacts could include direct crowding of, and competition with, native invertebrates such as pulmonate snails [citation omitted]. More severe consequences could include fish population declines associated with food web structure alterations. . . These effects would be site dependent, highly variable, and unpredictable; however, invasive mussels may have the greatest potential of all AIS evaluated to cause adverse impacts in the Hudson Bay basin." (Draft SEIS p. 4-107)

So, what are the potential environmental consequences of the transfer of invasive biota from the Missouri River Basin into the Hudson Bay Basin ecosystem? Reclamation's new analysis doesn't even hazard a guess. 16-15

Potential Economic Consequences

Although Reclamation is unable to provide a substantive analysis of the environmental consequences of the introduction of invasive biota from the Missouri River Basin into the Hudson Bay Basin, it nevertheless proceeds to discuss the incremental adverse economic consequences of those unidentified environmental impacts, e.g.:

> "This section summarizes the types and potential magnitude of possible incremental adverse economic consequences of unintended introduction of AIS." (Draft SEIS p. 4-107).

However, instead of addressing the adverse economic consequences of the introduction of invasive biota into the 1,490,000 square-mile Hudson Bay basin:

[1] On August 4, 2014, *National Geographic News* reported that a half million people were affected by the water use ban that was imposed in Toledo, Ohio, in response to the cyanobacter blue-green algae bloom that occurred in western Lake Erie (Lee 2014).

> "The geographic area of the economic analysis focus is on the Canadian region of the Hudson Bay basin that could be the recipient of AIS, particularly the province of Manitoba and the communities adjacent to Lake Winnipeg." (Draft SEIS p. 3-65)

The scope of the analysis of potential economic consequences is then narrowed even further:

> "Economic sectors comprising the potentially affected human environment for the introduction of AIS include those related to commercial fishing and aquaculture, recreational fishing, and non-fishing recreational activities." (Draft SEIS p. 3-66)

The Draft SEIS acknowledges that:

> "The unintended introduction and establishment of AIS could potentially affect local economies **in the Hudson Bay basin**. . ." (Emphasis added) (Draft SEIS p. 4-96)

but:

> "The economic impact analysis focuses on the potential *incremental* impacts of AIS introduction in the Hudson Bay basin and Lake Winnipeg. . . Potential influence from the Project is limited to the increased or incremental transfer risk associated with the action alternatives compared to the condition under No Action." (Italics in original) (Draft SEIS p. 4-96)

The Draft SEIS admits that:

> "Limited theoretical and empirical literature exists regarding economic impacts of invasive species establishment [citation omitted]. Information is also limited regarding the increased probability of AIS establishment due to the Project." (Draft SEIS p. 4-96)

thereby raising serious questions regarding the validity of its analysis of the incremental increase in the adverse economic impacts of the introduction of invasive biota into the Hudson Bay Basin by the NAWS project.

Indeed, Reclamation's analysis of the adverse economic impacts in Canada is so limited and so speculative as to be meaningless. Nevertheless, the Draft SESIS concludes that:

> "In any case, direct consequences on [commercial] fishery employment would be limited to some portion of the 1,000 to 1,100 total **Lake Winnipeg** fishers and hired helpers; in total, these potential affected jobs represent approximately 0.3 percent of the estimated 408,700 jobs in the **Winnipeg economy**." (Emphasis added) (Draft SEIS p. 4-107)\

> "AIS capable of infecting fish species reared at an *aquaculture* operation could cause significant mortalities within a fish stock for that year. However, the economic consequences of any effects of AIS on the aquaculture industry would be minor in the context of the regional economy." (Italics in original) (Draft SEIS p. 4-107)

> "For recreational fishing, any reduction in the health or abundance of fish species targeted by recreational anglers could adversely affect the level of enjoyment of the angling experience. . . Such potential consequences would likely be limited to a small portion of the $8 million estimated expenditure associated with **Lake Winnipeg** fishing trips." (Emphasis added) Draft SEIS p. 4-108)

> "For nonfishing recreation, the primary consequences of AIS would likely be an increase in beach closure days (associated with transfer of cyanobacter or human pathogens), with subsequent consequences for value to recreationists, tourism-related spending, shoreline property values, and tax revenues to shoreline communities. However, these impacts are expected to be limited . . ." (Draft SEIS p. 4-108) (See Footnote No. 1, p. 20)
>
> *First Nations* communities rely heavily on **Lake Winnipeg** fisheries for employment as commercial fishermen, for subsistence food source, and for cultural value. With such reliance on **Lake Winnipeg** fisheries, it is expected that First Nations communities would be affected by AIS consequences on fishery resources. In terms of subsistence food source, the value of First Nations subsistence fish harvest may be somewhere in the range of $561,000 to $1.6 million annually. . . Increased food costs could be a noticeable burden on the First Nations communities around **Lake Winnipeg** because these communities are low income and have a high unemployment rate." (Italics in original. Bold emphasis added) (Draft SEIS p. 4-108)

Consequently, although Reclamation claims to have performed a new analysis that takes a "hard look" at the consequences of the transfer of invasive biota from the Missouri River Basin into the Hudson Bay Basin by the NAWS Project, only 5 pages (1.25%) of the 400-page Draft SEIS are devoted to discussion of the environmental and economic impacts in Canada, and that consists solely of abstract conjecture about incremental increases in uncertain, generic, No Action impacts that are not described substantively. 16-16

Conspicuously absent from the Draft EIS is any discussion of liability and responsibility for compensation for even those potential adverse economic consequences that are identified – such as adverse impacts on the up to $1.6 million First Nations annual subsistence fish harvest – or how those adverse consequences will be addressed under Section IV of the Boundary Waters Treaty of 1909 between Canada and the United States, which states that: 16-17

> "It is further agreed that the waters herein defined as boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other."

International Joint Commission Analysis of Transboundry Impacts of Biota Transfer

It is instructive to compare Reclamation's new analysis of the consequences in Canada of the transfer of invasive biota from the Missouri River Basin into the Hudson Bay Basin by the NAWS Project with the International Joint Commission's 1977 analysis of the transboundary implications of the Garrison Diversion Unit.

The IJC explained the standard of its analysis of the issue this way:

> "In the Commission's view careful consideration must be given to the scope of the concept of 'transboundary implications' as stated in the reference.
>
> . . . The concept of 'transboundary implications' can be taken to indicate the desire of the Governments to have the Commission's opinion on the total environmental or ecological consequences not only of the Project itself but of the many activities geographically or functionally related to it.

> The Commission believes that it is in the interest of both countries for the Commission to adopt the wider view for without such perspectives many relevant matters may not be considered and some significant direct or indirect benefits or costs in Canada may be overlooked.
>
> The Governments, having asked the Commission to report on the transboundary implications, necessarily have made the Reference more wide-ranging in that the Commission must advise the Governments on matters which go beyond the traditional concept of pollution. This marks an extremely forward-looking concept which, hopefully, the Governments will continue to follow. No longer will large land use activities be analyzed from a narrow pollution sense, but rather advice will be sought as to the general impacts of projects on the natural resources of the adjoining country.
>
> **Experience has taught us that the impact of resource developments must be analyzed from a total systems concept, and the most fundamental system of all is the biosystem**. International boundaries may separate countries, but such political arrangements should not divide natural **ecosystems**.
>
> Throughout the course of this investigation, **the study area** went beyond the immediate Boundary areas**.** It **included not just the Souris, Assiniboine and Red River Basins and Lakes Manitoba and Winnipeg, but also the streams entering or leaving these latter lakes since such streams, including the Nelson River, for example, might be affected by possible transfer of Missouri River biota**. The [International Garrison Diversion Study] Board quite properly considered the impact of GDU on the biological resources of Manitoba, where citizens have an inherent right to be protected from the introduction of foreign species of biota which could adversely affect the indigenous living resources in Manitoba." (Emphasis added) (International Joint Commission 1977).

The IJC addressed the consequences of the interbasin transfer of invasive biota from the Missouri River Basin into the Hudson Bay Basin as follows:

> ". . . This possibility of a transfer of exotics, that is, the transfer of fish species, fish diseases and fish parasites indigenous to the Missouri River Basin into the Hudson Bay Drainage Basin has been a major concern of the [International Garrison Diversion Study Board] Biology Committee, the Board and the Commission itself.
>
> **In fact, overriding everything else, as it turns out, has been the necessity that such introduction be prevented at all cost**. This is not surprising. As the Biology Committee points out, 'the introduction, on a world-wide basis, of exotics has led to significant destabilization of ecosystems. . .'
>
> Unlike some other adverse consequences that can be minimized by additional mitigating measures or by cessation of operation of the Project, **remedial measures to control unwanted exotics are oftentimes futile, and, what makes it even more difficult, is that it may be some years before the full adverse impact is apparent**.
>
> For all these reasons, the Board insisted that the inter-basin transfer problem be examined in great depth. . ." (Emphasis added) (International Joint Commission 1977)

In addressing the risk of interbasin transfer of invasive biota from the Missouri River into the Hudson Bay Basin, the IJC stated:

> "There is no question in the Commission's mind that the Board's recommendations greatly reduce the risk of an unintentional transfer. There would now be two lines of defence, either one of which by itself might accomplish the desired result. True, the additional cost is quite high and might well adversely affect the overall economics of the Project, a question not before the Commission. The Commission gives great weight to the Board's opinion that these two lines of defence will work. At the same time, the Commission must weigh the consequences to Canada if the Board is wrong. Were the potential consequences ones which could be mitigated or corrected after the fact, the Commission would accept the Board's advice. **Were the biological consequences to the Hudson Bay drainage ecosystem predicable in manner and extent, the Commission might accept the Board's approach**. **The Board has reduced the risk of a biological 'time bomb', but not eliminated it**. The Commission is concerned that even with the best engineering talent available and with the best operating practices possible, the very complexity of the scheme, the immensity of the physical features, the large numbers of human beings involved in carrying out the responsibility, and the **possible mechanical failures**, **what cannot happen will happen**. The Commission believes it must advise the two Governments to be conservative and proceed very cautiously with new and untried engineering works, **the failure of which might seriously affect the equilibrium of a large natural system such as the Hudson Bay Drainage Basin that has been achieved over many centuries**. . ." (Emphasis added) (International Joint Commission 1977)

The IJC's concern that "what cannot happen will happen" was again validated by the recent anthrax and avian influenza virus safety breaches at the Centers for Disease Control's high-security infectious disease laboratory (Steenhuysen and Begley 2014). For further validation of the IJC's concern that "what cannot happen will happen" and for additional examples of the fallacy of Reclamation's implicit assumption of virtual infallibility ("failure is highly unlikely") of the NAWS Project's "biota treatment facilities and sophisticated control and response systems" (Draft SEIS pp. 4-97, 4-110, 4-111, 4-112), see Schlosser 2013. 16-18

It is relevant to note in this context that, after documenting a litany of design flaws, technical glitches, mechanical failures, human errors, political lapses, bureaucratic snafus, serious accidents and near disasters – including three in North Dakota – in the U. S. nuclear weapons program occurring over six decades, Schlosser reports that sociologist Charles B. Perrow began research on dangerous technologies following the partial meltdown of the Three Mile Island nuclear reactor in March 1979. According to Schlosser:

> "After studying a wide range of 'trivial events in non-trivial systems,' Perrow concluded that human error wasn't responsible for these accidents. The real problem lay deeply embedded within the technological systems, and it was impossible so solve: 'Our ability to organize does not match the inherent hazards of some of our organized activities.' **What appeared to be the rare exception, an anomaly, a one-in-a-million accident, was actually to be expected. It was normal**." (Emphasis added) (Schlosser 2013)

It also is instructive to contrast the International Joint Commission's conservative approach to the uncertainty regarding the risks and consequences of "seriously affect[ing] the equilibrium of a large natural system such as the Hudson Bay Drainage Basin that has been achieved over many centuries" with the Bureau of Reclamation's cavalier approach to what it admits to be the

"enormous" uncertainty (Draft SEIS, Appendix E p. 89) in predicting the potential effects of a transfer of invasive biota from the Missouri River Basin into the Hudson Bay Basin (*See also* Appendix E pp. 54-56, 111, 117, 127 and Draft SEIS pp. 4-95, 4-109, 4-111), i.e.:

> "Sufficient information was obtained to support sound scientific analysis, even in the absence of additional information that could have reduced uncertainty. The available information supported the ability to draw informed conclusions regarding the risk of AIS introduction and the evaluation of potential impacts of an establishment in the Hudson Bay basin." (Draft SEIS p. 4-111)

And, of course, to select the Missouri River and Groundwater option as the Preferred Alternative for the Northwest Area Water Supply Project.

It is important to note again in this context that, in its February 3, 2005, Memorandum Opinion, the U. S. District Court stated that:

> ". . . even a low risk of leakage may be offset by the possibility of catastrophic consequences should leakage occur. Without some **reasonable attempt to measure these consequences** instead of bypassing the issue out indifference, fatigue or through administrative legerdemain, the Court cannot conclude that BOR took a hard look at the problem. . ." (Emphasis added)

> ". . . Federal agencies must comply with the procedural requirements of NEPA and **reach reasonable decisions on issues of environmental concern**. . ." (Emphasis added)

> "Notably, it will not be sufficient for BOR to forego preparation of an EIS by merely stating that the environmental effects are unknown or unmeasurable because **the 'degree to which the possible effects on the human environment are highly uncertain or involve unknown risks' is an enumerated factor in the significant impact determination**." (Emphasis added)

In addressing the necessity for Reclamation to take a "hard look" at invasive species transmission risks from a pipeline breach, the U. S. District Court pointed out in its March 5, 2010, Memorandum Opinion that:

> "The *consequences* of the release of foreign biota should a breach occur – or even from the normal 5% leakage to be expected from any pipeline [citation omitted] – might be catastrophic and **should inform Reclamation's course of action**. (Italics in original. Bold emphasis added)

However, instead of being informed by the admitted "enormous" – Reclamation's term – uncertainty regarding the potential risks and consequences of its course of action, the Bureau has thrown up its hands, abandoned taking a "hard look" at the impacts of invasive biota transfer in Canada and proposes to move ahead in ignorance with an action "which might seriously affect the equilibrium of a large natural system such as the Hudson Bay Drainage Basin that has been achieved over many centuries." Instead of taking a hard look at the potential consequences of its action, Reclamation turns a blind eye to them.

16-19

INADEQUATE ANALYSIS OT ALTERNATIVES

The Draft SEIS states that:

> "This chapter [Chapter Two – Alternatives] describes the range of reasonable alternatives developed to meet the Project's purpose and need (Chapter 1), as well as the No Action Alternative, which is the future (through 2060) without any further Reclamation funding for the Project." (Draft SEIS p. 2-1)

The No Action Alternative

The Draft SEIS states that:

> "As detailed in Appendix B, most **project members** have indicated that they do not have alternative water supplies and **are relying on the Project to supply their future needs**." (Emphasis added) (Draft SEIS p. 2-14)

However, the Draft SEIS also admits that:

> "**Because most members have not been planning for a future without the Project**, **few specific details are available regarding what the Project members would do**. This analysis does not attempt to speculate whether the Project members would attempt to obtain funding from other sources or otherwise construct infrastructure improvements to address water quality and water supply issues." (Emphasis added) (Draft SEIS p. 2-14)

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Consequently, as the Draft SEIS discloses with inadvertent candor, the North Dakota State Water Commission, which has a statutory mandate to promote the diversion of Missouri River water into the Hudson Bay Basin[2] (page 5 above, Pearson and Conrad 2009), "has worked extensively with the communities and rural water systems" (Draft SEIS p. 1-1), which "are relying on the Project to supply their future water needs" and "have not been planning for a future without the Project" (Draft DSEIS p. 2-14) "to develop a plan that would meet their water needs" (Draft SEIS p. 1-1).

The predictable – in fact, inevitable – result, of course, is a manifestly inadequate and fundamentally flawed analysis of alternatives that not only does not provide a substantive discussion of the No Action Alternative, but is deliberately intended and conceptually designed to promote Missouri River water transfer alternatives while downplaying and dismissing in-basin alternatives.

In-Basin Groundwater Alternatives

In his April 14, 2006, Comments on scoping of the Draft Environmental Impact Statement for the Northwest Area Water Supply Project, Pearson noted that:

[2] North Dakota Century Code Chapter 61-02 establishes the North Dakota State Water Commission and Section 61-02-01.1 directs the Commission to "develop and implement a comprehensive statewide water development program." Section 61-01-01.1 then specifies that, "**The commission shall design the program** to serve the long-term water resource needs of the state and its people and **to protect** the current usage of, and **the state's claim to, its proper share of Missouri River water**." (Emphasis added)

> "The EA acknowledged that 'sufficient groundwater supply is available in nearly every location in the NAWS area,' but the only alternative other than using Missouri River water considered in the EA was to drill more wells for six communities and to construct 18 separate reverse osmosis systems, one for each of the 13 communities (except Parshall) and five rural water systems in the NAWS project area."
>
> . . .
>
> Therefore, one obvious alternative would be to increase the supply from the Sundre Aquifer and the capacity of the Minot water treatment facility by 21 percent to provide water to the additional 10,114 people in the small communities and rural water systems in the Hudson Bay Basin to be served by the NAWS project." (Pearson 2006, Attachment 2)

In its comments on the 2007 NAWS Project Draft Environmental Impact Statement on Water Treatment, the National Wildlife Federation pointed out that a report prepared by Pettyjohn and published by the Minot City Manager's Office had determined that:

> "In general, the quality of water in the Sundre Aquifer is good for drinking and many industrial purposes." (Pettyjohn 1970)

and:

> "That part of the Sundre aquifer in Township 154 North and Ranges 81 and 82 East contains a huge volume of water in storage. . . This undeground reservoir, as it extends from the south end of Minot to the McHenry County line contains more than 384,000 acre-feet of water. At a withdrawal rate of 6 mgd [million gallons per day], and no recharge to the aquifer, this quantity would last for more than 50 years!" (Pettyjohn, 1970, p. 27)

However, as the Federation also pointed out in its comments on the 2007 Draft EIS:

> "Nevertheless, the Draft EIS continues to consider only alternatives **for** treating Missouri River water delivered to the Hudson Bay Basin by the NAWS Project, and it fails to consider any alternatives **TO** the delivery of Missouri River water to the Hudson Bay Basin. Consequently, not only does the Draft EIS cover such a small portion of the overall NAWS project as to preclude a proper discussion of alternatives, but it also precludes consideration of alternatives that would avoid all of the NAWS Project's objectionable features." (Pearson and Conrad 2007, Attachment 3)

In its comments on the 2008 NAWS Project Final Environmental Impact Statement on Water Treatment (Pearson and Conrad 2009, Attachment 4), the Federation cited additional factual information refuting the Bureau's claim that:

> "Groundwater supplies in the Minot area, which would be key to the development of an integrated groundwater alternative, are inadequate based on the current information." (NAWS FEIS Appendix C, Letter No. 41, Response 41-10)

and noted that:

> "The Bureau's feeble response to comments pointing out the failure of the NAWS EA and EIS to consider substantively alternatives **TO** Missouri River water diversion for supplying water to communities in the Hudson Bay Basin portion of the NAWS service area simply confirms the inadequacy of the NAWS FEIS and the compelling need for an objective, comprehensive and professional analysis by a credible and competent independent agency or organization of alternatives utilizing existing in-basin water sources." (Pearson and Conrad 2009, Attachment 4)

The Draft SEIS now claims in Chapter Two – Alternatives that:

> This chapter describes the range of reasonable alternatives developed to meet the Project's Purpose and need (Chapter 1), as well as the No Action Alternative, which is the future (through 2060) without any further Reclamation funding for the Project." (Draft SEIS p. 2-1)

Consequently, the 2014 NAWS Project Draft SEIS is the first Environmental Impact Statement prepared for the NAWS Project under the National Environmental Policy Act that purports to address alternatives **TO** the transfer of Missouri River water to supply communities and rural water systems within the Hudson Bay Basin.

The Draft SEIS goes on to state:

> "The four action alternatives are designed to provide reliable, high-quality water to supply communities and rural water systems in northwestern North Dakota for municipal, rural, and industrial (MR&I) uses. . . To develop the action alternatives, water sources within each basin were considered as possible sources for the Project. The action alternatives whose principal water sources are within the Souris River basin are referred to as *inbasin alternatives.* The action alternatives with the principal water source within the Missouri River basin (Lake Sakakawea) are referred to as *Missouri River alternatives.*" (Italics in original) (Draft SEIS p. 2-1)

The Draft SEIS then describes two inbasin alternatives:

> "**Groundwater with Recharge** – This inbasin alternative would use the existing Minot and Sundre aquifer wellfields as the primary source of water for the Project. The Souris River would be used to provide artificial recharge to the aquifer. . ." (Bold in original) (Draft SEIS p. 2-1)

> "**Groundwater Recharge and the Souris River** – This inbasin alternative would use existing Minot and Sundre aquifer wellfields as the primary sources of water, with the Souris River providing artificial recharge to the aquifers, as well as providing a direct supply of water to the Minot WTP [Water Treatment Plant] during certain periods." (Bold in original) (Draft SEIS p. 2-2).

The Preferred Alternative identified in the Draft SEIS is the Missouri River and Groundwater Alternative (Draft SEIS p. 2-60), which:

> ". . . uses water from the Missouri River (withdrawn from Lake Sakakawea), which would be conveyed to the Minot WTP and blended with water from the Minot and Sundre aquifers." (Draft SEIS p. 2-37)

The DEIS Appendix J states that:

> "Alternative 1 (Groundwater with Recharge), Alternative 2 (Groundwater with Recharge and the Souris River), Alternative 3 (Missouri River and Conjunctive Use), and Alternative 4 (Missouri River and Groundwater) all include use of groundwater supplies from the Minot and Sundre aquifers. An analysis of the constraints on the aquifers was performed as part of assessing the availability of groundwater from these sources. . ." (Draft SEIS Appendix J, p. J-9)

and:

> "To meet the 2060 peak Project water needs, two peaking wells would be added to the system to **increase the current Sundre wellfield capacity**. From January through May and September through December, water needs would be met using existing Sundre aquifer wells. Approximately 5.05 mgd would be withdrawn from the existing wells during this time. During the peak demand months of June through August the existing Sundre wells and two 2,800-gpm peaking wells would be used to provide approximately 15.8 mgd of groundwater to meet the 2060 demands. **The two wells** (Figure 7-1), **would be located in the vicinity of the Sundre aquifer wellfield**. . . The estimate of two additional wells is based on the assumption that wells with the needed capacity of 2,800 gpm could be developed in the Sundre aquifer. The estimate of 2,800 gpm is based on **current well capacities in the Sundre aquifer wellfield.** Onsite aquifer testing would be necessary to determine whether 2,800 gpm could be achieved. If testing determined it could not be achieved, the number of wells would need to be increased accordingly. An opinion of cost to construct the peaking wells and associated facilities is provided in the following section." (Emphasis added) (Draft SEIS Appendix J, Subappendix A, p. 8-9)

Figure 7-1 shows the two peaking wells located within less than 500 feet of existing municipal wells in the Sundre aquifer wellfield (DEIS Appendix J, Subappendix A, p. 7.2). The estimated cost for the two 2,800 mpg peaking wells is $476,000 (DEIS Appendix J, Subappendix A, p. 8-10)

The Minot and Sundre Aquifers

In describing the Minot Aquifer, the Draft SEIS states that:

> "The Minot aquifer is the major water-bearing unit of the Souris aquifer in the vicinity of the City of Minot. . . The extent of the Minot aquifer is approximately 6 to 7 square miles. . . While there has been some disagreement about the quantity of recharge to the aquifer from direct inflow from the Souris River, recharge has long been acknowledged as an important contributor to the water supply of the aquifer [citations omitted]. . ." (Draft SEIS p. 3-24; Figure 3-10, p. 3-25)

and in discussing the **Water Quantity** in the Minot Aquifer, the Draft SEIS states:

> "The SWC [State Water Commission] originally determined that the sustainable yield of the Minot aquifer was 3.0 mgd, but lowered this estimate to 2.0 mgd in 1993 [citation omitted]. However, the continuing downward trend in aquifer levels during the period when withdrawals averaged 2.0 mgd indicates that the aquifer cannot sustain this level of withdrawal or support additional withdrawals without some type of supplemental recharge. . . " (Draft SEIS p. 3-26)

According to Draft SEIS Appendix J:

> "Daily groundwater level data were obtained (for several Minot aquifer wells) from the SWC water database website and analyzed graphically to characterize water levels in the aquifer. **Because the aquifer is currently in decline**, it was **assumed** that no additional sustained withdrawals (above the current pumpage rate) would be possible without supplemental recharge for any of the alternatives. . . Therefore, **the most important and restrictive constraint considered for the Minot aquifer was the long-term sustainability of groundwater levels."** (Emphasis added) (Draft SEIS Appendix J p. J-10)

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The Draft SEIS's description of the Sundre Aquifer consists of five sentences:

> "The Sundre Aquifer is a buried sand and gravel aquifer in a buried bedrock valley in the vicinity of Minot (Figure 3-11). The aquifer varies in width from approximately 1 to 2 miles, with a total length of approximately 18 miles, and it extends from Ward County near Minot into McHenry County. The aquifer varies in thickness from approximately 30 to 250 feet, with an average thickness of 120 feet. The Sundre aquifer is estimated to receive approximately 3 percent of its annual recharge via direct infiltration from the Souris River (Pusc 1987). Much of this recharge occurs during high-flow events in the river." (Draft SEIS p. 3-27)

In discussing the **Water Quantity** in the Sundre Aquifer, the Draft SEIS states that:

> ". . . During the period from 1977 to 2010, **the city's withdrawals** from the Sundre aquifer averaged approximately 3.1 mgd and **resulted in approximately 60 feet of drawdown in the aquifer** (Figure 3-12). The rapid rise of the aquifer level in 2011 is related to the major spring flooding event, which resulted in effects similar to those described for the Minot aquifer." (Emphasis added) (Draft SEIS p. 3-28)

> "The SWC determined that the sustainable yield of the Sundre aquifer was 6.0 mgd (Pusc 1987). However, based on current information, the continuing drawdown trend of the water level during the period when withdrawals averaged 3.1 mgd indicates that the aquifer cannot sustain this level of withdrawal or support additional withdrawals without some type of supplemental recharge." (Draft SEIS p. 3-29)

> "Daily groundwater level data were obtained (for several Sundre aquifer wells) from the SWC water data website and analyzed graphically to characterize water levels in the aquifer. **Because the aquifer is currently in decline**, it was **assumed** that no additional, sustained withdrawals (above the current pumpage rate) would be possible without supplemental recharge. . . Therefore, **the most important and restrictive constraint considered for the Sundre aquifer was the long-term sustainability of groundwater levels**." (Emphasis added) (Draft SEIS Appendix J, p. J-11)

It is important to note that "the most important and restrictive constraint" in considering the Minot Aquifer and the Sundre Aquifer as NAWS Project in-basin alternatives in the Draft SEIS for supplying communities and rural water systems in the Hudson Bay Basin was:

"the long-term sustainability of groundwater levels." (Draft SEIS Appendix J, pp. J-10, J-11)

Absence of Evidence that the Sundre and Minot Aquifers are Declining

It is appropriate, therefore, to consider the information upon which this "most important and restrictive constraint" on the Minot and Sundre aquifers is based, including the determinations that the both aquifers are in decline and that the decline in the Sundre Aquifer is the result of withdrawals by the City of Minot, and the assumption that "no additional sustained withdrawals . . . would be possible without supplemental recharge."

The information upon which these determinations are based consists of statements such as:

> "The major glaciofluvial aquifers in Minot's vicinity include the Minot and Sundre aquifers, which are the current water source for the city. . . In 1994, the SWC estimated the sustainable yield of the Minot wellfield at 2.0 mgd; however, the continuing downward trend in the aquifer levels during the period when withdrawals averaged 2.0 mgd indicates that **the portion of the aquifer near the Minot wellfield** cannot sustain this level of withdrawal or support additional withdrawals. Investigations have been conducted by the SWC and U. S. Geological Survey, but **the sustainable yield of the Sundre aquifer is undetermined**. The continuing downward trend of the water level during the period when withdrawals averaged 3.1 mgd indicates that the aquifer cannot sustain this level of withdrawal or support additional withdrawals. . . The future availability of aquifer water for the City of Minot is very uncertain both in terms of quantity and quality." (Emphasis added) (Draft SEIS p. 2-6)
>
> "Aquifer levels are generally in decline **in the vicinity of the City of Minot**, and the potential to develop additional groundwater supplies from the Sundre aquifer is low." (Emphasis added) (Draft SEIS p. 2-6)
>
> "Using a one-dimensional groundwater model, the initial analysis showed that the Sundre and Minot aquifers **in the vicinity of Minot** could be considered further as a potential water source for the Project. The City of Minot has been relying on these sources for its current drinking water system for a long time. The water levels in both aquifers are declining at the current use rate; therefore, it is **reasonable to assume** that the rate of decline would increase in the future with increased withdrawals for Project purposes." (Emphasis added) (Draft SEIS p. 2-9)
>
> "**Groundwater resources of the Minot area have been extensively studied for decades**, since groundwater has been important in meeting water supply needs." (Emphasis added) (Draft SEIS p. 3-24)
>
> "Consequences that are more predictable, such as changes to groundwater levels in the Minot and Sundre aquifers, are **described to the extent that information is available**." (Emphasis added) (Draft SEIS p. 4-2)
>
> "Consequences of the No Action Alternative include continued drawdown of the Minot and Sundre aquifers and insufficient quantities of water that meet primary and secondary drinking water standards for communities within the Project Area." (Draft SEIS p. 4-21)
>
> "A sufficiently detailed **regional groundwater model does not exist for the Minot and Sundre aquifers and the data necessary to develop, calibrate, and validate a detailed groundwater model are not available**. As described in Appendix A of the ALD Report, in order to develop a model that is appropriate for more than an appraisal-level analysis, field testing would be required, including extensive exploratory well drilling, monitoring

well construction, aquifer performance testing, and geologic data analysis. These data would be required to construct a more accurate and reliable groundwater model that would **encompass a larger portion of the aquifer, would likely take 2 or more years to develop**, **and would be very expensive**. Given the current stage of development of alternatives using groundwater from the Minot and Sundre aquifers, the available information provides adequate detail to assess the general types of impacts that would occur and their magnitude." (Emphasis added) (Draft SEIS p. 4-28)

"Based on a 45-year record of water levels, **both the Minot and Sundre aquifers have declined under pumping rates that averaged 2 mgd and 3.1 mgd, respectively** (Figures 3-11 and 3-12 in Chapter 3, 'Water Resources' section). The water surface elevation for both aquifers would likely continue to decline into the future at a similar or increased rate (approximately 0.25 feet/year for the Minot aquifer and 1.1 feet/year for the Sundre aquifer) if water use is maintained or increased." (Emphasis added) (Draft SEIS p. 4-37)

It is important to note that both of the inbasin groundwater alternatives described in the Draft SEIS:

"use **existing** Minot and Sundre aquifer **well fields**." (Draft SEIS pp. 2-1, 2-2)

The existing Minot Aquifer well field consists of seven wells in an area approximately 0.3 miles wide and 1 mile long within the 6 to 7 square-mile aquifer, and is located in the City of Minot (Draft SEIS pp. 3-24, 4-121) approximately a mile from the Water Treatment Plant (Draft SEIS Figure 2-3, p. 2-19; Draft SEIS Appendix J, Subappendix B, Figure B-02).

The Sundre Aquifer well field, which also is within the City of Minot (Draft SEIS p. 4-122), consists of six wells in an area approximately 0.15 mile wide and 0.55 miles long located approximately 5.5 miles from the Minot Water Treatment Plant (Draft SEIS Figure 2-3, p. 2-19; Appendix J, Subappendix B, Figure B-02)

It also is important to note that Draft SEIS Appendix J states that:

"Daily groundwater levels were obtained (for **several** Sundre aquifer wells) from the SWC water data website and analyzed graphically to **characterize water levels in the aquifer**." (Emphasis added) (Draft SEIS Appendix J, p. J-11)

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The same statement is made regarding the Minot Aquifer (Draft SEIS Appendix J p. J-10). However, neither the Draft SEIS nor Appendix J states from how many wells in each aquifer groundwater level data were obtained, where the wells are located or what the purposes of the wells are (e.g., municipal water supply, irrigation, observation, recorder, etc.).

Therefore, it is relevant to note that the North Dakota State Water Commission's water data website from which data were obtained by the Bureau to analyze groundwater levels in the Sundre Aquifer shows permits for five municipal wells all located in the same square-mile section (154-082-03) and eight functional observation wells, three of which are located in the same section as the municipal wells and the remaining five of which are located in sections adjacent to the section where the municipal wells are located. Similarly, review of the State Water Commission's water data for the Minot Aquifer shows permits for 10 municipal wells located in three adjacent sections, with 14 of the 28 observation and recorder wells located in the same sections as the municipal wells and 13 of the remaining 14 observation and recorder wells located

in adjacent sections. In other words, the data which the Bureau used to analyze groundwater levels in the Sundre Aquifer came either from the Minot municipal wells or from observation wells in the well field or within a mile of the well field.

In evaluating the validity of the statements in the Draft SEIS regarding (1) the Minot and Sundre aquifers "hav[ing] declined under pumping rates that averaged 2 mgd and 3.1 mgd respectively," (2) the aquifers being unable to support additional withdrawals without supplemental recharge, and (3) that "the rate of decline would increase in the future with increased withdrawals," it instructive to consider what Pusc said about the Sundre Aquifer in his 1987 report prepared by the North Dakota State Water Commission:

> "Presently, the City of Minot has five large capacity wells which draw groundwater from the Sundre aquifer system. Average water use since 1976 has been 2.1 million gallons per day (mg/d). Water use in 1985 was 2.6 mg/dl.
>
> . . .
>
> **Highest ground-water levels were recorded during extreme flood events of 1969, 1970, 1974, 1975, and 1976**. It appears that overbank flooding increased both recharge area and residence time, thereby increasing overall recharge for those particular high river stages.
>
> . . . Consequently, flood control efforts would reduce the amount of natural recharge to the Sundre aquifer by preventing major overbank recharge events. Data to substantiate this hypothesis is presently insufficient.
>
> In 1985, fluctuations of ground-water levels and movement in the Sundre aquifer **are dominated by pumping patterns** of the Sundre **well field**. The **cone of depression created by pumping wells** directs ground water in the Sundre aquifer toward the well field from all directions. During periods of heavy use (summer) water levels decline, and during less use (winter) water levels recover. Ten years of pumping has resulted in 17 to 25 feet of water level decline in the **eastern channel** of the Sundre aquifer . . . **In the well field**, **declines of 31 to 40 feet have occurred**. . . **The water level decline occurring as a result of pumping, however, represents a very small percentage of the total amount of water available in storage**. . .
>
> . . .
>
> The Sundre aquifer system is **highly productive**. Under present rates of withdrawal the **water levels have stabilized** with a **relatively small decline**. **Larger withdrawals will result in a short interval of additional water level decline and then stabilize at some lower level**. The total yield potential cannot be determined, however, **the capacity of the aquifer is significantly larger than the amount currently being pumped**. . ." (Emphasis added) (Pusc 1987)

It is necessary, therefore to evaluate the unqualified assertion in the Draft SEIS that:

> "During the period from 1977 to 2010, **the city's withdrawals from the Sundre aquifer** averaged approximately 3.1 mgd and **resulted in approximately 60 feet of drawdown** in the **aquifer**." (Emphasis added) (Draft SEIS p. 3-28)

in view of the findings of the North Dakota State Water Commission's report on the Sundre Aquifer (Pusc 1987).

First, it should be noted that the alleged decline in the levels of the Sundre Aquifer (Figure 3-12 Groundwater Level Changes in the Sundre Aquifer, Draft SEIS p. 3-29) and the Minot Aquifer (Figure 3-11, Groundwater Level Changes in the Minot Aquifer, Draft SEIS p. 3-26) from 1977 to 2010 were not declines from average historic levels of the aquifers, but rather from the:

> "Highest ground-water levels. . . recorded during extreme flood events of 1969, 1970, 1974, 1975, and 1976." (Pusc 1987)

Moreover, the Draft SESI points out that:

> "The rapid rise of the [Minot and Sundre] aquifer level in 2011 is related to the major spring flooding event . . ." (Draft SEIS pp. 3-26, 3-28)

In fact, Draft SEIS Figure 3-11 shows that level of the Minot Aquifer was 8.5 feet higher in 2011 than it was in 1976 and Figure 3-12 shows that the level of the Sundre Aquifer was only 12 feet lower in 2011 than it was in 1976.

The Draft SEIS even points out that:

> "Historical concerns about falling groundwater levels in the first half of the 1900s prompted early studies of the feasibility of artificial recharge of the western portion of the Minot Aquifer [citations omitted]." (Draft SEIS p. 3-26)

Consequently, the Draft SEIS cites no credible evidence that the declines in the levels of the Minot and Sundre aquifers from 1977 to 2010 were the result of withdrawals by the City of Minot or that they reflected anything other than natural fluctuations in the levels of the aquifers related to precipitation and recharge. 16-23

Second, as Pusc pointed out:

> ". . . **fluctuations of ground-water levels** and movement in the Sundre aquifer **are dominated by pumping patterns** of the Sundre **well field**. The **cone of depression created by pumping wells** directs ground water in the Sundre aquifer toward the well field from all directions. During periods of heavy use (summer) water levels decline and during less use (winter) water levels recover. Ten years of pumping has resulted in 17 to 25 feet of water level decline in the **eastern channel** of the Sundre Aquifer." (Emphasis added) (Pusc 1987)

but:

> "The Sundre aquifer system is highly productive. **Under present rates of withdrawal, the water levels have stabilized with a relatively small decline**. **Larger withdrawals** will result in a **short interval** of additional water level decline and **stabilize at some lower level.** The total yield potential cannot be determined, however, **the capacity of the aquifer is significantly larger than the amount currently being pumped**. . . " (Emphasis added) (Pusc 1987)

16-24

With the City of Minot's municipal well field in the Sundre Aquifer (located in the eastern channel of the aquifer) spanning an area approximately 0.15 mile wide and 0.55 miles long (<0.1 square-mile) within the 1 to 2 mile-wide and 18 mile-long (~25 to 30 square-mile) Sundre Aquifer (Pusc 1987), and with the data upon which the Bureau bases it determination that the aquifer is declining coming from the immediate vicinity of the municipal well field, there is no evidence that the claimed "approximately 60 feet of drawdown in the aquifer" (Draft SEIS p. 3-28) represents anything other than the cone of depression in the immediate vicinity of wells created by pumping from Minot's municipal wells. Consequently, the Draft SEIS cites absolutely no evidence that the entire Sundre Aquifer has declined significantly – and certainly not by 60 feet – since 1977. Or that any decline that may have occurred was the result of pumping rather than natural fluctuations in the level of the aquifer.

Because the Draft SEIS cites no credible evidence that the Sundre and Minot aquifers have been declining from normal historic levels or that the current withdrawals have caused the aquifers to decline, the 'assumption' that "no additional sustained withdrawals (above the current pumpage rate) would be possible without supplemental recharge" (Draft SEIS Appendix J, p. J-10, 11) is without foundation.

Failure to Analyze In-Basin Groundwater Alternatives

It is important to note in this context that the Bureau admits that:

> ". . . the sustainable yield of the Sundre aquifer is undetermined." (Draft SEIS p. 2-6)

and:

> "A sufficiently detailed regional groundwater model does not exist for the Minot and Sundre aquifers and the data to develop, calibrate, and validate a detailed groundwater model are not available." (Draft SEIS p. 4-28)

The Draft SEIS then goes on to state:

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> "As described in Appendix A of the ALD Report, in order to develop a model that is appropriate for more than an appraisal-level analysis, field testing would be required, including extensive exploratory well drilling, monitoring well construction, aquifer performance testing and geologic analysis. These data would be required to construct a more accurate and reliable groundwater model that would **encompass a larger portion of the aquifer, would likely take 2 or more years to develop**. . ." (Emphasis added) (Draft SEIS. 4-28)

but it rejects performing an adequate evaluation of in-basin groundwater alternatives because it:

> ". . . would be very expensive." (Draft SEIS p. 28)

DEIS Appendix J, Subappendix A, p.8-11,Table 8-8, estimates the cost for testing and modeling for final design of the Missouri River and Groundwater Alternative's two 2,800 gpm peaking wells in the Sundre Aquifer to be $3,303,367.

To put into perspective Reclamation's rationale for not taking the "2 or more years" necessary to perform an accurate and objective analysis of alternatives to transferring Missouri River water

into the Hudson Bay Basin because it "would be very expensive," it is helpful to consider the following:

- The NAWS Project was authorized in 1986. (Draft SEIS p. 1-1)
- A *Northwest Area Water Supply Project Draft Environmental Assessment* was completed in 1997. (Houston Engineering, Inc., et al. 1997).
- At least ten additional reports on the Northwest Area Water Supply Project were prepared for the North Dakota State Water Commission and the Garrison Diversion Conservancy District by Houston Engineering, American Engineering and Montgomery Watson between 1973 and 2001. (Houston Engineering, Inc., et. al. 2001)
- A *Northwest Area Water Supply Project Final Environmental Assessment* was prepared for the North Dakota State Water Commission, the Garrison Diversion Conservancy District and the Bureau of Reclamation by Houston Engineering, American Engineering, Montgomery Watson and Bluestem Incorporated in 2001. (Houston Engineering, Inc., et al 2001)
- The Bureau of Reclamation issued a *Finding of No Significant Impact for the Northwest Area Water Supply Project in North Dakota* on September 10, 2001.
- A *Northwest Area Water Supply Project Draft Environmental Impact Statement on Water Treatment* was prepared in 2007. (Bureau of Reclamation 2007)
- A *Northwest Area Water Supply Project Final Environmental Impact Statement on Water Treatment* was prepared in 2008. (Bureau of Reclamation 2008)
- Construction on portions of the Northwest Area Water Supply Project was delayed in 2005 and further construction on the project was halted in 2010 by order of the U. S. District Court because the Bureau of Reclamation had failed to produce an environmental impact analysis for the NAWS Project that complies with the requirements of the National Environmental Policy Act. (Draft SEIS p. 1-5)
- A *Water Needs Assessment Technical Report, Northwest Area Water Supply Project* was prepared in 2012. (Bureau of Reclamation 2012)
- A *Northwest Area Water Supply Project Draft Supplemental Environmental Impact Statement* has now been prepared in 2014. (Bureau of Reclamation 2014)

It is relevant to recall again here the statement in the U. S. District Court's March 5, 2010, Memorandum Opinion that:

> "Reclamation has wasted years by cutting corners and looking for shortcuts."

However, no further studies are necessary to demonstrate the unequivocal inadequacy of the Bureau's analysis of in-basin groundwater alternatives, which is confirmed by the statements that both in-basin groundwater alternatives described in the Draft SEIS:

> "would use the **existing Minot and Sundre aquifer wellfields** as the primary source of water for the Project." (Emphasis added) (Draft SEIS pp. 2.1, 2.2)

As noted above, the existing Minot Sundre Aquifer wellfield is located in an area of less than 0.1 square-mile (a little over 50 acres) 5.5 miles from the Minot Water Treatment Plant, but the 25-30 square-mile, 18 mile long Sundre Aquifer extends southeast from Minot into McHenry County.

It is instructive to consider that the Draft SEIS states that, based on the Bureau of Reclamation's 2012 Water Needs Assessment Technical Report, Northwest Area Water Supply (NAWS) Project:

> "In 2010, the water use was approximately 7.91 million gallons per day (mgd). By the end of the planning period in 2060, the projected average daily water need would be approximately 10.40 mgd (Reclamation 2012a)." (Draft SEIS p. 1-7)

Under the preferred Missouri River and Groundwater Alternative, 5.05 million gallons per day would be supplied from the existing Minot municipal wells in the Minot and Sundre aquifer wellfields from January through May and September through December, and those existing wells plus the "two 2,800 gpm peaking wells would be used to provide approximately 15.8 mgd of groundwater to meet 2060 demands" (Draft SEIS Appendix J, Subappendix A, p. 8-9). In other words, the addition of two more wells in the Sundre Aquifer would supply over 1.5 times the 2060 average daily water needs of the communities to be supplied by the NAWS Project. 16-26

Under the preferred Missouri River and Groundwater Alternative, the NAWS project's forecasted average annual water withdrawal from the Missouri River is 13,600 acre-feet per year and the theoretical maximum withdrawal would be 29,100 acre-feet per year (Draft SEIS p. 4-65). However, the theoretical maximum represents the maximum capacity of the main transmission pipeline from the Missouri River sized to meet peak daily demands and it would not be operated at full capacity year-round (Draft SEIS p. 4-65). If it is assumed that the maximum annual withdrawal from the Missouri River would be increased by the same percentage as the average annual withdrawal has been increased since the 2008 NAWS Final EIS on Water Treatment (Bureau of Reclamation, 2008), then the actual maximum withdrawal under the Missouri River and Groundwater Alternative would be expected to be approximately 20,000 acre-feet per year. 16-27

It also should be noted that one 2,800 mgd well in the Sundre Aquifer would produce 4,517 acre-feet of water per year. Therefore, only three additional 2,800 mgd wells would be required in the Sundre Aquifer to replace the 13,600 acre-feet average annual withdrawals from the Missouri River under the Bureau's preferred Missouri River and Groundwater Alternative. To replace the 20,000 acre-feet maximum annual withdrawals from the Missouri River under the Bureau's preferred Missouri River and Groundwater Alternative would require a total of five additional 2,800 cfs wells in the Sundre Aquifer. At a cost of $238,000 per well (DEIS Appendix J, Subappendix A, p. 8-10), the total cost of five additional wells in the Sundre Aquifer would be $1,190,000. Adding an average additional $1,651,684 per well for testing and modeling costs (Draft SEIS Appendix J, Subappendix A, p. 8-11, Table 8-8) would bring the total cost of an in-basin groundwater supply designed to meet the estimated maximum annual water needs of the NAWS Project area to $9,448,420, compared with the estimated $75,000,000 cost of the Missouri River and Groundwater Preferred Alternative's intake, pumping plant and main transmission pipeline ($45,000,000) and biota treatment plant ($30,000,000) (Draft SEIS pp. 2-41, 2-61). 16-28

Adding another 50% of the cost of the wells in the Sundre Aquifer to cover the costs of additional water conveyance features from the wells to Minot Water Treatment Plant would bring the total 16-29

cost of this in-basin groundwater alternative to approximately $147,000,000, or 71 percent of the $207,000,000 estimated cost of the preferred Missouri River and Groundwater Alternative (Draft SEIS p. 2-61).

Unfortunately, the North Dakota State Water Commission's premature construction of the NAWS Project's pipeline from the Missouri River before the Federal NEPA process was completed may preclude realization of the full savings from an in-basin groundwater alternative. Therefore, the discussion of in-basin groundwater alternatives should also consider reimbursement by the State of North Dakota of the sunk Federal costs of the NAWS Project's Missouri River pipeline 16-30

The North Dakota State Water Commission and the Bureau of Reclamation have not hesitated to spend 28 years and untold millions of taxpayer dollars promoting, designing, analyzing, constructing and defending a Northwest Area Water Supply Project with a 45-mile, $45 million pumping plant and pipeline from the Missouri River and a $30 million biota treatment plant, with annual Operation, Maintenance and Replacement costs in excess of $2.5 million (Draft SEIS pp. 2-44, 2-61), to deliver Missouri River water into the Hudson Bay Basin, but they obstinately refuse to spend two years and a few million dollars to develop the information necessary to evaluate objectively the obvious alternative of drilling new wells in the Sundre Aquifer a few miles from the existing Minot municipal well field as needs arise over the next 60 years. 16-31

Consequently, 28 years after the NAWS Project was authorized and 17 years after the NEPA process was initiated for the Project, an adequate analysis of alternatives to transferring Missouri River water into the Hudson Bay Basin still has not been performed. Indeed, the Bureau's analysis of in-basin groundwater alternatives for the NAWS Project cannot be explained simply as inept and unprofessional; it is intentionally misleading and fundamentally dishonest. 16-32

CUMULATIVE IMPACTS

Precedent for Missouri River Diversions Into the Hudson Bay Basin

In an October 20, 2000, Briefing for the Secretary, the Bureau of Reclamation's Great Plains Regional Director stated that:

> "Approval of NAWS would likely set a precedent in North Dakota for any other interbasin transfers into the Hudson Bay drainage of Canada, as this decision will be the first Executive Branch application of the 1986 GDU provision." (Bach 2000)

In fact, the North Dakota State Engineer was reported to have stated explicitly that the NAWS Project provided the framework for a Red River Valley Water Supply Project to deliver Missouri River water to the Red River Valley under the Dakota Water Resources Act of 2000 (*See* Pearson 2001, Attachment 1).

The Draft SEIS does not address the precedent that its preferred Missouri River and Groundwater Alternative would establish for other diversions of Missouri River water into the Hudson Bay Basin in North Dakota and for out-of-basin diversions by other states, and how those future diversions could affect other users of the Missouri River. 16-33

The Draft SEIS also does not address how the State of North Dakota's vested interest in using the NAWS Project to establish a precedent for the Red River Valley Water Supply Project and other 16-34

Missouri River diversions into the Hudson Bay Basin has contributed to the failure to develop objective information on in-basin groundwater resources and to the failure of the Draft SEIS to evaluate in-basin groundwater alternatives substantively, and how the State's statutory mandate to pursue Missouri River diversion has influenced the State Water Commission's and the Bureau of Reclamation's selection of a Missouri River and Groundwater Preferred Alternative.

Risk of Biota Transfer

16-35

Although the Draft SEIS acknowledges that the risk of transfer of invasive species is proportional to the volume of water transferred (Draft SEIS p. 4-97), it does not address the cumulative impacts on the risk of invasive species transfer by the NAWS Project posed by other Missouri River diversions such as the Bureau of Reclamation's proposed Red River Valley Water Supply Project (Draft SEIS pp. 3-48, 3-49, 4-110), which would deliver an estimated 810,450 acre-feet of Missouri River Water to the Hudson Bay Basin during the 10-year course of a 1930s-type drought (Pearson 2007).

Indian Water Rights

The Mission Statement in the frontispiece of the Department of the Interior, Bureau of Reclamation's Draft SEIS states that:

> "**The Department of the Interior** protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and **honors its trust responsibilities or special commitments to American Indians**, Alaskan Natives and affiliated island communities." (Emphasis added)

In commenting on the Bureau of Reclamation's decision in 2001 to prepare an Environmental Assessment for the NAWS Project instead of a full Environmental Impact Statement, Pearson pointed out that the decision violated Section 102(2)(D) of the National Environmental Policy Act because:

> "The Environmental Assessment for the NAWS project does not provide the detailed discussion of the cumulative impacts of the NAWS project on. . . unquantified Indian Missouri River water rights. . . that is required by the National Environmental Policy Act." (Pearson 2001, Attachment 1)

In discussing Indian Trust Assets in Chapter Three – Affected Environment, the Draft SEIS states:

> "**Indian water rights**, both surface water and groundwater, **are a matter of federal law**. The basis for this stems from the U.S. Supreme Court's decision in *Winters v. United States* (1908), which enunciated the Winters Doctrine. According to the doctrine, the establishment of an Indian reservation implied that sufficient water was **reserved (set aside)** to fulfill purposes for which the reservation was created, with the priority date being the date the reservation was established. As such, Indian water rights, when quantified, constitute an ITA [Indian Trust Asset]. In *Arizona v. California* (1963) the U.S. Supreme Court held that water allocated should be sufficient to meet both present **and future needs** of the reservation to assure the viability of the reservation as a homeland. Case law also supports the premise that **Indian reserved water rights are not lost through non-use**." (Emphasis added) (Draft SEIS p. 3-104)

and:

> "In the Missouri River basin, 27 tribes were identified as having reservations within the Project Area, 13 of which have reservations located directly on the Missouri River. Several of these tribes are in various stages of quantifying their water rights.
>
> . . .
>
> **The Corps is the federal agency responsible** for **operations of the Missouri River** and has recognized that certain Missouri River basin tribes are entitled to water rights in streams running through or along their reservations under the Winters Doctrine. **Operational decisions** concerning the Missouri River System are based on the water currently in the system and demands placed upon it. **The Corps recognizes tribal water rights to the mainstem irrespective of whether those rights have been quantified**. In doing so, **the Corps has recognized that future quantification of those rights could affect operations**. With respect to Indian water rights, the Master Water Control Manual [citation omitted] states:
>
> > *'When a Tribe exercises its water rights, these consumptive uses will then be incorporated in an existing depletion. Unless specifically provided for by law, these rights do not entail allocation of storage. Accordingly, water must actually be diverted to have an impact on the* ***operation*** *of the System. Further modifications to System* ***operation****, in accordance with pertinent legal requirements, will be considered as Tribal water rights are exercised in accordance with applicable law.'"*
>
> (Italics in original. Bold emphasis added) (Draft SEIS pp. 3-105, 3-106)

In comments on the 2007 NAWS Project Draft EIS on Water Treatment, the National Wildlife Federation noted that:

> "The Mitchell, South Dakota *Daily Republic* reported in a December 15, 2007, story that:
>
> > 'There are 27 tribes in the Missouri River basin. If all of their water rights were quantified, predicted Dale Frink, one of North Dakota's representatives at this week's MoRAST meeting in Pierre, they could secure rights to an enormous amount of water.
> >
> > "**If they all would do it, they would tie up a chunk of water, if not all of it**," **said Dale Frink, an engineer with the North Dakota State Water Commission**. "I don't know if I should say 'tie up,' but certainly they could quantify a huge amount of water."' (Emphasis added)
>
> The Draft EIS for the NAWS Project acknowledges that:
>
> > '. . . there could be potential Indian water rights issues.' (Draft EIS, p.4-25)
>
> but instead of addressing this very significant issue substantively, the Draft EIS summarily dismisses it with three brief and cursory paragraphs:
>
> > '**Water Rights**

> If Missouri River tribes quantify their reserved water rights and put the water to beneficial use, the volume of water available for other users in the basin may be affected. The Corps [citation omitted] has stated, "until such time as the tribes quantify their water rights and consumptively withdraw their water from the Mainstem Reservoir System, the water is in the system." The Corps intends to operate the Missouri River using the water currently in the system.
>
> Any future tribal rights settlements may require additional analysis of potential impacts on the Missouri River System.
>
> **Cumulative Impacts**
> With respect to potential Indian water rights to the Missouri River, cumulative effects concern the amount of water that potentially would be available for other projects if tribes quantified their reserved rights. **Quantification could affect Project water users and other Missouri River water users with permits junior to Indian water rights**.' (Emphasis added) (Draft EIS, p. 4-25)

16-36

Obviously, **the Corps** is going to operate the Missouri River Mainstem Reservoir System using the water in the system. What the Draft EIS fails to address is the **Secretary of the Interior's** responsibility under the Winters Doctrine to protect and preserve Tribal water rights to the Missouri River, or to consider that the Federal Government has had to make very substantial financial compensation payments to Tribes when the Secretary has failed to fulfill that responsibility in the past. Consequently, the Draft EIS does not address the fact that the Bureau and the State of North Dakota are deliberately proceeding with a Northwest Area Water Supply Project with full knowledge that it (1) disregards Tribal water rights to the Missouri River established under the Winters Doctrine, (2) violates the Secretary of the Interior's responsibility to protect Tribal water rights, and (3) could cost additional millions of dollars in compensation to the Tribes for Missouri River water used by the NAWS Project. The DEIS also does not discuss how the costs of compensation to the Tribes could affect the costs to water users and the economic feasibility of the project, nor does it consider alternatives that would avoid this objectionable feature of the project." (Pearson and Conrad 2008, Attachment 4)

In Chapter Four – Environmental Impacts, the Draft SEIS states, under Indian Trust Assets:

> "This section discusses the consequences of the No Action Alternative and the effects of the action alternatives on Indian Trust Assets (ITAs)." (Draft SEIS p. 4-169)

and under "Methods" states that:

> "To identify potential impacts on trust lands, the areas of potential effects for the Project alternatives were compared to the distribution of tribal lands. . . The terms of those treaties and pertinent Supreme Court decisions relative to treaty rights, such as *Winters v. United States* (1908) **were considered**." (Bold emphasis added) (Draft SEIS p. 4-170)

However, the Bureau's 'consideration' of Indian water rights to the Missouri River is limited to seven sentences, two of which deal with the Corps of Engineers' responsibility for operation of the Missouri River Reservoir System and not the Bureau's responsibility to protect Indian water rights to the Missouri River under the Winter's Doctrine:

> "With respect to water rights, **if tribes quantified their reserved water rights and put the water to beneficial use the water available for other users in the basin may be affected**. The Corps [citation omitted] has stated, '[u]ntil such time as the Tribes quantify their water rights and consumptively withdraw their water from the Mainstem Reservoir System, the water is in the system.' The Corps intends to operate the Missouri River using the water currently in the system.
>
> In its depletion analysis of Missouri River resources, Reclamation included all future tribal depletions **documented in written plans**, such as municipal, rural, and industrial needs assessments and **tribal reserved water rights that have been quantified** (as identified in Chapter 3). These depletion data are in Appendix D. Some depletions result from water rights settlements, while others do not. Both depletion simulations estimated for this Project should not affect **reserved tribal water rights settlements**." (Emphasis added) (Draft SEIS pp. 4-170, 4-171)

and two sentences under "Cumulative Effects:"

> "The analyses have not identified direct or indirect effects on ITAs; therefore, no cumulative effects would occur. . . Furthermore, the action alternatives would not affect water rights or any hunting and gathering rights over the long term, as described in the above analysis." (Draft SEI:S p. 4-171)

Reclamation's Missouri River Depletion Analysis in Appendix D does not mention the terms "Indian water rights," "Indian Trust Assets" or "Winters Doctrine" (Draft SEIS Appendix D).

Consequently, the Draft SEIS acknowledges that (1) Indian water rights are a matter of Federal law, (2) the water required to meet those Indian water rights must be reserved, (3) the amount must be sufficient to meet current and future needs, (4) the rights are not lost through non-use (Draft SEIS p. 3-104), (5) the U. S. Army Corps of Engineers recognizes Indian water rights to Missouri River irrespective of whether those rights have been quantified (Draft SEIS p. 3-106) and (6) quantification of Indian water rights could affect the amount of water available from the Missouri River for other users (Draft SEIS pp. 4-170). Furthermore, the Secretary of the Interior has the responsibility under the Winters Doctrine to protect and preserve Indian water rights to the Missouri River, and that responsibility is absolute and unequivocal in the case of water projects, such as the Northwest Area Water Supply Project, being developed by the U. S. Department of the Interior's Bureau of Reclamation.

16-37

However, instead of addressing Reclamation's responsibilities under the Winters Doctrine and the requirements of the National Environmental Policy Act regarding the impacts of the NAWS Project on Indian water rights, the Draft SEIS continues to evade the issue with irrelevant information about the U. S. Army Corps of Engineers' responsibility for operation the Missouri River's Mainstem Reservoir System. Consequently, despite acknowledging that Indian water rights are a matter of Federal law, that the amount reserved must be enough to meet future needs, that the rights are not lost through non-use, that the Corps recognizes Indian water rights irrespective of whether they are quantified, and that quantification of Indian water rights to the Missouri River could affect the amount of water available to other users, the Draft SEIS deals only with tribal water rights that have been quantified and the water has been put "to beneficial use," or future depletions that have been "documented in written plans," or tribal water rights that have been quantified or involve "reserved tribal water right settlements" (Draft SEIS pp. 4-170, 4-171).

It should be noted in this context that on July 28, 2014, *The Bismarck Tribune* reported that:

> "Native American leaders in the Dakotas are working to preserve water rights they say are guaranteed by a century-old treaty.
>
> Representatives of the Standing Rock, Oglala and Rosebud tribes are part of the Great Plains Water Alliance, which is pushing for a congressional hearing to discuss the issue. Dennis 'Charlie' Spotted Tail, chairman of the Great Plains Water Alliance, said a doctrine dating back to 1908 establishes that all water on Native American land or that naturally flowed to Indian land should be held by the sovereign tribes.
>
> Spotted Tail said the U.S. Army Corps of Engineers is navigating waters from the Missouri River that would naturally flow from the tribes to other users. He said that's a violation of treaty rights." (Associated Press, 2014)

The Draft SEIS does not address the probability that more Tribes will be quantifying their rights to Missouri River water over the 60-year planning period of the NAWS Project, that the quantification of those water rights could affect the cost and the amount of water available for the NAWS Project, and that, as former North Dakota State Engineer Dale Frink pointed out in 2007, quantification of Indian water rights "certainly could quantify a huge amount of water." 16-38

Not only does the Bureau not address the potential impacts of the quantification of Indian water rights to the Missouri River on the future costs and availability of water for the NAWS Project, but it does not consider that the adoption of an in-basin groundwater alternative would insulate the NAWS Project from those potential impacts and assure a reliable source of water for the Project into the future. 16-39

THE BOUNDARY WATERS TREATY OF 1909

The Draft SEIS states:

> ". . . The information in this SEIS was included following consultations with the U. S. Department of State in compliance with Executive Order 12114 – Environmental Effects Abroad of Major Federal Actions. Furthermore, the Boundary Waters Treaty of 1909 states, "boundary waters and waters flowing across the [U.S.-Canadian] boundary shall not be polluted on either side to the injury of health or property on the other side [of the international boundary]." The Dakota Water Resources Act of 2000 directs the Secretary of the Interior, in consultation with the Secretary of State and the Administrator of the U. S. Environmental Protection Agency (EPA), to determine that adequate treatment can be provided to meet the requirements of the Boundary Waters Treaty prior to construction of any water systems authorized under the act that delivers Missouri River water into the Hudson Bay basin. The analysis completed by Reclamation and the Cooperating Agencies fulfills the directives of the Boundary Waters Treaty and the Dakota Water Resources Act (P.L. 106-554, Title VI, Section 602)." (Draft SEIS pp. 4-1, 4-2)

It should be noted, however, that while the analysis completed by the Bureau and the Cooperating Agencies may fulfill the requirements of Executive Order 12114 – Environmental Effects Abroad

of Major Federal Actions and of the Dakota Water Resources Act of 2000, it does not address the recommendations of the International Joint Commission in its 1977 Report to the Governments of Canada and the United States on the *Transboundary Implications of the Garrison Unit* regarding compliance of the Garrison Diversion project, including its municipal water supply components, with the Boundary Waters Treaty of 1909 (International Joint Commission 1977).

The 250,000-acre Initial Stage of the Garrison Diversion Unit authorized on August 5, 1965, (Public Law 89-108, 79 Stat. 433) provided for delivery of water to 14 municipalities and four industrial areas, including Minot, North Dakota, which was to be supplied with Missouri River water from the Garrison Diversion project's Lonetree Reservoir via the Velva Canal (Bureau of Reclamation 1962, 1975).

On October 22, 1975, the Secretary of State for External Affairs for the Government of Canada and the Secretary of State for the Government of the United States submitted a joint Reference to the International Joint Commission pursuant to Article IV of the Boundary Waters Treaty of 1909 requesting the International Joint Commission:

> ". . .to examine into and to report upon the transboundary implications of the proposed completion and operation of the Garrison Diversion Unit in the State of North Dakota; and to make recommendations as to such measures, including modifications, alterations or adjustments to the Garrison Diversion Unit, as might be taken to assist governments in ensuring that the provisions of Article IV of the Boundary Waters Treaty are honoured." (International Joint Commission 1977, Appendix A)

The six-member International Joint Commission, which was established by the Governments of the United States and Canada to address transboundary issues under the Boundary Waters Treaty of 1909, appointed a 12-member International Garrison Diversion Study Board, which in turn assembled five committees with a total of 55 members and 94 consultants from both countries (Water Quality – 11 members and 2 consultants, Water Quantity – 10 members and 2 consultants, Biology – 11 members and 61 consultants, Uses – 14 members and 46 consultants, Engineering – 9 members and 13 consultants), to investigate the potential impacts of the Garrison Diversion Unit in Canada (International Garrison Diversion Unit Study Board 1976).

In its 1977 Report to the Governments of Canada and the United States on the *Transboundary Implications of the Garrison Diversion*, the International Joint Commission recommended:

> "That because the 'closed system' and the McClusky Canal fish screen cannot with any certainty prevent biota and disease transfers which would cause severe and irreversible damage to the ecosystem and, in particular, to the commercial and sport fisheries in Canada, **those portions of the Garrison Diversion Unit which could affect waters flowing into Canada not be built at this time**. . ." (Emphasis added) (International Joint Commission 1977)

and:

> "That, **if and when the Governments of Canada and the United States agree** that **methods have been proven that will eliminate the risk of biota transfer, or if the question of biota transfer is agreed to be no longer a matter of concern,** then construction of that portion of the Garrison Diversion Unit which would affect waters flowing into Canada may be undertaken provided [certain] conditions are met. . ." (Emphasis added) (International Joint Commission 1977)

In an August 23, 1983, memorandum to the Secretary of the Interior regarding the Record of Decision – Final Supplemental Environmental Statement on Features of the Garrison Diversion Unit (GDU) for Initial Development of 85,,000 Acres (EES 83,35), U. S. Bureau of Reclamation Commissioner R. N. Broadbent noted that:

> "**In the event that Canada's concerns remain unresolved** and the United States treaty obligations should be deemed to require that we refrain from development of features which could release project waters to the Hudson Bay drainage basin**,** it might **become necessary to reformulate the remaining features of the GDU** in a fashion which would require not only additional NEPA compliance but possible reauthorization of the unit by Congress." (Emphasis added) (Broadbent 1983)

The 1984 Energy and Water Development Appropriations Act (Public Law 98-360, 98 Stat. 403), which provided appropriations for the Garrison Diversion Unit for Fiscal Year 1985, recognized that:

> "the Garrison Diversion Unit, as presently authorized, raises significant issues of economic, environmental and **international** concern" (Emphasis added)

and recommended that:

> "a Secretarial commission should be established to examine the water needs of North Dakota and **propose development alternatives which will lead to the early resolution of the problems identified**." (Emphasis added)

The Secretary of the Interior appointed a 12-member Garrison Diversion Unit Commission on August, 11, 1984:

> "to review the controversy surrounding the authorized Initial Stage of the Garrison Diversion Unit, to evaluate the contemporary water needs of the State of North Dakota and to make recommendations." (Garrison Diversion Unit Commission 1984).

In his September, 1984, cover letter transmitting the *North Dakota Plan for Development, Garrison Diversion Unit* to the Garrison Diversion Unit Commission established by the Act, North Dakota Governor Allen I. Olson stated:

> "This report presents, in detail, the North Dakota Plan for the Development of the Garrison Diversion Unit. This plan was outlined for the Commission in the testimony presented to you by state officials at the September 10th and 11th, 1984, hearings in Bismarck.
>
> North Dakota's plan sets forth the importance of water development to the state and the benefits to be realized from the Garrison Diversion Unit. The state plan is consistent with the existing Garrison Diversion Unit authority, state policy as established by the Legislative Assembly and the Master Contract held by the Garrison Diversion Conservancy District.
>
> North Dakota has pursued a reasonable approach to resolving issues related to Garrison. This plan recommends a continuing effort in this regard and proposes modifications

> which address present water development needs that can be met within the existing authorization." (State of North Dakota 1984)

The 1984 North Dakota Plan submitted to the Garrison Diversion Unit Commission identified 22 communities in the Souris Basin "currently utilizing water of lesser quality than the water that would be provided by the Garrison Diversion Unit." The 22 communities identified in the North Dakota Plan included nine (All Seasons Water Users District, Upper Souris Water Users District, and the cities of Berthold, Bottineau, Burlington, Kenmare, Minot, Souris and Westhope) of the 14 project participants listed in the 2014 Northwest Area Water Supply Project Draft Supplemental Environmental Impact Statement (Draft SEIS Table 2.1, p. 2-8).

In its Final Report, the Garrison Diversion Unit Commission recommended "establishment of MR&I (municipal, rural, and industrial) systems for treatment and delivery of quality water to approximately 130 communities in North Dakota" and that:

> "The configuration and character of the municipal, rural, and industrial water systems and the location and character of facilities to treat water supplies shall be determined through a planning process of the bureau or agency that will implement these recommendations. Whether by pipeline, open channel conveyance or some other approach, and whether from Missouri River water, ground water, or a combination, an important consideration of system design shall be cost effectiveness. . .
>
> For those municipal and industrial systems that will deliver Missouri River water to communities in the Hudson Bay drainage, it is recommended that the United States consult with the Government of Canada on plans and methodologies before implementation." (Garrison Diversion Unit Commission 1984)

Among the Municipal, Rural, and Industrial Water Supply Systems specifically identified in the Commission's report is Minot, with a 1984 area population of 60,725 to be served (Garrison Diversion Unit Commission 1984). In 2008, the U. S. Bureau of the Census and the North Dakota State Data Center projected the total population of the entire 10-county project region to be 109,409 in 2020 (Bureau of Reclamation 2008).

The Garrison Diversion Unit Commission did not determine that methods had been proven that would eliminate the risk of biota transfer or that the question of biota transfer was agreed to be no longer a matter of concern, and it did not recommend that the Government of the United States disregard the International Joint Commissions' 1977 recommendations regarding the Garrison Diversion Unit.

In Section 1 of the Garrison Diversion Unit Reformulation Act of 1986 (Public Law 99-294):

> "The Congress declares that the purposes of the Act are [among others] to:
>
> > "(1) implement the recommendations of the Garrison Diversion Unit Commission Final Report (dated December 20, 1984) in the manner specified by this Act;
> >
> > (2) meet the water needs of the State of North Dakota, including municipal, rural and industrial water needs, as identified in the Garrison Diversion Unit Commission Final Report;

(3) **minimize the environmental impacts associated with the** construction and **operation** of the Garrison Diversion Unit;

(4) **assist the United States in meeting its responsibilities under the Boundary Waters Treaty of 1909**." (Emphasis added)

The Garrison Diversion Unit Reformulation Act of 1986 authorized appropriations of $200,000,000 for the construction of municipal, rural and industrial water systems in North Dakota and provided that:

> "Municipal, rural, and industrial water systems constructed with funds authorized under this Act may deliver Missouri River water into the Hudson Bay drainage only after the Secretary of the Interior, in consultation with the Secretary of State and the Administrator of the Environmental Protection Agency, has determined that adequate treatment has been provided to meet the requirements of the Boundary Waters Treaty of 1909."

The Dakota Water Resources Act of 2000 amends the 1965 Act that authorized the Garrison Diversion Unit:

> ". . . to increase authorization levels for State and Indian tribal, municipal, rural, and industrial water supplies, to meet current and future water quantity and quality needs of the Red River Valley, to deauthorize certain project features and irrigation service areas, to enhance natural resources and fish and wildlife habitat, and for other purposes."

The 2000 Act authorizes appropriations of an additional $200,000,000 for municipal, rural and industrial water supplies and specifies that:

> "The Southwest Pipeline Project, the Northwest Area Water Supply Project, and the Red River Valley Water Supply Project, and other municipal, industrial, and rural water systems in the State of North Dakota shall be eligible for funding under items of this section. . ."

The Dakota Water Resources Act of 2000 also provides that:

> "Prior to construction of any water systems authorized under this Act to deliver Missouri River water into the Hudson Bay basin, the Secretary, in consultation with the Secretary of State and the Administrator of the Environmental Protection Agency, must determine that adequate treatment can be provided to meet the requirements of the Treaty between the United States and Great Britain relating to Boundary Waters Between the United States and Canada, signed at Washington, January 11, 1909 (26 Stat. 2448;TS 548) (commonly known as the Boundary Waters Treaty of 1909)."

The Bureau of Reclamation's June 2014, Northwest Area Water Supply Project, North Dakota, Draft Supplemental Environmental Statement states that:

> "The Project was authorized by the Garrison Diversion Reformulation Act of 1986 and the Dakota Water Resources Act of 2000 as part of the Municipal, Rural, and Industrial (MR&I) Grant Program." (Draft SEIS p. 1-1)

Even more specifically, the Bureau of Reclamation's December 2008, Northwest Area Water Supply Project Final Environmental Impact Statement on Water Treatment confirmed that:

> "**The Garrison Diversion Unit MR&I water supply grant program was authorized by the U.S. Congress on May 12, 1986, through the Garrison Diversion Unit Reformulation Act.** This act authorized the appropriation of $200 million of Federal funds for the planning and construction of water supply projects throughout North Dakota. **This Project is being developed as a result of this authorization**. . ." (Emphasis added) (Bureau of Reclamation, 2008)

Consequently, the legislative history of the Garrison Diversion Unit clearly demonstrates that (1) a water supply for Minot and surrounding communities has been a component of the project since it was authorized in 1965 and (2) authorization of a water supply for Minot and surrounding communities has been retained as a component of the Garrison Diversion Unit through subsequent amendments of the 1965 Act in 1986 and 2000. Furthermore, the Bureau of Reclamation has explicitly confirmed that the current Northwest Area Water Supply Project is a specifically authorized component of the Garrison Diversion Unit MR&I water supply program.

The Garrison Diversion Unit Reformulation Act of 1986 states that Garrison Diversion Unit MR&I projects may **deliver** Missouri River into the Hudson Bay Basin **only after** the Secretary of the Interior, in consultation with the Secretary of State and the Administrator of the Environmental Protection Agency, has determined that adequate treatment has been provided to meet the requirements of the Boundary Waters Treaty of 1909, and the Dakota Water Resources Act of 2000 specifies that **prior to construction** of any water systems authorized under the Act to deliver Missouri River water into the Hudson Bay Basin, the Secretary, in consultation with the Secretary of State and the Administrator of the Environmental Protection Agency, must determine that adequate treatment can be provided to meet the requirements of the Boundary Waters Treaty of 1909. However, neither the Garrison Diversion Unit Reformulation Act of 1986 nor the Dakota Water Resources Act of 2000 determined that methods have been proven that would eliminate the risk of biota transfer or that the question of biota transfer has been agreed by the Governments of Canada and the United States to be no longer a matter of concern, and neither act addresses the 1977 recommendation of the International Joint Commission regarding agreement by the Governments of Canada and the United States on the resolution of the biota transfer issue before construction proceeds on those portions of the Garrison Diversion Unit, including municipal, rural and industrial water supplies, which could affect waters flowing into Canada.

16-40

Consequently, although the Garrison Diversion Unit Reformulation Act of 1986 and the Dakota Water Resources Act of 2000 prohibit the construction or operation of Garrison Diversion Unit municipal, rural and industrial water supply projects delivering Missouri River into the Hudson Bay Basin prior to a determination by the Secretary of the Interior, in consultation with the Secretary of State and the Administrator of the Environmental Protection Agency, that adequate treatment can be provided to meet the requirements of the Boundary Water Treaty of 1909, neither act exempts the Northwest Area Water Supply Project or the Secretary of the Interior, the Secretary of State or the Administrator of the Environmental Protection Agency from the International Joint Commission's 1977 recommendation that construction of portions of the Garrison Diversion Unit which could affect waters flowing into Canada be undertaken only:

> "if and when the Governments of Canada and the United States agree that methods have been proven that will eliminate the risk of biota transfer, or if the question of biota transfer is agreed to be no longer a matter of concern." (International Joint Commission 1977)

The Government of Canada has not agreed that methods have been proven that will eliminate the risk of biota transfer by the Northwest Area Water Supply Project nor has it agreed that the question of biota transfer no long is a matter of concern with the project.

The Northwest Area Water Supply Project is a conceptual and statutory component of the Garrison Diversion Unit subject to the International Joint Commissions' 1977 recommendations regarding achieving compliance of the Garrison Diversion Unit with the provisions of Section IV of the Boundary Water's Treaty of 1909. The Draft SEIS claims that its analysis "fulfills the directives of the Boundary Waters Treaty" (Draft SEIS pp. 4-1, 4-2), but it does not address the recommendations of the International Joint Commission, made in response to a joint Reference by the Government of Canada and the Government of the United Stares, regarding the construction of those portions of the Garrison Diversion Unit which could affect waters flowing into Canada. 16-41

EPILOGUE

The Mission Statement in the frontispiece of Reclamation's July 2014 *Northwest Area Water Supply Project, North Dakota, Draft Supplemental Environmental Impact Statement* states:

> "The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American Public."

However, the Bureau of Reclamation's Draft SEIS and its selection of a Missouri River and Groundwater Alternative as the preferred alternative for the Northwest Area Water Supply Project brazenly violate literally every tenet of the agency's stated mission. 16-42

They do not contribute to the management, development or protection of water or related resources in an environmentally or economically sound manner. Instead they promote shameful mismanagement of water and related resources, the Federal subsidization of potentially severe environmental degradation, and a profligate expenditure of public tax revenues on a project for which far better and less costly alternatives are readily available. They do not serve the interests of either the American Public or the citizens of North Dakota, and they certainly do not serve the interest of the communities and rural water systems in the NAWS Project area where the development of a sound and sensible water supply project has been delayed for 17 years by the Bureau's repeated failures to carry out its mission in a responsible manner. Moreover, they display a shameful lack of professional competence and integrity and an astonishing disregard for Federal laws, the Federal courts, the International Boundary Waters Treaty, Native Americans and the people – including First Nations – and the governments of Canada and the Province of Manitoba. 16-43

Reiterating the recommendation of the National Wildlife Federation in its comments on Reclamation's 2008 *Northwest Area Water Supply Project Final Environmental Impact Statement on Water Treatment*, the Secretary of the Interior should withdraw the NAWS Project Draft SEIS, remove the Bureau of Reclamation from the NEPA process, and appoint an independent, professional entity to begin the NEPA process anew to produce a credible and complete EIS for the NAWS Project that complies with the requirements of the National Environmental Policy Act, Council on Environmental Quality regulations, the Winters Doctrine, the Boundary Waters Treaty of 1909 and other Federal laws. 16-44

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ATTACHMENTS

Attachment 1: Pearson, Gary L. 2001. Letter to Dennis E. Breitzman, Area Manager, Dakotas Area Office, U. S. Bureau of Reclamation, Bismarck, North Dakota. Re: Notice of Appeal of Decision of Bureau of Reclamation Area Manager to Prepare an Environmental Assessment and Sign a Finding of No Significant Impact for the Northwest Area Water Supply Project in North Dakota. July 12. 5 pp.

Attachment 2: Pearson, Gary L. 2006. Letter to Northwest Area Water Supply Project EIS, U. S. Bureau of Reclamation, Dakotas Area Office, Bismarck North Dakota. Re: Comments regarding scoping of the Draft Environmental Impact Statement for the Northwest Area Water Supply Project. April 14. 4 pp.

Attachment 3: Pearson, Gary L. and David R. Conrad. 2008. Comments of the National Wildlife Federation on the U. S. Department of the Interior, Bureau of Reclamation, Great Plains Region, Dakotas Area Office, December 2007 Northwest Area Water Supply Project Draft Environmental Impact Statement on Water Treatment. 11 pp.

Attachment 4: Pearson, Gary L and David R. Conrad. 2009. Comments of the National Wildlife Federation on the U. S. Department of the Interior, Bureau of Reclamation, Great Plains Region, Dakotas Area Office, December 2008 Northwest Area Water Supply Project Final Environmental Impact Statement on Water Treatment. 18 pp.

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July 12, 2001

VIA FACSIMILE (701/250-4326) AND FIRST CLASS MAIL

Mr. Dennis E. Breitzman
Area Manager
Dakotas Area Office
U. S. Bureau of Reclamation
P. O. Box 1017
Bismarck, North Dakota 58502

Notice of Appeal of Decision of Bureau of Reclamation Area Manager to Prepare an Environmental Assessment and Sign a Finding of No Significant Impact Instead of Initiating a National Environmental Policy Act Environmental Impact Statement for the Northwest Area Water Supply Project in North Dakota

Dear Mr. Breitzman:

Pursuant to your letter dated July 6, 2001, I am submitting this letter as a formal Notice of Appeal of the U. S. Bureau of Reclamation's Environmental Assessment and decision regarding the proposed Northwest Area Water Supply (NAWS) project in North Dakota contained in the Finding of No Significant Impact (FONSI) for the project that was signed on May 18, 2001. According to your letter:

> "the intent of the process was to allow individuals or groups with standing to appeal the decision made by the Area Manager to sign a FONSI instead of initiating the EIS."

It is my contention that the Bureau's decisions to prepare an Environmental Assessment and to sign a Finding of No Significant Impact for the NAWS project instead of initiating a process to prepare a full Environmental Impact Statement under the National Environmental Policy Act (NEPA) and Council on Environmental Quality guidelines were inappropriate and improper for at least five reasons, including:

1. **The decisions to prepare an Environmental Assessment and to sign a FONSI for the NAWS project are not compatible with the recommendations of the International Joint Commission regarding the interbasin transfer of Missouri River water to the Hudson Bay Basin. Therefore, the NAWS project should be subject to detailed review in a full National Environmental Policy Act Environmental Impact Statement.**

The NAWS project is being implemented under Section 7 of Public Law 89-108 authorizing the Garrison Diversion Unit in 1965, as amended by the Dakota Water Resources Act of 2000,which Garrison Diversion Conservancy District officials recently described in a paper entitled *Transbasin Aspects of the Garrison Diversion Project* as a "revised Garrison project which amends the 1986 Garrison Diversion Reformulation Act."

In its 1977 Report to the Governments of Canada and the United States entitled *Transboundary Implications of the Garrison Diversion Unit*, the International Joint Commission recommended:

> "1. That…those portions of the Garrison Diversion Unit which could affect waters flowing into Canada not be built at this time…
>
> 2. That, if and when the **Governments of Canada and the United States agree** that methods have been proven that will **eliminate the risk of biota transfer**, or if the question of **biota transfer is agreed to be no longer a matter of concern**, then the construction of that portion of the Garrison Diversion Unit which would affect waters flowing into Canada may be undertaken…" (Emphasis added)

Because Canada has not agreed that methods have been proven that will eliminate the risk of biota transfer or that the question of biota transfer no longer is a matter of concern, the Bureau's unilateral decisions in preparing an Environmental Assessment and in signing a FONSI to proceed with the NAWS project are not compatible with the recommendations of the International Joint Commission regarding the interbasin transfer of Missouri River water to the Hudson Bay Basin. An unilateral decision by an U. S. federal agency that is incompatible with the recommendations of a bi-national commission established to administer an international treaty clearly warrants detailed disclosure and review in a full Environmental Impact Statement as provided under the National Environmental Policy Act.

2. The decision to prepare an Environmental Assessment and to sign a FONSI for the NAWS project violate Section 102 (2) (D) of the National Environmental Policy Act.

Section 102 (2) (D) of the National Environmental Policy Act requires federal agencies to:

> "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."

That unresolved conflicts exist concerning alternative uses of the available resources of the Missouri River is demonstrated by the enclosed copy of a March 22, 2001, letter to the President from the governors of Arkansas, Illinois, Kentucky, Louisiana, Minnesota, Mississippi, Missouri, Tennessee and Wisconsin expressing their concern over depletions of water from the Missouri River continuing to increase as demands for water grow.

In addition to authorizations for other Bureau of Reclamation projects in Montana and South Dakota which draw water from the Missouri River, non-federal within-basin withdrawals for municipal, rural and industrial use and private irrigation development also are increasing. Agency denials notwithstanding, the NAWS project, by definition, sets a new and significant precedent for approving out-of-basin water transfers from the Missouri River. In fact, the North Dakota State Engineer is reported to have stated that the NAWS project provides the framework for a Red River Valley Water Supply Project to deliver Missouri River water to the Red River Valley under the Dakotas Water Resources Act of 2000.

The Environmental Assessment for the NAWS project does not provide the detailed discussion of the cumulative impacts of the NAWS project and other existing and proposed water withdrawals from the Missouri River on the Missouri River ecosystem, on unquantified Indian Missouri River water rights, or on the economies and social structures of other states on the Missouri and Mississippi rivers that is required by the National Environmental Policy Act in order to resolve conflicts.

3. The decisions to prepare an Environmental Assessment and to sign a FONSI for the NAWS project violate Council on Environmental Quality guidelines for the preparation of Environmental Impact Statements under the National Environmental Policy Act.

That the interbasin transfer of Missouri River water to the Hudson Bay Basin under the Dakota Water Resources Act of 2000 is controversial is clearly demonstrated by the recent paper by Garrison Diversion Conservancy District officials on *Transbasin Aspects of the Garrison Diversion Unit*. That the NAWS project itself is controversial is demonstrated by the enclosed copy off a May 21, 2010, letter to Secretary of the Interior Gail Norton from the Great Lakes Commission, which:

> "views the NAWS project as an ill advised inter-basin diversion scheme that will compromise transboundary relations with Canada, undermine the U. S.-Canada Boundary Waters Treaty of 1909, and establish a dangerous water diversion precedent that could have adverse implications for the Great Lakes states and provinces."

Council on Environmental Quality guidelines call for federal agencies to prepare full NEPA Environmental Impact Statements rather than Environmental Assessments on actions that are controversial.

4. The decisions to prepare an Environmental Assessment and to sign a FONSI on the NAWS project violate Section 102 (2) (C) of the National Environmental Policy Act Requiring a detailed statement on the environmental impacts of the project.

The FONSI for the NAWS project is based substantially on the Bureau's conclusion that the measures proposed will reduce the risk of biota transfer from the Missouri River Basin to the Hudson Bay Basin to an acceptable level. However, although the proposed measures may substantially reduce the risk of biota transfer, the Environmental Assessment and the FONSI acknowledge that the risk would not be eliminated, as specified by the International Joint Commission. It is relevant, therefore, to recall the conclusion of the International Joint Commission regarding biota transfer under the Garrison Diversion project:

> "In fact, overriding every thing else, as it turns out, has been the **necessity that such introduction be prevented at all cost**…
>
> Unlike some other adverse consequences that can be minimized by additional mitigating measures or by cessation of operation of the Project, remedial measures to control unwanted exotics are oftentimes futile and, what makes it even more difficult, is that it may be some years before the full impact is apparent.
>
> …

> There is no question in the Commission's mind that the Board's recommendations greatly reduce the risk of an unintentional transfer… The Commission gives great weight to the Board's opinion… At the same time, the Commission must weigh the consequences to Canada if the Board is wrong. Were the potential consequences ones which could be mitigated or corrected after the fact, the Commission would accept the Board's advice. Were the biological consequences to the Hudson Bay drainage ecosystem predictable in manner and extent, the Commission might accept the Board's approach. The Board has **reduced the risk of a biological 'time bomb,' but not eliminated it**…" (Emphasis added)

Simply because the risk of adverse impacts may be reduced does not relieve federal agencies of the responsibility for describing those impacts—and the efficacy of measures for dealing with them—in the event they should occur. Because the measures proposed for the NAWS project would reduce the risk of biota transfer but not eliminate it, the potential consequences to the Hudson Bay ecosystem and Canada in the event the Bureau's conclusion is wrong must be discussed in detail in a full NEPA Environmental Impact Statement. In addition should an Environmental Impact Statement still recommended the NAWS project as the preferred federal action, then it must also discuss in detail the rationale and justification for rejecting the standard established by the International Joint Commission, which requires, not simply reduction, but the elimination of the potential for biota transfer.

5. The Environmental Assessment and FONSI for the NAWS project are inadequate and unacceptable vehicles for evaluating, establishing and documenting compliance with the Boundary Waters Treaty of 1909.

The proposed outlet from Devils Lake to the Sheyenne River also raises the issue of compliance with the Boundary Waters Treaty of 1909. The Devils Lake Basin is a subbasin of the Hudson Bay Basin, but it has been isolated for the past 1000-1800 years. In addition, Devils Lake has been stocked with a variety of indigenous and non-indigenous fish species from a number of sources over the past 30 years, thus enhancing the potential for the proposed outlet to introduce foreign biota into the Hudson Bay Basin. However, the potential for biota foreign to the Hudson Bay Basin to be present in the vast Missouri River system appears to be even greater than in Devils Lake.

As the enclosed copy of a March 10, 1998, letter from the Assistant Secretary of the Army for Civil Works to the Secretary of State indicates, the U. S. Army Corps of Engineers had:

> "begun the scoping process **under the National Environmental Policy Act (NEPA) as the first step in the preparation of an EIS**." (Emphasis added)

The Assistant Secretary of the Army went on to request that:

> "the Department of State initiate consultations with the International Joint Commission, as directed by P. L. 105-62."

The Assistant Secretary of State for European and Canadian Affairs responded that:

> "… We are well aware that the 1998 Energy and Water Development Appropriations Act (PL105-62) requires as a prerequisite for construction of the project that the Secretary must provide assurances, after consultation with the IJC, that the project will not violate the requirements or intent of the Boundary Waters Treaty of 1909.

> … As we have discussed with your staff, **in order to determine the applicability of the Treaty's provisions, we will need** to provide the IJC the details of the Corps of Engineers' plans, and **the results of the Corps' environmental impact assessment, now in progress.** When the Corps has completed its requirements under NEPA, and has forwarded those results to the Department of State, we will be in a position to approach the IJC to undertake the necessary consultations." (Emphasis added)

Although the Dakota Water Resources Act of 2000 does not explicitly require consultations with the International Joint Commission regarding the NAWS project, it also does not preclude such consultations, and such consultations clearly are appropriate and necessary in order to evaluate, establish and document compliance with the Boundary Waters Treaty of 1909. Nevertheless, the Dakota Water Resources Act does require that:

> "Prior to construction of any water system authorized under this Act to deliver Missouri River water into the Hudson Bay basin, the Secretary [of the Interior], in consultation with the Secretary of State and the Administrator of the Environmental Protection Agency, must determine that adequate treatment can be provided to meet the requirements of the Treaty between the United States and Great Britain relating to Boundary Waters Between the United States and Canada…(commonly known as the Boundary Waters Treaty of 1909)."

Clearly, if the preparation of a full Environmental Impact Statement under the National Environmental Policy Act is necessary for the Secretary of State to evaluate compliance of the proposed Devils Lake outlet with the Boundary Waters Treaty of 1909, then a full NEPA Environmental Impact Statement also is necessary for the Secretary of the Interior, the Secretary of State and the Administrator of the Environmental Protection Agency to make a similar determination regarding compliance of the NAWS project with the Boundary Waters Treaty of 1909.

For these and other reasons, the Bureau's decision to prepare an Environmental Assessment and to sign a FONSI for the NAWS project instead of initiating a full Environmental Impact Statement were inappropriate and improper. Therefore, those decisions should be rescinded, the Environmental Assessment and the Finding of No Significant Impact should be withdrawn, and the Bureau should proceed with the preparation of a full Environmental Impact Statement on the NAWS project under procedures outlined in the National Environmental Policy Act and by Council on Environmental Quality NEPA guidelines.

Finally, five days from the date of receipt (July 9, 2001) of your July 6, 2001, letter announcing the appeal process does not provide sufficient time to identify all potential issues and information establishing foundation for appeal of the Bureau's decision to prepare an Environmental Assessment and to sigh a FONSI for the NAWS project. I understand that the Bureau is contemplating providing an opportunity for appellants to make more complete submissions and/or oral presentations in support of their appeals in early September, and I wish to reserve the option of supplementing and/or amending this Notice of Appeal at that time.

Sincerely,

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April 14, 2006

Re: Comments regarding scoping of the Draft Environmental Impact Statement for the Northwest Area Water Supply Project

Northwest Area Water Supply Project EIS
U. S. Bureau of Reclamation
Dakotas Area Office
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Bismarck, North Dakota 58502-1017

Dear Sir or Madam:

The Environmental Assessment (EA) prepared for the Bureau of Reclamation's Northwest Area Water Supply Project (NAWS) by Houston Engineering, Inc., American Engineering, P.C., Montgomery Watson, and Bluestem Incorporated in 2001 failed to comply with the requirements of the National Environmental Policy Act in three fundamental and important respects:

1. The Environmental Assessment failed to describe adequately the environmental impacts of the proposed action.

2. The Environmental Assessment failed to consider alternatives to the proposed action.

3. The Environmental Assessment was not prepared by the Bureau of Reclamation or in cooperation with unbiased, independent contractors.

In order to comply with the requirements of the National Environmental Policy Act, it will be necessary for the Bureau of Reclamation to address each of these deficiencies substantively and objectively in the Environmental Impact Statement (EIS) that now is being prepared for the project.

Environmental Impacts of the Proposed Action

Section 102(2)(C) of the National Environmental Policy Act requires Federal agencies to prepare a "detailed statement" describing the environmental impacts of proposed actions significantly affecting the quality of the human environment, and the courts have confirmed that environmental impact statements are to be full disclosure documents.

The EIS must not only describe the environmental impacts that will occur in the immediate area of the project and the risk of impacts occurring in other areas, but it must provide a detailed discussion of the environmental impacts both in the local area and in other areas. Therefore,

instead of concluding that, because the risks of transfer of invasive species from the Missouri River Basin to the Hudson Bay basin under NAWS are determined to be low, the impacts of biota transfer need not be considered, the EIS must provide a detailed discussion of the environmental impacts of such low probability/high consequence events.

The EIS must also include a detailed analysis of the cumulative impacts of the NAWS project on the Missouri River in terms of current authorized and proposed or anticipated future withdrawals from the river under a full range of conditions, including the operation of Red River Valley Water Supply Project Missouri River supply alternatives during prolonged droughts in the Missouri and Red River basins.

Alternatives to the Proposed Action

Section 102(2)(C)(iii) specifies that Environmental Impact Statements are to address "alternatives to the proposed action," and Council on Environmental Quality Regulations and the courts have made it clear that Federal agencies are not simply to consider alternatives for implementing the proposed action, but they are to explore all reasonable alternatives to the proposed action. For example, in *NRDC v. Morton*, the U. S. Court of Appeals for the District of Columbia stated:

> "Congress contemplated that the impact statement would constitute the environmental source material for the information of the Congress as well as the Executive, in connection with the making of relevant decisions, and would be available to enhance enlightenment of and by the public. The impact statement provides the basis for (a) evaluation of the benefits of the proposed action in light of its environmental risks, and (b) comparison of the net balance for the proposed project with the environmental risks presented by alternative courses of action."

The EA for the NAWS project considered alternatives **FOR** supplying Missouri River water to eleven communities and five rural water systems in the Hudson Bay Basin of North Dakota, but it did not seriously consider alternatives **TO** supplying Missouri River water to those communities and rural water systems. The EA acknowledged that "sufficient groundwater supply is available in nearly every location of the NAWS area," but the only alternative other than using Missouri River water considered in the EA was to drill more wells for six communities and to construct 18 separate reverse osmosis systems, one for each of the 13 communities (except Parshall) and five rural water systems in the NAWS project area.

Certainly, construction of 18 individual reverse osmosis systems to serve communities as small as Columbus (pop. 223), Noonan (pop. 231) and Souris (pop. 97) would be among the least feasible groundwater alternatives that could be designed. Even so according to the EA, this alternative would cost only $27 million more the preferred alternative utilizing an integrated Missouri River supply for the communities and rural water systems in located in the Hudson Bay Basin. However, neither the EA nor the reports it cites considers alternative configurations utilizing integrated groundwater supplies that would reduce the number of wells and reverse osmosis systems needed.

For example, according to the EA, the projected 2010 combined 47,095 population of Minot and the Minot Air Force Base is 82 percent of the total combined population of the communities and rural water systems located in the Hudson Bay Basin to be supplied with Missouri River water under the NAWS project. Therefore, one obvious alternative would be to increase the supply from the Sundre Aquifer and the capacity of the Minot water treatment facility by 21 percent to provide water to the additional 10,114 people in the small communities and rural water systems in

the Hudson Bay Basin to be served by the NAWS project. Water could be distributed to those communities and rural water systems through the same 304 miles of distribution pipelines that would be used to deliver Missouri River water to them under the preferred alternative, and the cost savings from not building 45 miles of pipeline from the Missouri River and not building and operating the biota treatment plant could be used to expand the Minot water treatment facility. Of course, other alternatives utilizing integrated groundwater supplies also should be discussed and evaluated in the Environmental Impact Statement.

It should be noted in this context that the fact that Bureau violated NEPA by not adequately considering alternatives to the proposed action in its EA for the NAWS project may not be cited as an excuse for continuing to fail to evaluate alternatives to the proposed action in the Environmental Impact Statement. Consequently, the Bureau may not cite the fact that construction already is underway on the pipeline from the Missouri River to Minot to justify not considering alternatives **TO** the construction of a pipeline from the Missouri River to Minot.

Unfortunately, however, that is exactly what the Bureau is proposing to do in the Dakotas Area Office's *RECLAMATION Managing Water in the West, Northwest Area Water Supply Project* on "Environmental Impact Statement: Public Scoping," which states:

> "Reclamation proposes to study and evaluate alternative **water treatment methods** to minimize the risk of transferring non-native biota **from the Missouri River Basin to the Hudson Bay Basin trough the NAWS project**." (Emphasis added)

Although the Bureau's decision to prepare an Environmental Impact Statement on the NAWS project is the result of a ruling by the U. S. District Court for the District of Columbia in a suit brought by the Province of Manitoba challenging the adequacy of the EA's discussion of impacts of the project in Canada and alternatives for minimizing those impacts, NEPA requires a full exploration of all reasonable alternatives, including alternatives **TO** delivering Missouri River water to the Hudson Bay Basin. Failure of the Environmental Impact Statement to address alternatives to the current NAWS project, including utilizing water supplies within the Hudson Bay Basin, objectively and substantively will render it inadequate under the National Environmental Policy Act and Council on Environmental Quality Regulations, and make it vulnerable to further litigation.

In order not to create additional bias against the full consideration of alternatives to the proposed action mandated by the National Environmental Policy Act, the Bureau should suspend all further construction on the NAWS project until full compliance with the Act has been achieved.

Eliminating Bias in the Preparation of the Environmental Impact Statement

Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act make it very clear that any Environmental Impact Statement:

> ". . . prepared pursuant to the requirements of NEPA shall be prepared directly by or by a contractor selected by the lead agency . . . It is the intent of these regulations that the contractor be chosen solely by the lead agency, or by the lead agency in cooperation with cooperating agencies, or where appropriate by a cooperating agency **to avoid conflict of interest**. Contractors shall execute a disclosure statement prepared by the lead agency . . . specifying that they have no **financial or other interest in the outcome of the project**." (Emphasis added)

The EA for the NAWS project was prepared by private contractors for the North Dakota State Water Commission, the Garrison Diversion Conservancy District, and the Bureau of Reclamation. Both the North Dakota State Water Commission and the Garrison Diversion Conservancy District have mandates under North Dakota statutes to promote and pursue the diversion of water from the Missouri River into the Hudson Bay Basin of North Dakota. For example, North Dakota Century Code § 61-02-01.1 dealing with the State Water Commission directs that:

> "The commission shall design the program to serve the long-term water resource needs of the state and its people and **to protect the state's current usage of, and the state's claim to, its proper share of Missouri River water**." (Emphasis added)

Similarly, North Dakota Century Code § 61-24-01 establishing the Garrison Diversion Conservancy District declares the construction of the Garrison Diversion Unit to be a public necessity in order:

> "To make available within the district, **waters diverted from the Missouri River** for irrigation, domestic, municipal, and industrial needs, and for hydroelectric power, recreation, fish, wildlife, and other beneficial and public purposes." (Emphasis added)

The EA was prepared for the State Water Commission, the Garrison Diversion Conservancy District and the Bureau by Houston Engineering, Inc., American Engineering P.C., Montgomery Watson and Bluestem Incorporated, all of which have long histories of contractual relationships with the North Dakota State Water Commission, the Garrison Diversion Conservancy District, and others with vested interests in Missouri River diversion and which, consequently, have clear financial interests in the outcome of the NAWS project.

In order to avoid these clear conflicts of interest and institutional and contractual biases in the Environmental Impact Statement for the NAWS project, the Bureau must (1) prepare the EIS itself, (2) exercise sole authority in selecting any contractors, and (3) assure that any contractors are free of historical or current financial or contractual relationships with the State Water Commission, the Garrison Diversion Conservancy District, or others with a vested interest in the NAWS project and/or Missouri River diversion.

Sincerely,

Gary L. Pearson, D.V.M.

COMMENTS OF
NATIONAL WILDLIFE FEDERATION
ON THE
U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
GREAT PLAINS REGION
DAKOTAS AREA OFFICE

DECEMBER 2007

NORTHWEST AREA WATER SUPPLY PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT ON WATER TREATMENT

Prepared by

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and

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March 26, 2008

INTRODUCTION

On December 21, 2007, the U. S. Bureau of Reclamation (Bureau) Great Plains Regional Office released a *Northwest Area Water Supply Project Draft Environmental Impact Statement on Water Treatment* (Draft EIS). Under "Proposed Action," the Draft EIS states:

> "Reclamation proposes to construct a biota water treatment plant (WTP) for the Project to treat the source water from Lake Sakakawea before it is delivered into the Hudson Bay drainage. Four alternative courses of action have been developed to further reduce the risk of transferring potentially invasive species from the Missouri River basin to the Hudson Bay basin. . . " (Draft EIS, p. 1-5)

In its October 22, 2002, Complaint in Government of Manitoba v. Norton et al. challenging the adequacy of the 2001Environmental Assessment (EA) for the Northwest Area Water Supply (NAWS) Project prepared by an engineering consulting firm with long-standing relationships with the North Dakota State Water Commission and the Garrison Diversion Conservancy District, and the 2001 Finding of No Significant Impact (FONSI) prepared by the U. S. Bureau of Reclamation, the Government of Manitoba asked the United States District Court for the District of Columbia to issue a declaratory judgment requiring the defendants to:

> ". . .prepare, make available for public comment and consider in their decision-making process an EIS [Environmental Impact Statement] on the NAWS Project in accordance with Section 102(2)(C) of NEPA [National Environmental Policy Act] and its implementing regulations."

In her February 3, 2005, Memorandum Opinion, United States District Court Judge Rosemary M. Collyer stated:

> "Until BOR [Bureau of Reclamation] has completed a more thorough EA, the question of whether an EIS is required remains open and the Court will not grant the request for declaratory and injunctive relief requiring production of an EIS. **The decision to issue an EIS is committed to the agency's discretion** and any judicial review of a substantive finding of no significant impact is deferential [citations omitted]. The Court has identified a preliminary deficiency in the agency's decision not to issue an EIS—a limited finding that the agency has failed to take a 'hard look.' A determination of whether the agency's failure to issue an EIS is supportable would be premature.
>
> Although it will not order production of an EIS, the Court notes that Manitoba has raised the specter of **significant environmental consequences that deserve serious consideration**. . ." (Emphasis added)

In her Memorandum Opinion, Judge Collyer specifically noted that:

> "Federal Defendants argue that the risks of leakage are low and, therefore, that no further study is necessary. They repeatedly provide varied estimates that more than ninety-nine percent of biota will be disinfected under NAWS. While facially compelling, the argument ignores the fact that certain biota have been identified that may be impervious or highly-resistant to the planned treatment. Therefore, **even a low risk of leakage may be offset by the possibility of catastrophic consequences should leakage occur. Without some reasonable attempt to measure these consequences instead of**

> **bypassing the issue out of indifference, fatigue, or through administrative legerdemain, the Court cannot conclude that BOR took a hard look at the problem**." (Emphasis added)

Therefore, Judge Collyer:

> ". . . **Ordered** that the case be **REMANDED** to the agency for completion of an **Environmental Assessment** that considers an integrated analysis of the **possibility** of leakage **and the potential consequences** of the failure to fully treat the Missouri River at its source given the agency's awareness of treatment-resistant biota. After doing so, the agency is **ORDERED** to revisit its finding of no significant impact." (Emphasis of non-capitalized words added)

On March 6, 2006, the Bureau issued a Notice of Intent in the *Federal Register*.

> "The notice announced Reclamation's intent to prepare an **Environmental Impact Statement** (EIS) to address issues identified in the Court order and evaluate **water treatment alternatives** that would further reduce the risk of transferring invasive species from the Missouri River drainage to the Hudson Bay drainage through the construction and operation of the Project. When completed, this EIS will fulfill the Courts [sic] order for an integrated analysis of pipeline leakage **and potential consequences** of the failure to fully treat the Missouri River water prior to crossing the basin divide into the Hudson Bay drainage." (Emphasis added) (Draft EIS, pp. 1-4, 1-5)

In its April 2006 *Reclamation Managing Water in the West* brochure on Public Scoping of the Northwest Area Water Supply Project Environmental Impact Statement, the Bureau's Dakota Area Office stated that:

> "The Bureau of Reclamation will prepare an Environmental Impact Statement on the Northwest Area Water Supply (NAWS) **Project**. . . **This Federal action** is subject to requirements of the National Environmental Policy Act (NEPA)." (Emphasis added)

Therefore, the Court had noted that "the specter of significant environmental consequences that deserve serious consideration" had been raised, but stated that "the decision to issue an EIS is committed to the agency's discretion." The Bureau then made a decision to prepare an EIS on the NAWS project "subject the requirements of the National Environmental Policy Act." Section 102(2)(C) of the National Environmental Policy Act specifies that all agencies of the Federal Government shall:

> "(C) include in every recommendation or report on proposals for legislation or any other major Federal actions significantly affecting the quality of the environment, a detailed statement by the responsible official on—
>
> (i) the **environmental impact of the proposed action**,
> (ii) any adverse environmental effects which cannot be avoided should the proposed action be implemented,
> (iii) **alternatives to the proposed action,**
> (iv) the relationship between the local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
> (v) **any irreversible and irretrievable commitments of resources** which would be involved in the proposed action should it be implemented."
>
> (Emphasis added)

When the Bureau made the decision "to prepare an Environmental Impact Statement on the Northwest Area Water Supply Project. . . subject to the requirements of the National Environmental Policy," it made a commitment to do exactly that, i.e., prepare a detailed statement on the environmental impacts of the NAWS Project, alternatives to the NAWS Project, and any irreversible and irretrievable commitments of resources resulting from the construction and/or operation of the NAWS Project.

It should be noted again that Judge Collyer's Order specifically remanded the case to the Bureau:

> ". . . for completion of an **Environmental Assessment** that considers an integrated analysis of the **possibility** of leakage and the **potential consequences** of failure to fully treat Missouri River water at its source. . ." (Emphasis added)

In her Memorandum Opinion, Judge Collyer made a separate determination that:

> "Until BOR has completed a more thorough EA, the question of whether an EIS is required remains open. . . **The decision to issue an EIS is committed to the agency's discretion**. . .
>
> Although it will not order production of an EIS, the Court notes that Manitoba has raised the specter of **significant environmental consequences that deserve serious consideration**. . ." (Emphasis added)

Given that it was the Bureau's decision to prepare an Environmental Impact Statement for the NAWS Project, for the EIS to comply with the requirements of the National Environmental Policy Act, it clearly would have to demonstrate serious consideration of the potentially significant environmental consequences of the project. In addition, the courts have held that a thorough consideration of alternatives is central to the purpose of NEPA. For example, in Calvert Cliffs v. Atomic Energy Commission (2 ERC 1779) 449 F.2d 1109 (D.C. Cir., 1971), cert. denied 404 U.S. 942 (1972), the U. S. Court of Appeals for the District of Columbia found, regarding the consideration of alternatives in the EIS, that:

> "This requirement, like the 'detailed statement' requirement, seeks to insure that each agency decision-maker has before him and takes into proper account all possible approaches to a particular project (including total abandonment of the project) which would **alter the environmental impact** and the cost-benefit balance. **Only in that fashion is it likely that the most intelligent, optimally beneficial decision will ultimately be made**. . ." (Emphasis added)

The same U.S. Court of Appeals also held in Natural Resources Defense Council v. Morton (3 ERC 1473, 1558, 1623) 337 F.Supp. 165 (D.DC., 1971), 337 F.Supp. 167 (D.DC., 1971), 458 F2d 827 (DC Cir., 1971) 337 F.Supp. 170 (D.DC., 1972), that Federal agencies may not disregard alternatives simply because they "do not offer a complete solution to the problem."

In NRDC v. Morton, the U. S. Court of Appeals stated that:

> "Congress contemplated that the impact statement would constitute the environmental source material for the information of the Congress as well as the Executive, in connection with the making of relevant decisions, and would be available to enhance enlightenment of and by the public. The impact statement provides a basis for (a)

> **evaluation of the benefits of the proposed action in light of its environmental risks, and** (b) **comparison of the net balance for the proposed project with the environmental risks presented by alternative courses of action**." (Emphasis added)

In Environmental Defense Fund v. Corps of Engineers (Gillham Dam) (2 ERC 1260, 4 ERC 1097, 1721 5 ERC 1416 325 F.Supp. 728 (D.EArk., 1971), 342 F.Supp. 1211 (D. Eark., 1972), 470 F.2d 289 (8th Cir., 1972), cert denied, 412 U.S. 908 (June 4, 1973), the District Court held that the range of alternatives to be considered must extend from the alternative of rejecting the proposed action up to and including **alternatives that would fully accomplish the goal of the proposed action but would avoid all of its objectionable features**.

Finally, the Courts have consistently rejected Environmental Impact Statements when they have covered such a small part of an overall project that the proper discussion of alternatives was precluded. (See, e.g., Committee to Stop Route 7 v. Volpe (4 ERC 1329, 1681) 346 F.Supp. 731 (D. Conn, 1972) F.Supp. (D. Conn. 1972); Keith v. Volpe (4 REC 1350, 1562) - - F. Supp. - - (D. Ccal., 1972) - - F.Supp. - - (D. Ccal., 1972); Indian Lookout Alliance v. Volpe (4 ERC 1449 5 ERC 1749, 345 F.Supp. 1167 (D. SIowa, 1972), 484 F.2d 11 (8th Cir, 1973).

However, instead of preparing an adequate EIS that addresses the potentially significant environmental impacts of the NAWS Project and discusses alternatives to the Project that would avoid its objectionable features, the Bureau has attempted to circumvent the Court's Memorandum Opinion and Order and the National Environmental Policy Act by preparing a Draft EIS but limiting it to the narrow issue of evaluating:

> "**water treatment alternatives** that would further reduce the risk of transferring invasive species from the Missouri River drainage to the Hudson Bay drainage through the construction and operation of the Project." (Emphasis added) (Draft EIS, p. 1-4)

Consequently, the *Northwest Area Water Supply Project Draft Environmental Impact Statement of Water Treatment* is deliberately and specifically designed to preclude the thorough evaluation of alternatives to the NAWS Project that is required by NEPA.

ENVIRONMENTAL IMPACT ANALYSIS

As noted above, in her February 3, 2005, Memorandum Opinion, Judge Collyer explicitly pointed out that:

> ". . . **even a low risk of leakage may be offset by the possibility of catastrophic consequences should leakage occur**. Without some reasonable attempt **to measure these consequences instead of bypassing the issue** out of indifference, fatigue, or through administrative legerdemain, **the Court cannot conclude the BOR took a hard look at the problem**." (Emphasis added)

Consequently, in her Order, Judge Collyer specifically directed the Bureau to prepare an environmental impact document:

> "that considers an integrated analysis of the possibility of leakage **and the potential consequences** of the failure to fully treat the Missouri River water at its source. . ." (Emphasis added)

However, the Draft EIS simply presents another risk analysis concluding that:

> "The risks of transferring invasive species via the Project's facilities have been carefully estimated and are on the low to very low end of the scale." (Draft EIS, p. 4-17)

Although the Draft EIS acknowledges that:

> "Because of the number and complexity of competing pathways, **it is difficult to quantify the risk of transferring invasive species through non-Project pathways**." (Emphasis added) (Draft EIS, p. 4-13)

it nevertheless concludes that:

> "The probability of Project-related biological invasions **was much lower** and less variable **than for any of the competing non-Project pathways** considered in the simulation." (Emphasis added) (Draft EIS, p. 4-13)

Of course, if the risk of transferring invasive species through non-Project pathways cannot be reliably determined, any comparison of the risks from non-Project pathways with the risk of Project-related invasions will be correspondingly unreliable.

However, the most obvious deficiency of the Draft EIS's analysis of the environmental impacts of the NAWS Project is its defiant rejection of Judge Collyer's explicit order to take a hard look at the potential consequences of the introduction of invasive species from the Missouri River Basin into the Hudson Bay Basin as a result of the NAWS Project. Instead, the Bureau obdurately continues to bypass the issue through deliberate administrative legerdemain. For example, instead of addressing Judge Collyer's conclusion that "even a low risk of leakage may be offset by the possibility of catastrophic consequences" so "[w]ithout some reasonable attempt to measure these consequences. . . the Court cannot conclude that the BOR took a hard look at the problem," after acknowledging that:

> "An interbasin water transfer could provide a pathway for introducing invasive aquatic species to the Hudson Bay basin." (Draft EIS, p. 4-5)

the Bureau cavalierly dismisses the Judge's concerns with statements such as:

> "The statutory provisions of NEPA (and Council on Environmental Quality's regulations implementing NEPA) do not require the assessment of environmental impacts within the territory of a foreign country; therefore this type of evaluation is considered outside the scope of the EIS." (Draft EIS, p. 1-9)

Consequently, there simply is no discussion anywhere in the Draft EIS of the potentially catastrophic consequences of the introduction of invasive species from the Missouri River Basin into either the Canadian or U.S. portions of the Hudson Bay Basin by the NAWS Project (including waters and ecosystems in North Dakota such as the Des Lacs, Upper Souris and J. Clark Salyer National Wildlife Refuges and waters of the Red River Basin).

CUMULATIVE ENVIRONMENTAL IMPACTS

The same day (December 21, 2007) that the Bureau released its *Northwest Area Water Supply Project Draft Environmental Impact Statement on Water Treatment*, it also released a *Final Environmental Impact Statement, Red River Valley Water Supply Project*, identifying as its preferred alternative the Garrison Diversion Unit Import to Sheyenne River, which would deliver 810,450 acre-feet of water from the Missouri River to the Hudson Bay Basin during the 10-year course of a 1930s-type drought. The NAWS project is authorized to deliver 15,000 acre-feet of water annually from the Missouri River to the Hudson Bay Basin (Draft EIS, p. 1-1), or a total of 150,000 acre-feet during a 1930s-type drought, bringing the total diversion of Missouri River water to the Hudson Bay Basin in a 1930s-type drought to 960,450 acre-feet from just these two projects alone. However, the NAWS Draft EIS does not address the cumulative impacts on the Missouri River of these two projects, along with the scores of other public and private projects that withdraw water from the river.

Despite the Bureau's having just endorsed the Garrison Diversion Unit Import to Sheyenne River as the preferred Red River Valley Water Supply Project alternative, the Bureau's NAWS Project Draft EIS simply dismisses the issue of cumulative impacts with the patently false statement that:

> "No other federal, state or local government actions in the Project area that would cumulatively lead to increased risk of transferring invasive species were identified." (Draft EIS p. 4-17)

Clearly, even if the risks of invasive biota transfer were low in each project, those risks would be cumulative.

ALTERNATIVES

The attached *Comments regarding sc~~o~~oping of the Draft Environmental Impact Statement for the Northwest Area Water Supply Project* pointed out specifically that:

> "Section 102(2(C)(iii) [of the National Environmental Policy Act] specifies that Environmental Impact Statements are to address 'alternatives to the proposed action,' and Council on Environmental Quality Regulations and the courts have made it clear that Federal agencies are not simply to consider alternatives for implementing the proposed action, but they are to explore all reasonable alternatives to the proposed action . . .
>
> The EA for the NAWS project considered alternatives **FOR** supplying Missouri River water to eleven communities and five rural water systems in the Hudson Bay Basin of North Dakota, but it did not seriously consider alternatives **TO** supplying Missouri River water to those communities and rural water systems. The EA acknowledged that 'sufficient groundwater supply is available in nearly every location of the NAWS area,' but the only alternative other than using Missouri River water considered in the EA was to drill more wells for six communities and to construct 18 separate reverse osmosis systems, one for each of the 13 communities (except Parshall) and five rural water systems in the NAWS project area.
>
> Certainly, construction of 18 individual reverse osmosis systems to serve communities as small as Columbus (pop. 223), Noonan (pop. 231) and Souris (pop. 97) would be among the least feasible groundwater alternatives that could be designed (because a multitude of

individual facilities would fail to take advantage of the economies of scale of larger, more consolidated facilities). Even so, according to the EA, this alternative would cost only $27 million more than the preferred alternative utilizing an integrated Missouri River supply for the communities and rural water systems located in the Hudson Bay Basin. However, neither the EA nor the reports it cites considers alternative configurations utilizing integrated groundwater supplies that would reduce the number of wells and reverse osmosis systems needed.

For example, according to the EA, the projected 2010 combined 47,095 population of Minot and the Minot Air Force Base is 82 percent of the total combined population of the communities and rural water systems in the Hudson Bay Basin to be supplied with Missouri River water under the NAWS project. Therefore, one obvious alternative would be to increase the supply from the Sundre Aquifer[1] and the capacity of the Minot water treatment by 21 percent to provide water to the additional 10,114 people in the small communities and rural water systems in the Hudson Bay Basin to be served by the NAWS project. Water could be distributed to those communities and rural water systems through the same 304 miles of distribution pipelines that would be used to deliver Missouri River to them under the preferred alternative, and the cost savings from not building 45 miles of pipeline from the Missouri River and not building and operating the biota treatment plant could be used to expand the Minot water treatment facility. Of course, other alternatives utilizing integrated groundwater supplies should also be discussed and evaluated in the Environmental Impact Statement.

It should be noted in this context that the fact that the Bureau violated NEPA by not adequately considering alternatives to the proposed action in the EA for the NAWS project may not be cited as an excuse for continuing to fail to evaluate alternatives to the proposed action in the Environmental Impact Statement. Consequently, the Bureau may not cite the fact at construction already is underway on the pipeline from the Missouri River to Minot to justify not considering alternatives **TO** the construction of a pipeline from the Missouri River to Minot.

[1] The 15,000 acre-feet per year maximum permitted withdrawal from the Missouri River for the NAWS project would be equivalent to 13,368,898 gallons per day. The 1970 *Preliminary Report on the Ground-Water Conditions In the Vicinity of Minot, North Dakota* prepared by Wayne A. Pettyjohn of Columbus, Ohio, and published by the City of Minot City Manager's Office determined that, "In general, the quality of water in the Sundre aquifer is good for drinking and many industrial purposes. It contains less dissolved minerals than several of the existing municipal wells." And, "That part of the Sundre aquifer in Township 154 North and Ranges 81 and 82 East contains a huge volume of water in storage. . . This underground reservoir, as it extends from the south end of Minot to the McHenry County line contains more than 384,000 acre-feet of water. At a withdrawal rate of 6 mgd [million gallons per day], and no recharge to the aquifer, this quantity would last for more than 50 years!" Therefore, just the portion of the Sundre Aquifer south of Minot alone could provide nearly half of the maximum annual water supply for the NAWS project for 50 years, even if there were no recharge of the aquifer. However, the Pettyjohn Report goes on to state that, "Future pumping from wells tapping the lower aquifer will result in induced infiltration from the Souris River to the Lower Souris aquifer and from the Lower Souris Aquifer into the Sundre aquifer. This, in turn, means that large areas are available for natural recharge. In fact, more than 28 square miles provided recharge during the pumping test." Consequently, with normal recharge, the portion of the Sundre Aquifer south of Minot could provide an even greater portion of the water supply for the NAWS project. Additional groundwater sources include continued use of the Minot Aquifer and development of the portion of the Sundre Aquifer northwest of Minot and the Lower Souris Aquifer. According to the Pettyjohn Report, "The quality of water in the Lower Souris aquifer is suitable for most municipal and industrial uses." And, "Properly constructed, fully-penetrating wells could produce as much as 1,000 gpm with about 12 feet of drawdown."

Unfortunately, however, that is exactly what the Bureau is proposing to do in the Dakotas Area Office's *RECLAMATION Managing Water in the West, Northwest Area Water Supply Project* on "Environmental Impact Statement: Public Scoping," which states:

> "Reclamation proposes to study and evaluate alternative **water treatment methods** to minimize the risk of transferring non-native biota **from the Missouri River Basin to the Hudson Bay Basin through the NAWS project**." (Emphasis added)

Although the Bureau's decision to prepare an Environmental Impact Statement on the NAWS project is the result of a ruling by the U.S. District Court for the District of Columbia in a suit brought by the Province of Manitoba challenging the adequacy of the EA's discussion of impacts of the project in Canada and alternatives for minimizing those impacts, NEPA requires a full exploration of all reasonable alternatives **TO** delivering Missouri River water to the Hudson Bay Basin. The alternative of development of groundwater resources within the Souris River basin has the potential to entirely avoid creating the water pathway for transfer of invasive species to the Hudson Bay drainage that is inherent in the Missouri importation approach. Failure of the Environmental Impact Statement to address alternatives to the current NAWS project, including utilizing water supplies within the Hudson Bay Basin, objectively and substantively will render it inadequate under the National Environmental Policy Act and Council on Environmental Quality Regulations, and make it vulnerable to further litigation.

Nevertheless, the Draft EIS continues to consider only alternatives **for** treating Missouri River water delivered to the Hudson Bay Basin by the NAWS Project, and it fails to consider any alternatives **TO** the delivery of Missouri River water to the Hudson Basin. Consequently, not only does the Draft EIS cover such a small portion of the overall NAWS project as to preclude a proper discussion of alternatives, but it also precludes consideration of alternatives that would avoid all of the NAWS Project's objectionable features.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The Mitchell, South Dakota *Daily Republic* reported in a December 15, 2007, story that:

> "There are 27 tribes in the Missouri River basin. If all of their water rights are quantified, predicted Dale Frink, one of North Dakota's representatives at this week's MoRAST meeting in Pierre, they could secure rights to an enormous amount of water.
>
> '**If they all would do it, they would tie up a chunk of water, if not all of it,**' **said Dale Frink, an engineer with the North Dakota State Water Commission. '**I don't know if I should say "tie up," but certainly they could quantify a huge amount of water.'" (Emphasis added)

The Draft EIS for the NAWS Project acknowledges that:

> ". . . there could be a potential Indian water rights issue." (Draft EIS, p. 4-25)

but instead of addressing this very significant issue substantively, the Draft EIS summarily dismisses it with three brief and cursory paragraphs:

> "**Water Rights**
> If Missouri River tribes quantify their reserved water rights and put the water to beneficial use, the volume of water available for other users in the basin may be affected. The Corps [citation omitted] has stated, 'until such time as the tribes quantify their rights and consumptively withdraw their water from the Mainstem Reservoir System, the water is in the system.' The Corps intends to operate the Missouri River using the water currently in the system.
>
> Any future tribal rights settlements may require additional analysis of potential impacts on the Missouri River System.
>
> **Cumulative Effects**
> With respect to potential Indian water rights to the Missouri river, cumulative effects concern the amount of water that potentially would be available for other projects if tribes quantified their reserved rights. **Quantification could affect Project water users and other Missouri River water users with permits junior to Indian water rights.**" (Emphasis added) (Draft EIS, p. 4-25)

Obviously, the **Corps** is going to operate the Missouri River Mainstem Reservoir System using the water in the system. What the Draft EIS fails to address is the **Secretary of the Interior's** responsibility under the Winters Doctrine to protect and preserve Tribal water rights to the Missouri River, or to consider that the Federal Government has had to make very substantial financial compensation payments to Tribes when the Secretary has failed to fulfill that responsibility in the past. Consequently, the Draft EIS does not address the fact that the Bureau and the State of North Dakota are deliberately proceeding with a Northwest Area Water Supply Project with the full knowledge that it (1) disregards Tribal water rights to the Missouri River established under the Winters Doctrine, (2) violates the Secretary of the Interior's responsibility under the Winter's Doctrine to protect Tribal water rights, and (3) could cost additional millions of dollars in compensation to the Tribes for Missouri River water used by the NAWS Project. The DEIS also does not discuss how the costs of compensation to the Tribes could affect the costs to water users and the economic feasibility of the project, nor does it consider alternatives that would avoid this objectionable feature of the project.

SUMMARY

Because the Draft EIS for the NAWS Project fails to (1) describe the potentially significant environmental impacts of the project, (2) consider alternatives to the project, (3) discuss cumulative impacts to the Missouri River, or (4) address the Secretary of the Interior's responsibility under the Winters Doctrine to protect and preserve Tribal water rights to the Missouri River, the Draft EIS is inadequate on its face and deficient as a matter of law. Because the Draft so fundamentally fails to meet basic NEPA and other environmental law and treaty-related requirements, we believe the Bureau must set aside this draft and formulate a wholly new draft, properly scoped, to correct its deficiencies and to allow the public to have an opportunity to comment on the full range of issues and alternatives required by the CEQ regulations and the relevant federal laws.

Thank you for the opportunity to provide the views of the National Wildlife Federation on this document. If you have further questions regarding the views herein presented or any of the points we have raised, please do not hesitate to call or write at: David Conrad, Senior Water Resources Specialist, National Wildlife Federation, 1400 16th Street, NW, Washington DC, 20036, phone 202-797-6697, or email at **conrad@nwf.org**.

Attachment A

GARY L. PEARSON, D.V.M.
1305 Business Loop East
Jamestown, North Dakota 58401
Telephone (701) 252-6036
Facsimile (701) 251-6160
Email: geparson@daktel.com

April 14, 2006

Re: Comments regarding scoping of the Draft Environmental Impact Statement for the Northwest Area Water Supply Project

Northwest Area Water Supply Project EIS
U. S. Bureau of Reclamation
Dakotas Area Office
P. O. Box 1017
Bismarck, North Dakota 58502-1017

Dear Sir or Madam:

The Environmental Assessment (EA) prepared for the Bureau of Reclamation's Northwest Area Water Supply Project (NAWS) by Houston Engineering, Inc., American Engineering, P.C., Montgomery Watson, and Bluestem Incorporated in 2001 failed to comply with the requirements of the National Environmental Policy Act in three fundamental and important respects:

1. The Environmental Assessment failed to describe adequately the environmental impacts of the proposed action.

2. The Environmental Assessment failed to consider alternatives to the proposed action.

3. The Environmental Assessment was not prepared by the Bureau of Reclamation or in cooperation with unbiased, independent contractors.

In order to comply with the requirements of the National Environmental Policy Act, it will be necessary for the Bureau of Reclamation to address each of these deficiencies substantively and objectively in the Environmental Impact Statement (EIS) that now is being prepared for the project.

Environmental Impacts of the Proposed Action

Section 102(2)(C) of the National Environmental Policy Act requires Federal agencies to prepare a "detailed statement" describing the environmental impacts of proposed actions significantly affecting the quality of the human environment, and the courts have confirmed that environmental impact statements are to be full disclosure documents.

The EIS must not only describe the environmental impacts that will occur in the immediate area of the project and the risk of impacts occurring in other areas, but it must provide a detailed discussion of the environmental impacts both in the local area and in other areas. Therefore, instead of concluding that, because the risks of transfer of invasive species from the Missouri River Basin to the Hudson Bay basin under NAWS are determined to be low, the impacts of biota transfer need not be considered, the EIS must provide a detailed discussion of the environmental impacts of such low probability/high consequence events.

The EIS must also include a detailed analysis of the cumulative impacts of the NAWS project on the Missouri River in terms of current authorized and proposed or anticipated future withdrawals from the river under a full range of conditions, including the operation of Red River Valley Water Supply Project Missouri River supply alternatives during prolonged droughts in the Missouri and Red River basins.

Alternatives to the Proposed Action

Section 102(2)(C)(iii) specifies that Environmental Impact Statements are to address "alternatives to the proposed action," and Council on Environmental Quality Regulations and the courts have made it clear that Federal agencies are not simply to consider alternatives for implementing the proposed action, but they are to explore all reasonable alternatives to the proposed action. For example, in *NRDC v. Morton*, the U. S. Court of Appeals for the District of Columbia stated:

> "Congress contemplated that the impact statement would constitute the environmental source material for the information of the Congress as well as the Executive, in connection with the making of relevant decisions, and would be available to enhance enlightenment of and by the public. The impact statement provides the basis for (a) evaluation of the benefits of the proposed action in light of its environmental risks, and (b) comparison of the net balance for the proposed project with the environmental risks presented by alternative courses of action."

The EA for the NAWS project considered alternatives **FOR** supplying Missouri River water to eleven communities and five rural water systems in the Hudson Bay Basin of North Dakota, but it did not seriously consider alternatives **TO** supplying Missouri River water to those communities and rural water systems. The EA acknowledged that "sufficient groundwater supply is available in nearly every location of the NAWS area," but the only alternative other than using Missouri River water considered in the EA was to drill more wells for six communities and to construct 18 separate reverse osmosis systems, one for each of the 13 communities (except Parshall) and five rural water systems in the NAWS project area.

Certainly, construction of 18 individual reverse osmosis systems to serve communities as small as Columbus (pop. 223), Noonan (pop. 231) and Souris (pop. 97) would be among the least feasible groundwater alternatives that could be designed. Even so according to the EA, this alternative would cost only $27 million more than thee preferred alternative utilizing an integrated Missouri River supply for the communities and rural water system located in the Hudson Bay Basin. However, neither the EA nor the reports it cites considers alternative configurations utilizing integrated groundwater supplies that would reduce the number of wells and reverse osmosis systems needed.

For example, according to the EA, the projected 2010 combined 47,095 population of Minot and the Minot Air Force Base is 82 percent of the total combined population of the communities and

rural water systems located in the Hudson Bay Basin to be supplied with Missouri River water under the NAWS project. Therefore, one obvious alternative would be to increase the supply from the Sundre Aquifer and the capacity of the Minot water treatment facility by 21 percent to provide water to the additional 10,114 people in the small communities and rural water systems in the Hudson Bay Basin to be served by the NAWS project. Water could be distributed to those communities and rural water systems through the same 304 miles of distribution pipelines that would be used to deliver Missouri River water to them under the preferred alternative, and the cost savings from not building 45 miles of pipeline from the Missouri River and not building and operating the biota treatment plant could be used to expand the Minot water treatment facility. Of course, other alternatives utilizing integrated groundwater supplies also should be discussed and evaluated in the Environmental Impact Statement.

It should be noted in this context that the fact that the Bureau violated NEPA by not adequately considering alternatives to the proposed action in its EA for the NAWS project may not be cited as an excuse for continuing to fail to evaluate alternatives to the proposed action in the Environmental Impact Statement. Consequently, the Bureau may not cite the fact that construction already is underway on the pipeline from the Missouri River to Minot to justify not considering alternatives **TO** the construction of a pipeline from the Missouri River to Minot.

Unfortunately, however, that is exactly what the Bureau is proposing to do in the Dakotas Area Office's *RECLAMATION Managing Water in the West, Northwest Area Water Supply Project* on "Environmental Impact Statement: Public Scoping," which states:

> "Reclamation proposes to study and evaluate alternative **water treatment methods** to minimize the risk of transferring non-native biota **from the Missouri River Basin to the Hudson Bay Basin through the NAWS project**." (Emphasis added)

Although the Bureau's decision to prepare an Environmental Impact Statement on the NAWS project is the result of a ruling by the U. S. District Court for the District of Columbia in a suit brought by the Province of Manitoba challenging the adequacy of the EA's discussion of impacts of the project in Canada and alternatives for minimizing those impacts, NEPA requires a full exploration of all reasonable alternatives, including alternatives **TO** delivering Missouri River water to the Hudson Bay Basin. Failure of the Environmental Impact Statement to address alternatives to the current NAWS project, including utilizing water supplies within the Hudson Bay Basin, objectively and substantively will render it inadequate under the National Environmental Policy Act and Council on Environmental Quality Regulations, and make it vulnerable to further litigation.

In order not to create additional bias against the full consideration of alternatives to the proposed action mandated by the National Environmental Policy Act, the Bureau should suspend all further construction on the NAWS project until full compliance with the Act has been achieved.

Eliminating Bias in the Preparation of the Environmental Impact Statement

Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act make it very clear that any Environmental Impact Statement:

> ". . . prepared pursuant to the requirements of NEPA shall be prepared directly by or by a contractor selected by the lead agency . . . It is the intent of these regulations that the contractor be chosen solely by the lead agency, or by the lead agency in cooperation with cooperating agencies, or where appropriate by a cooperating agency **to avoid conflict of**

> **interest**. Contractors shall execute a disclosure statement prepared by the lead agency . . . specifying that they have no **financial or other interest in the outcome of the project**." (Emphasis added)

The EA for the NAWS project was prepared by private contractors for the North Dakota State Water Commission, the Garrison Diversion Conservancy District, and the Bureau of Reclamation. Both the North Dakota State Water Commission and the Garrison Diversion Conservancy District have mandates under North Dakota statutes to promote and pursue the diversion of water from the Missouri River into the Hudson Bay Basin of North Dakota. For example, North Dakota Century Code § 61-02-01.1 dealing with the State Water Commission directs that:

> "The commission shall design the program to serve the long-term water resource needs of the state and its people and **to protect the state's current usage of, and the state's claim to, its proper share of Missouri River water**." (Emphasis added)

Similarly, North Dakota Century Code § 61-24-01 establishing the Garrison Diversion Conservancy District declares the construction of the Garrison Diversion Unit to be a public necessity in order:

> "To make available within the district, **waters diverted from the Missouri River** for irrigation, domestic, municipal, and industrial needs, and for hydroelectric power, recreation, fish, wildlife, and other beneficial and public purposes." (Emphasis added)

The EA was prepared for the State Water Commission, the Garrison Diversion Conservancy District and the Bureau by Houston Engineering, Inc., American Engineering P.C., Montgomery Watson and Bluestem Incorporated, all of which have long histories of contractual relationships with the North Dakota State Water Commission, the Garrison Diversion Conservancy District, and others with vested interests in Missouri River diversion and which, consequently, have clear financial interests in the outcome of the NAWS project.

In order to avoid these clear conflicts of interest and institutional and contractual biases in the Environmental Impact Statement for the NAWS project, the Bureau must (1) prepare the EIS itself, (2) exercise sole authority in selecting any contractors, and (3) assure that any contractors are free of historical or current financial or contractual relationships with the State Water Commission, the Garrison Diversion Conservancy District, or others with a vested interest in the NAWS project and/or Missouri River diversion.

Sincerely,

Gary L. Pearson, D.V.M.

COMMENTS OF
THE NATIONAL WILDLIFE FEDERATION

ON THE

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
GREAT PLAINS REGION
DAKOTAS AREA OFFICE

DECEMBER 2008

NORTHWEST AREA WATER SUPPLY PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT ON WATER TREATMENT

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INTRODUCTION

The National Wildlife Federation (Federation) submitted extensive comments pointing out fundamental deficiencies in the December 2007 *Northwest Area Water Supply Project Draft Environmental Impact Statement on Water Treatment* (NAWS DEIS) (Pearson and Conrad 2008; NAWS FEIS Appendix C, Letter Number 41) and those comments on the NAWS DEIS are incorporated in these comments on the NAWS FEIS both by reference and by their inclusion in *Northwest Area Water Supply Project Final Environmental Impact Statement on Water Treatment* (NAWS FEIS) Appendix C.

The following comments are not intended to address all of the deficiencies of the NAWS FEIS and of the Bureau's responses to comments on the NAWS DEIS. Rather, their purpose is simply to cite several examples to illustrate the continued failure of the Bureau of Reclamation (Bureau) to comply with the requirements of the National Environmental Policy Act (NEPA) and Council on Environmental Quality regulations in its evaluation of the Northwest Area Water Supply Project.

The Federation's comments documented four fundamental deficiencies of the NAWS DEIS that rendered it deficient as a matter of law in meeting the most basic requirements of the National Environmental Policy Act and other environmental law and treaty-related requirements, as well as the February 3, 2005, Opinion and Order of the United States District Court for the District of Columbia. Those fundamental deficiencies of the NAWS DEIS include:

(1) failure to describe the potentially significant environmental impacts of the NAWS project,

(2) failure to consider alternatives to the NAWS project,

(3) failure to address cumulative impacts of the NAWS project to the Missouri River and,

(4) failure to address the Secretary of the Interior's responsibility under the Winters Doctrine to protect and preserve Tribal water rights to the Missouri River.

Because these deficiencies are so fundamental and so serious, they rendered the NAWS DEIS inadequate on its face in meeting the requirements of NEPA. Consequently, the Federation recommended that the Bureau of Reclamation set aside the DEIS and formulate a wholly new draft, properly scoped to correct its deficiencies and to allow the public to have an opportunity to comment on the full range of issues and alternatives as required by Council on Environmental Quality regulations and the relevant Federal laws. Instead, the Bureau proceeded directly to a *Northwest Area Water Supply Project Final Environmental Impact Statement on Water Treatment.*

The NAWS FEIS states that:

> "This Final EIS (FEIS) analyzes and discloses the environmental impacts of the proposed action. . . The FEIS has been prepared in compliance with NEPA. This FEIS responds to substantive comments related to environmental issues received on the DEIS with revisions to text, appendices and responses to comments in Appendix C." (NAWS FEIS p. 1-5)

However, these statements are flatly refuted by even a cursory examination of the NAWS FEIS. The NAWS FEIS does not address substantively the environmental impacts of the NAWS project, or even the potential environmental impacts of the interbasin transfer of invasive species from the Missouri River Basin to the Hudson Bay Basin that the various water treatment alternatives are supposed to prevent. In fact, the NAWS FEIS acknowledges that there are only seven "primary changes" from the DEIS (NAWS FEIS p. 1-11), and these are:

(1) Information on how waste from the Minot Water Treatment Plant would be handled.

The new information is limited to five sentences.

- In the No Action Alternative and Basic Treatment Alternative, "the waste stream from the Minot WTP would be either treated to inactivate disinfectant resistant pathogens or transported to an appropriate disposal site as described in the FONSI." (NAWS FEIS pp. 2-6, 2-8).

- With the Conventional Treatment Alternative and the Microfiltration Alternative, "the disposal of waste streams from the Minot WTP will not be a concern." (NAWS FEIS pp. 2-11, 2-12

- "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." (NAWS FEIS p. 4-23)

(2) "The cost estimate for the No Action Alternative was revised based on updated information in a[n unidentified] comment letter."

(3) "Cost estimates for each alternative were indexed to 2008 values."

(4) "The Preferred Alternative was identified and cost estimates were provided."

(5) "Additional information included in chapters three and four describes the potential impacts to waters in the United States portion of the Hudson Bay Basin."

The additional information in Chapter 3 consists of three sentences regarding basin divides being naturally overtopped (NAWS FEIS p. 3-13). The additional information in Chapter 4 consists of approximately four pages of basic biological information on invasive species (NAWS FEIS pp. 4-9 to 4-14) that simply dismiss the potential impacts of interbasin transfer with statements such as:

- "It is not possible to quantify the impacts that an invading species will have on its ecosystem." (NAWS FEIS p. 4-10)

- "Also, it must be noted that even in the absence of an interbasin water transfer, biological invasions of the Hudson Bay basin are likely to occur due to multiple competing pathways. . ." (NAWS FEIS p. 4-10)

(6) "Additional information was included in chapter four describing the potential impacts associated with biological invasions. However these impacts are not necessarily Project-related impacts since numerous competing non-Project pathways could produce the same impact."

As noted above, the NAWS FEIS acknowledges that it provides no substantive information on the potential impacts associated with biological invasions resulting from either Project water transfers or non-Project pathways (NAWS FEIS p. 4-10). However, the NAWS FEIS does acknowledge that:

> "Fish diseases that become established in wild populations may be difficult to control and impossible to eradicate." (NAWS FEIS p. 4-10)

(7) "Appendix C contains responses to the comments received on the DEIS."

The standard responses to comments pointing out deficiencies in the NAWS DEIS are either:

> "The comment is outside the scope of the EIS."

or:

> "Reclamation does not concur with this comment," typically followed by non-substantive discussion, irrelevant or misleading information, and/or quibbling arguments.

Consequently, instead of addressing the serious, fundamental deficiencies in the DEIS, the NAWS FEIS simply perpetuates them.

CONFLICT OF INTEREST AND ABSENCE OF INDEPENDENT OBJECTIVITY IN THE NAWS NEPA PROCESS AND PREPARATION OF THE NAWS EIS

In Attachment A to the National Wildlife Federation's comments on the NAWS DEIS, it was pointed out, regarding scoping of the NAWS EIS, that:

> "Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act make it very clear that any Environmental Impact Statement:
>
> > '. . . prepared pursuant to the requirements of NEPA shall be prepared by or by a contractor selected by the lead agency. . . It is the intent of these regulations that the contractor be chosen solely by the lead agency, or by the lead agency in cooperation with cooperating agencies, or where appropriate by a cooperating agency **to avoid conflict of interest**. Contractors shall execute a disclosure statement prepared by the lead agency. . . specifying that they have no **financial or other interest in the outcome of the project**.' (Emphasis added)
>
> The EA [Environmental Assessment] for the NAWS project was prepared by private contractors for the North Dakota State Water Commission, the Garrison Diversion

Conservancy District, and the Bureau of Reclamation. Both the North Dakota State Water Commission and the Garrison Diversion Conservancy District have mandates under North Dakota statutes to promote and pursue the diversion of water from the Missouri River into the Hudson Bay Basin of North Dakota. For example, North Dakota Century Code § 61-02-01.1 dealing with the State Water Commission directs that:

> 'The commission shall design the program to serve the long-term water resource needs of the state and its people and **to protect the state's current usage of, and the state's claim to, its proper share of Missouri River water**.' (Emphasis added)

Similarly, North Dakota Century Code § 61-24-01 establishing the Garrison Diversion Conservancy District declares the construction of the Garrison Diversion Unit to be a public necessity in order:

> 'To make available within the district, **waters diverted from the Missouri River** for irrigation, domestic, municipal, and industrial needs, and for hydroelectric power, recreation, fish, wildlife and other beneficial and public purposes.' (Emphasis added)

The EA was prepared for the State Water Commission, the Garrison Diversion Conservancy District and the Bureau by Houston Engineering, Inc., American Engineering P.C., Montgomery Watson and Bluestem Incorporated, all of which have long histories of contractual relationships with the North Dakota State Water Commission, the Garrison Diversion Conservancy District, and others with vested interests in Missouri River diversion and which, consequently, have clear financial interests in the outcome of the NAWS project." (Pearson 2006; Pearson and Conrad 2008; NAWS FEIS Appendix C, Letter Number 41)

The Bureau did not respond to this comment (NAWS FEIS Appendix C, Letter Number 41). In fact, the Bureau not only proceeded to rely extensively on information from these same private contractors in preparing the NAWS DEIS, but it perpetuated the conflict of interest in the NAWS FEIS and even compounded it by relying on information from the State Water Commission that was developed by Montgomery Watson Harza and Houston Engineering in evaluating the costs of the water treatment alternatives (NAWS FEIS p. 2-20), including the Preferred Alternative (NAWS FEIS p. 2-21).

The pervasive extent and potentially profound degree of conflict of interest and lack independent objectivity that appears to be inherent in the NEPA process for the NAWS project was exposed by a story in the December 17, 2007, edition of *The Bismarck Tribune* reporting that:

> "Three water leaders from Bismarck were honored during the 44th annual Joint North Dakota Water Convention and Irrigation Expo [sponsored by the North Dakota Water Users Association and the North Dakota Irrigation Association].
>
> Dennis Brietzman [Manager of the Bureau of Reclamation's Dakotas Area Office] was commissioned as a commodore in the Governor's Mythical Navy for his role in **representing North Dakota's water interests** in coordinating with regional and national management levels within the Bureau of Reclamation." (Emphasis added)

It is instructive to note in this context that the ***Environmental Assessment*** for the NAWS project, the Bureau' ***Finding of No Significant Impact*** for the NAWS project, the ***Northwest Area Water Supply Project Draft Environmental Impact Statement on Water Treatment*** and the ***Northwest Area Water Supply Project Final Environmental Impact Statement on Water Treatment*** all appear to have been prepared under Mr. Brietzman's direction as Manager of the Bureau's Dakotas Area Office. However, rather than representing the interests of the Federal Government in assuring that these documents were prepared in full compliance with the National Environmental Policy Act, Mr. Brietzman, a Federal official, instead apparently may have represented the interests of the North Dakota water development establishment, for whom NEPA compliance frequently presents significant obstacles to implementation of its agenda (Pearson 2005).

Mr. Brietzman's acceptance of an award for "representing North Dakota water interests" in dealing with higher management levels of the Bureau regarding North Dakota water projects from organizations with vested interests in Missouri River diversion provides tacit confirmation – at the very least – of what appears to be a conflict of interest and a lack of independent objectivity that is apparently inherent in the NEPA process for the NAWS project.

MISINTERPRETATION OF THE RULING OF THE UNITED STATES DISTRICT COURT

The Bureau cites the February 3, 2005, ruling of the United States District Court for the District of Columbia in an action brought by the Province of Manitoba challenging the adequacy of the EA and Finding of No Significant Impact for the NAWS project as the justification for limiting the scope of the NAWS EIS to the construction of the biota water treatment plant and treatment alternatives for Missouri River water delivered by the NAWS project to the Hudson Bay Basin (NAWS FEIS pp. 1-8, 1-9, 1-10, Appendix C).

The Bureau then attempts to portray the Court's limited finding that the analysis of water treatment options presented in the EA for the NAWS project was inadequate as a determination by the Court that the rest of the EA was adequate (NAWS FEIS Appendix C) when the Court, in fact, made no findings regarding the adequacy of other aspects of the EA.

The Bureau misinterprets the Court's findings to justify limiting the EIS to water treatment alternatives, but at the same time it defies the Court's directive to consider "an integrated analysis of the possibility of leakage and the potential consequences of failure to fully treat the Missouri River water at its source" and to make "some reasonable attempt to measure these consequences instead of bypassing the issue" by claiming that the potential consequences to the environment of the Hudson Bay Basin within Canada are "outside the scope of the EIS" (NAWS FEIS pp. 1-9, 1-10, Appendix C).

The Bureau acknowledges that the Court found that the evaluation of water treatment alternatives in the NAWS EA was inadequate (NWS FEIS p. 1-8), but states that the Secretary of the Interior's 2001determination that the project was in compliance with the Boundary Waters Treaty based on that inadequate EA "remains in effect." (NAWS FEIS Appendix C, Letter Number 5, Response 5-3).

The Bureau's decision not to revisit the Secretary's 2001 determination clearly is not consistent with the Environmental Protection Agency's March 25, 2008, letter commenting on the NAWS DEIS, which stated:

> "EPA looks forward to participating in the consultation with the Secretary of the Interior and the Secretary of State regarding the adequacy of treatment to meet the requirements of the Boundary Waters Treaty of 1909, in accordance with the Dakota Water Resources Act of 2000." (NAWS FEIS Appendix C, Letter Number 34)

It is clear from the reference to "any subsequent FONSI" in its February 3, 2005, Memorandum Opinion that the U. S. District Court also anticipated that the Secretary's 2001 determination would be revisited after an adequate NEPA analysis of the NAWS project had been completed.

ENVIRONMENTAL IMPACT ANALYSIS

The National Wildlife Federation noted in its comments on the NAWS DEIS that United States District Court Judge Rosemary M. Collyer had pointed out in her February 3, 2005, Memorandum Opinion that:

> ". . . **even a low risk of leakage may be offset by the possibility of catastrophic consequences should leakage occur** . . . Without some reasonable attempt to **measure these consequences instead of bypassing the issue** out of indifference, fatigue, or through legislative legerdemain, **the Court cannot conclude that the BOR took a hard look at the problem**." (Emphasis added) (Pearson and Conrad 2008; NAWS FEIS Appendix C, Letter Number 41)

The Federation went on to note that:

> ". . . the most obvious deficiency of the Draft EIS's analysis of the environmental impacts of the NAWS Project is its defiant rejection of Judge Collyer's explicit order to take a hard look at the potential consequences of the introduction of invasive species from the Missouri River Basin into the Hudson Bay Basin as a result of the NAWS project." (Pearson and Conrad 2008; NAWS FEIS Appendix C, Letter Number 41)

However, instead of responding substantively and objectively to Judge Collyer's order to take a hard look at the possibility of catastrophic consequence from the introduction of invasive species from the Missouri River Basin into the Hudson Bay Basin as a result of operation of the NAWS project, and making some reasonable attempt to measure those consequences, the Bureau again cavalierly dismisses the issue in the NAWS FEIS by repeating the same statement from the NAWS DEIS (p. 1-9) 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; therefore this type of evaluation is considered outside the scope of the EIS." (NAWS FEIS pp. 1-9, 1-10)

Of course, the Bureau fails to mention that neither the statutory provisions of NEPA nor the Council on Environmental Quality's regulations implementing NEPA **prohibit** the Bureau from assessing the environmental impacts of the operation of the NAWS project within the territory of the Government of Canada. The National Wildlife Federation believes, in fact, that it is mandatory. The Bureau itself in the NAWS FEIS acknowledges that it has discretion to assess these impacts:

> "**Executive Order 12114 for Environmental Effects Outside of the United States** This order, established in 1979, addresses the issue of how the environmental review process should be implemented for major federal actions having significant effects outside of the borders of the United States. Section 1 of the Executive Order provides that it is the U. S. government's 'exclusive and complete determination of the procedural and other actions to be taken by Federal agencies to further the purpose of the National Environmental Policy Act, with respect to the environment outside the U. S. territories and possessions.'" (NAWS FEIS p. 5-6)

It is instructive to note in this context that the NAWS FEIS also explains, regarding the Garrison Diversion Unit Reformulation Act of 1986, which authorized $200 million in Federal funds for water supply projects in North Dakota, and the Dakota Water Resources Act of 2000, which authorized another $200 million in Federal funds for water projects in North Dakota, that:

> "Each act includes language on compliance with the Boundary Waters Treaty established between the U. S. and Canada. Section 1(h) of the Dakota Water Resources Act states that 'Prior to the construction of any water system authorized under this Act to deliver Missouri River water into the Hudson Bay basin, the Secretary, in consultation with the Secretary of State and the Administrator of the Environmental Protection Agency, must determine that adequate treatment can be provided to meet the requirement of the Treaty . . .' It goes on to state that all costs attributable to meeting the requirements of the treaty are non-reimbursable. This means that all costs associated with compliance with the Boundary Waters Treaty would be funded by the federal government." (NAWS FEIS p. 1-6)

The NAWS FEIS then goes on to state that:

> "The construction cost of a biota WTP [water treatment plant] is a federal expense, which means that the Project beneficiaries would not have to repay this federal cost. This is based on the premise that **compliance with the Boundary Waters Treaty of 1909 is a federal responsibility**. The OM&R [operation, maintenance and replacement] costs associated with a biota WTP would also be funded by the federal government and have no repayment requirement." (Emphasis added) (NAWS FEIS p. 2-14)

and:

> "The EIS assumes that construction and OM&R of the biota WTP alternatives considered in the EIS would be funded by the Federal Government because **treatment of water prior to transfer into the Hudson Bay basin is a Federal responsibility under the Boundary Waters Treaty**." (Emphasis added) (NAWS FEIS p. 4-29)

The NAWS FEIS also states that the proposed action addressed in the FEIS is construction of:

> ". . . a biota water treatment plant (WTP) for the Project to treat the source water from Lake Sakakawea before it is delivered into the Hudson Bay drainage." (NAWS FEIS p. 1-5)

and:

> "The purpose of the proposed action is to adequately treat 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." (NAWS FEIS pp. 1-5, 1-6)

The NAWS FEIS estimates the construction costs of the preferred biota water treatment plant alternative at $17,500,000 and the annual OM&R costs at $306,000 (equivalent to $7,650,000 over 25 years) (NAWS FEIS p. 2-22)

Consequently, the NAWS FEIS acknowledges that:

(1) The proposed action addressed in the NAWS FEIS is the construction of a biota treatment plant.

(2) The purpose of the biota water treatment plant is to treat Missouri River water to reduce the risk of the transfer of invasive species to the Hudson Bay Basin by operation of the NAWS project.

(3) The biota water treatment plant is being built to reduce the environmental impacts that could result from the introduction of invasive species into the Hudson Bay Basin of Canada in order to meet the requirements of the Boundary Waters Treaty between the U. S. and Canada.

(4) The non-reimbursable costs to the Federal Government for construction and operation of the biota treatment plant over 25 years will be in excess of $25,000,000.

Yet the Bureau refuses to analyze the environmental impacts associated with the project that is the subject of its NAWS Environmental Impact Statement and the purpose of which is to minimize those impacts.

It is nothing short of preposterous for the Bureau arbitrarily to decide not to analyze the potential environmental impacts of the transfer of invasive species into the Hudson Bay Basin of Canada, and the efficacy of a $25 million Federal project the sole purpose of which is to meet the Federal Government's responsibilities under the Boundary Waters Treaty with Canada.

The Bureau's claim that an analysis of the environmental impacts of an interbasin transfer of invasive species from the Missouri River Basin into the Hudson Bay Basin of Canada as a result of the NAWS project is "outside the scope of the EIS" clearly is contrary to the District Court's February 3, 2005, finding that:

> "Federal Defendants argue that the risks of leakage are low and, therefore, that no further study is necessary. They repeatedly provide varied estimates that more than ninety-nine percent of biota will be disinfected under NAWS. While facially compelling, the argument ignores the fact that certain biota have been identified that may be impervious or highly-resistant to the planned treatment measures. **Therefore, even a low risk of leakage may be offset by the possibility of catastrophic consequences should leakage occur. Without some reasonable attempt to measure these consequences instead of bypassing the issue out of indifference, fatigue, or through administrative legerdemain, the Court cannot conclude that the BOR took a hard look at the problem**." (Emphasis added)

The NAWS FEIS dismisses a substantive analysis of the potential environmental impacts of an interbasin transfer of invasive species from the Missouri River Basin to the Hudson Bay Basin under the NAWS project with statements such as:

> "It is not possible to quantify the impacts that an invading species will have on its new ecosystem." (NAWS FEIS p. 4-10)

and:

> "Establishing causal linkages between source waters and disease outbreaks in the importing basin may defy attribution, since it is unlikely that outbreaks of any of various diseases . . . could be unequivocally linked to interbasin water transfers. . ." (NAWS FEIS p. 4-15)

However, the International Joint Commission (IJC) did quantify the potential environmental impacts of an interbasin transfer of invasive species from the Missouri River Basin to the Hudson Bay Basin in its 1977 report on the *Transboundary Implications of the Garrison Diversion Unit*. In its report, the IJC concluded that:

> ". . . the impact of such a transfer would be irreversible and would become apparent in about 10 years, with full impact in 25 to 50 years. . . In addition to the general ecosystem destabilization that could occur, the population of whitefish, walleye and sauger could be reduced by 50 percent in Lakes Winnipeg and Manitoba. This would, in turn cause an annual loss of $6 million (Can. [1977]) to the commercial fishing industry of Manitoba and could possibly eliminate it. The Manitoba sports fishery could experience an annual loss of 26,000 recreation days and $130,000 [Can. 1977] in related revenue. . ." (International Joint Commission 1977)

The NAWS FEIS presents no data or analysis to refute the IJC's conclusions but attempts to discount them with the statement that:

> ". . .For some potentially invasive species, however, the IJC's findings of unacceptable risks of biological invasions resulting from water diversions envisioned in the mid-1970s and early 1980s (see IJC 1977, Section 1) were justified given the control systems proposed at that time. With the control technologies developed in the intervening 30 years and proposed in the EIS, along with differences in purpose and scope between this Project and the Garrison Diversion Unit as envisioned in the 1970s, those findings are not applicable to this Project." (NAWS FEIS p. 4-22)

It should be noted, however, that the IJC's concerns about the interbasin transfer of invasive species under the Garrison Diversion Unit were not related to the control technologies available at that time, but with the potential for failure of those control technologies:

> "The Board's conclusion was that the implementation of their proposals should virtually eliminate any direct transfer by GDU of fish, fish eggs, fish larvae and fish parasites and would reduce the risk of transfer of fish diseases to the Hudson Bay Drainage Basin. . .
>
> There is no question in the Commission's mind that the Board's recommendations greatly reduce the risk of an unintentional transfer. **There would now be two lines of defence, either of which by itself might accomplish the desired result.** . . The Commission gives great weight to the Board's opinion that these two lines of defence will work. At

> the same time, the Commission must weight the consequences to Canada if the Board is wrong. Were the potential consequences ones which could be mitigated or corrected after the fact, the Commission would accept the Board's advice. Were the biological consequences to the Hudson Bay drainage ecosystem predictable in manner and extent, the Commission might accept the Board's approach. **The Board has reduced the risk of a biological 'time bomb', but not eliminated it. The Commission is concerned that even with the best engineering talent available and with the best operating practices possible, the very complexity of the scheme**, the immensity of the physical features, the large number of human beings involved in carrying out the responsibility, **and the possible mechanical failures, what cannot happen, will happen**. . ." (Emphasis added) (International Joint Commission 1977)

In is instructive to note in this context that the Bureau's conclusion that:

> "With the multiple barriers included in all alternatives, the risk of biological invasions through Project pathways would be low to very low for all potentially invasive species identified. Therefore, no project-related impacts are anticipated under any of the alternatives evaluated." (NAWS FEIS p. 4-22)

is qualified with the statement that:

> "However, the risk will never be zero." (NAWS FEIS p. 4-22)

CUMULATIVE ENVIRONMENTAL IMPACTS

The NAWS DEIS stated that:

> "No other federal, state or local government actions in the Project area that would cumulatively lead to increased risk of transferring invasive species were identified." (NAWS DEIS p. 4-17)

The Federation pointed out in its comments on the NAWS DEIS that the Bureau had just identified as its preferred Red River Valley Water Supply Project Alternative a Garrison Diversion Unit Import to Sheyenne River project that would deliver 810,450 acre-feet of Missouri River water to the Hudson Bay Basin during the course of a 10-year, 1930s-type drought, and the NAWS project was authorized to deliver 15,000 acre-feet per year per year from the Missouri River to the Red River Basin, or a total of 150,000 acre-feet over the course of a 10-year drought, bringing the total diversion of Missouri River water to the Hudson Bay Basin in a 1930s-type drought to 960,450 acre-feet from just these two projects alone. Consequently, even if the risk of invasive biota transfer were low in each project, those risks would be cumulative.

The Bureau's response to the comment is:

> "This comment is outside the scope of the EIS." (NAWS FEIS Appendix C, Letter Number 41, Responses 41-7 and 41-9)

The Bureau goes on to say that chapter one of the EIS discusses the depletion analysis conducted for the Final EA and FONSI which concluded ". . . the incremental effects of the NAWS withdrawals from the Missouri River system, will not be measurable at or below Lake Sakakawea" (NAWS FEIS Appendix C, Letter Number 41, Response 41-7). However, at the

time the Final EA was released in April 2001, work had not yet begun on the Red River Valley Water Needs and Options Study from which the GDU Import to Sheyenne River alternative subsequently was identified four years later.

The Bureau also states that it contacted the U. S. Army Corps of Engineers to complete an analysis of potential impacts to Missouri River users and resources that could result if the Red River Valley Water Supply Project were constructed, and that annual depletions for the NAWS project were included in the analysis as an existing condition (NAWS FEIS Appendix C Letter Number 41, Response 41-7). However, rather than discussing the environmental impacts of removing 810,450 acre-feet of water from Lake Sakakawea during a 10-year 1930s-type drought for a GDU Import to Sheyenne River project, the Bureau's *Supplemental Draft Environmental Impact Statement for the Red River Valley Supply Project* dismissed the impacts by comparing the depletion with "the **average annual inflows** into Lake Sakakawea for the 1967 through 2004 period" and "**the average storage** in Lake Sakakawea. . . for 1967-2004." (Pearson 2007) (emphasis added). By using average annual inflows and storage, the Bureau effectively masks the intensity of impacts that would accompany a 10-year 1930's-type drought situation.

In addition, neither the NAWS FEIS nor the Bureau's Environmental Impact Statements on the Red River Valley Water Supply Project discuss the cumulative risks and environmental impacts of interbasin transfer of invasive species under the two projects.

INADEQUATE ANALYSIS OF ALTERNATIVES TO MISSOURI RIVER DIVERSION

The Bureau of Reclamation has failed to consider an appropriate array of alternatives to the NAWS project in the FEIS.

The Federation pointed out in its comments on the NAWS DEIS that:

> ". . . the Draft EIS continues to consider only alternatives **for** treating Missouri River Water delivered to the Hudson Bay Basin by the NAWS Project, and it fails to consider any alternatives **TO** the delivery of Missouri River water to the Hudson Bay Basin. Consequently, not only does the Draft EIS cover such a small portion of the overall NAWS project as to preclude a proper discussion of alternatives, but it also precludes consideration of alternatives that would avoid all of the NAWS Project's objectionable features." (Pearson and Conrad 2008; NAWS FEIS Appendix C, Letter Number 41)

The Federation went on to cite information from the 1970 *Preliminary Report on the Ground-Water Conditions in the Vicinity of Minot, North Dakota* prepared by Wayne A. Pettyjohn and published by the City of Minot Manager's Office, which determined that:

> "In general, the quality of water in the Sundre Aquifer is good for drinking and many industrial purposes. It contains less dissolved minerals than several of the existing wells." (Pettyjohn 1970, p. 27)

and:

> "That part of the Sundre aquifer in Township 154 North and Ranges 81 and 82 East contains a huge volume of water in storage. . . This underground reservoir, as it extends

> from the south end of Minot to the McHenry County line contains more than 384,000 acre-feet of water. At a withdrawal rate of 6 mgd [million gallons per day], and no recharge to the aquifer, this quantity would last for more than 50 years!" (Pettyjohn 1970, p. 27)

The report went on to state that:

> "Future pumping from wells tapping the lower aquifer will result in induced infiltration from the Souris River to the Lower Souris aquifer and from the Lower Souris Aquifer into the Sundre aquifer. This, in turn, means that large areas are available for natural recharge. In fact, more than 28 square miles provided recharge during the pumping test." (Pettyjohn 1970, p. 23)

The Federation noted:

> "Therefore, just the portion of the Sundre Aquifer south of Minot alone could provide nearly half of the maximum annual water supply for the NAWS project for 50 years, even if there were no recharge of the aquifer." (Pearson and Conrad 2008; NAWS FEIS Appendix C, Letter Number 41)

and NWF went on to point out that:

> "Additional groundwater sources include continued use of the Minot Aquifer and development of the portion of the Sundre Aquifer northwest of Minot and the Lower Souris Aquifer. According to the Pettyjohn report, 'The quality of water in the Lower Souris aquifer is suitable for most municipal and industrial uses.' And, 'Properly constructed, fully penetrating wells could produce as much as 1,000 gpm with about 12 feet of drawdown.'" (Pearson and Conrad 2008; NAWS FEIS Appendix C, Letter Number 41)

The Bureau's response to these comments is:

> "This comment is outside the scope of the EIS." (NAWS FEIS Appendix C, Letter Number 41, Responses 41-9, 41-10)

It its Response 41-10, the Bureau says that:

> "Groundwater supplies in the Minot area, which would be key to the development of an integrated groundwater alternative**,** are **inadequate based on current information**." (Emphasis added) (NAWS FEIS Appendix C, Letter Number 41, Response 41-10)

The Bureau's response then cites information from the North Dakota State Water Commission which it claims shows that the Minot Aquifer has declined more than 60 feet since 1976. However, the Minot Aquifer is a small (4 square miles), superficial aquifer overlying the Sundre Aquifer and the Pettyjohn report had pointed out in 1970 that the aquifer already had dropped appreciably by 1963 (Pettyjohn 1970, p. 13).

The Bureau's response also cites observation well data from the North Dakota State Water Commission which it claims show similar drawdown effects "in other parts of the Sundre Aquifer," but it provides no analysis of those or any other data to refute the Pettyjohn report's conclusions that:

(1) The portion of the Sundre Aquifer extending from the south end of Minot to the McHenry County Line "contains more than 384,000 acre-feet of water." (Pettyjohn 1970, p. 27)

(2) "This quantity of water is equal to a surface reservoir more than 40 feet deep, a mile wide, and 15 miles long, which is considerably larger than Lake Darling." (Pettyjohn 1970, p. 27)

(3) "At a withdrawal rate of 6 mgd, and no recharge to the aquifer, this quantity of water would last for more than 50 years!" (Pettyjohn 1970, p. 27)

The Bureau's response also cites a 1987 North Dakota State Water Commission analysis of the Sundre Aquifer, which it admits "did not identify an aquifer total yield," and it quotes a statement from the report that:

> "The total yield potential cannot be determined; however the capacity of the aquifer is significantly larger than the amount currently being pumped."

In fact, what the report concluded was:

> "The Sundre aquifer system is highly productive. Under present rates of withdrawal the water levels have stabilized with a relatively small decline. Larger withdrawals will result in a short interval of additional water level decline and then stabilize at some lower level. The total yield potential cannot be determined, however, the capacity of the aquifer is significantly larger than the amount currently being pumped. An increase in pumping, however, may result in some further change in water quality." (Puce 1987)

The Bureau's response does not mention the Lower Souris Aquifer, for which the Pettyjohn report concluded that:

> "The quality of the water in the Lower Souris aquifer is suitable for most municipal and industrial uses." (Pettyjohn 1970, p. 18)

> "The Lower Souris aquifer has a large potential for development in many areas. Properly constructed, fully-penetrating wells could produce as much as 1,000 gpm [1,440,000 gallons per day] with about 12 feet of drawdown." (Pettyjohn 1970, p. 18)

It is instructive to note that neither the 1970 Pettyjohn report nor the State Water Commission's own 1987 report on the Sundre Aquifer was cited in the 2001 Final EA for NAWS, which the Bureau claims evaluated alternatives to the project (NAWS FEIS p. 1-6), nor is either one cited in the 2007 NAWS DEIS. Thus the Bureau has failed to consider even readily available information regarding alternatives within the Souris River – Hudson Bay drainage basin.

In our comments on **scoping** of the NAWS EIS, it was pointed out that:

> ". . . according to the EA, the projected 2010 combined 47,095 population of Minot and the Minot Air Force Base is 82 percent of the total combined population of the communities and rural water systems located in the Hudson Bay Basin to be supplied with Missouri River water under the NAWS project. Therefore, one obvious alternative would be to increase the supply from the Sundre Aquifer and the capacity of the Minot

> water treatment facility by 21 percent to provide water to the additional 10,114 people in the small communities and rural water systems in the Hudson Bay Basin to be served by the NAWS project." (Pearson 2006; Pearson and Conrad 2008, Attachment A; NAWS FEIS Appendix C, Letter Number 41)

It is relevant to note, therefore, that a story in the November 21, 2008, *Minot Daily News* reported that:

> "NAWS officials look to an Environmental Impact Statement due out next month to alleviate the delay related to that [Manitoba] lawsuit. However, design and construction of treatment facilities will take at least a few years.
>
> In the meantime, NAWS is going ahead with construction of a line from Berthold to Kenmare next spring. A pipeline to serve Mohall and All Seasons Rural Water District is in the design phase and could be bid next spring.
>
> Kenmare and Mohall hope to obtain Minot's water to blend with their existing water.
>
> **Serving neighboring towns would add less than 20 percent to the demand on Minot's water treatment plant**, said Alan Walter, Minot public works director.
>
> "**The Minot water supply can handle that**," he said. "In the summer time we would have to take a closer look, but **as far as the water supplies being there through 2012, I don't have any qualms about saying we have the water supplies**." (Emphasis added) (Schramm 2008)

In other words, the Minot water treatment plant already has both the capacity and the water supply to serve a 20 percent increase in the current demand, which would be sufficient to provide water to the additional 10,114 people in the small communities and rural water systems in the Hudson Bay Basin estimated in the 2001 NAWS EA to be served by the NAWS project.

But that is not all. The NAWS FEIS states that:

> "The Bureau of the Census and North Dakota State Data Center (NDSCD) estimated a 2000 population of more than 119,000 people for the ten county economic impact region. The population of this same region decreased to less than 112,500 people by 2006**; a decline of approximately 5.5% from 2000 to 2006**. In 2006, Minot and Williston accounted for about 42% of the regional population. The rest of the region is rural in nature. **All counties in the Project area experienced a population decline from 2000 to 2006**." (Emphasis added) (NAWS FEIS p. 3-18)

Consequently, not only does the Minot water treatment facility already have the capacity and the water supply, without expanding withdrawals from the Sundre Aquifer, to serve the population that was projected in 2001 to receive Missouri River water under the NAWS project, but that population has been decreasing by approximately 1 percent every year.

The Bureau's feeble response to comments pointing out the failure of the NAWS EA and EIS to consider substantively alternatives **TO** Missouri River water diversion for supplying water to communities in the Hudson Bay Basin portion of the NAWS service area simply confirms the inadequacy of the NAWS FEIS and the compelling need for an objective, comprehensive and

professional analysis by a credible and competent independent agency or organization of alternatives utilizing existing in-basin water sources.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The Federation noted in its comments on the NAWS DEIS that North Dakota State Engineer Dale Frink had been quoted in the December 15, 2007, edition of the Mitchell, South Dakota, *Daily Republic* as stating, regarding the unquantified water rights of the 27 Tribes in the Missouri River Basin, that:

> "**If they all would do it, they would tie up a chunk of water, if not all of it," said Dale Frink, an engineer with the North Dakota State Water Commission.** "I don't know if I should say 'tie up,' but certainly they could quantify a huge amount of water." (Emphasis added) (Pearson and Conrad 2008; NAWS FEIS Appendix C, Letter Number 41)

The Federation then pointed out the following:

> "The Draft EIS for the NAWS Project acknowledges that:
>
> '. . . there could be potential Indian water rights issues.' (Draft EIS, p. 4-25)
>
> but instead of addressing this very significant issue substantively, the Draft EIS summarily dismisses it with three brief and cursory paragraphs . . . .
>
> . . . .What the Draft EIS fails to address is the **Secretary of the Interior's** responsibility under the Winters Doctrine to protect and preserve Tribal water rights to the Missouri River, or to consider that the Federal Government has had to make substantial compensation payments to the Tribes when the Secretary has failed to fulfill that responsibility in the past. Consequently, the Draft EIS does not address the fact that the Bureau and the State of North Dakota are deliberately proceeding with a Northwest Area Water Supply Project with the full knowledge that it (1) disregards Tribal water rights to the Missouri River established under the Winters Doctrine, (2) violates the Secretary of the Interior's responsibility established under the Winters Doctrine to protect Tribal water rights, and (3) could cost additional millions of dollars in compensation to the Tribes for Missouri River water used by the NAWS Project. The DEIS also does not discuss how the costs of compensation to the Tribes could affect the costs to water users and the economic feasibility of the project, nor does it consider alternatives that would avoid this objectionable feature of the project." (Pearson and Conrad 2008; NAWS FEIS Appendix C, Letter Number 41)

The Bureau's response to the comment is:

> "Reclamation does not concur with this comment." (NAWS FEIS Appendix C, Letter Number 41, Response 41-13)

Therefore, the discussion of Tribal water rights in the NAWS FEIS (pp. 3-25, 3-26) is exactly the same as in the NAWS DEIS (pp. 3-25-26).

The Bureau states that:

> "Reclamation understands its trust responsibility under the Winters Doctrine, and also recognizes that if the Missouri River Tribes adjudicated their rights to the Missouri River water it would likely be determined to be a senior water right, however the amount of water to which the Tribes would be entitled has not been established nor quantified at this time. . ." (NAWS FEIS Appendix C, Letter Number 41, Response 41-13)

Consequently, the NAWS FEIS continues to fail to address substantively the issue of Tribal water rights under the Winters Doctrine, it disregards Tribal water rights to the Missouri River established under the Winters Doctrine, it does not address the NAWS project's violation of the Secretary of the Interior's responsibility under the Winters Doctrine to protect Tribal water rights, it fails to address the potential impacts on the economic feasibility of the project that could result from compensation to the Tribes for violation of their Missouri River water rights, and it does not consider alternatives that would avoid this objectionable feature of the project.

SUMMARY

Because the *Northwest Area Water Supply Project Final Environmental Impact Statement on Water Treatment* fails to (1) describe the potentially significant environmental impacts of the project, (2) consider alternatives to the project, (3) discuss cumulative impacts to the Missouri River, or (4) address substantively and relevantly the Secretary of the Interior's responsibility under the Winters Doctrine to protect Tribal water rights to the Missouri River, and because the NAWS FEIS (5) is based on fundamental misinterpretations of U. S. District Court for the District of Columbia's February 3, 2005, ruling and (6) reflects serious conflicts of interest and an absence of independent objectivity in the NAWS NEPA process, the Secretary of the Interior should withdraw the NAWS FEIS, remove the Bureau of Reclamation from the NEPA process, and appoint an independent, professional entity to begin the NEPA process anew to produce a credible and complete EIS for the NAWS project that complies with the requirements of the National Environmental Policy Act, Council on Environmental Quality regulations, the Boundary Waters Treaty of 1909 and other relevant Federal laws.

REFERENCES

International Joint Commission. 1977. Transboundary Implications of the Garrison Diversion Unit. An IJC Report to the Governments of Canada and the United States. 153 pp. w/Appendices.

Pearson, Gary L. 2005. North Dakota's Plan for Hijacking the Missouri River. A Review of the U. S. Department of the Interior, Bureau of Reclamation, Dakotas Area Office, Draft Report on Red River Valley Water Needs and Options. 94 pp.

Pearson, Gary L. 2006. Comments regarding scoping of the Draft Environmental Impact Statement for the Northwest Area Water Supply Project. Submitted to the U. S. Bureau of Reclamation, Dakotas Area Office, Bismarck, North Dakota. 4pp.

Pearson, Gary L. 2007. Comments of National Wildlife Federation Representative on the Red River Valley Water Supply Study Technical Team on the U. S. Department of the Interior, Bureau of Reclamation, Dakotas Area Office, and State of North Dakota, Garrison Diversion Conservancy District Supplemental Draft Environmental Impact Statement, Red River Valley Water Supply Project. 60 pp.

Pearson, Gary L. and David R. Conrad. 2008. Comments of National Wildlife Federation on the U. S. Department of the Interior, Bureau of Reclamation, Great Plains Region, Dakotas Area Office, December 2007 Northwest Area Water Supply Project Draft Environmental Impact Statement on Water Treatment. 15 pp. w/ 4 pp. Attach.

Pettyjohn, Wayne A. 1970. Preliminary Report on the Ground-Water Conditions In the Vicinity of Minot, North Dakota. Published by The City of Minot, North Dakota, City Manager's Office, Civic Center. 36 pp.

Puce, Steve W. 1987. Hydrology and Computer Simulation of the Sundre Aquifer System Ward and McHenry Counties, North Dakota. North Dakota Ground-Water Studies Number 92, Part II. North Dakota State Water Commission, Verh Fahy, State Engineer. Prepared By the North Dakota State Water Commission In Cooperation with the City of Minot, North Dakota.

Schramm, Jill. 2008. Burlington interested in using Minot water. The Minot Daily News. November 21.

Response 16-1 – In this case, Reclamation has undertaken an evaluation of the potential impacts from the Project to the Canadian environment consistent with the court's Order. The text in the Final SEIS has been amended.

Response 16–2 – The 2008 Final EIS on Water Treatment included a preferred alternative of chlorination/UV inactivation at the Biota WTP near Max, ND. The Draft SEIS identified the Missouri River and Groundwater Alternative as the preferred alternative which included the chlorination/UV Inactivation Biota WTP option, therefore this comment is correct in stating that the treatment process proposed to reduce the risk of AIS transfer is the same.

Response 16-3 –Chapter 3 of the SEIS describes resources in the Hudson Bay basin that could be affected by Project alternatives including No Action, consistent with NEPA's Implementing Regulations (40 CFR 1502.15). For example, the analysis of Souris River hydrology is limited to the portion of the river where Project water withdrawals could have measureable effects. For AIS transfer, the affected environment analyzed in the SEIS is expanded to include portions of the watershed downstream of Minot to Lake Winnipeg in response to input provided during the public scoping process. Lake Winnipeg is the largest freshwater lake in Southern Canada. The Lake Winnipeg watershed includes the Souris River, and any Project-related AIS transfer potentially affecting Canada would occur in the Souris River basin. Within the Hudson Bay basin, the risks and potential consequences of a Project-related AIS transfer are greatest for Lake Winnipeg because it lies downstream of the Project, has many of the same ecological receptors as Lake Sakakawea, and has high ecological and economic value. The commenter's characterization of the Hudson Bay basin as a single ecosystem that could be affected by the Project is incorrect and lacks technical support.

Response 16-4 – Reclamation does not concur with this comment as discussed in Response 16-3. Consistent with NEPA's Implementing Regulations, the SEIS "describe[s] the environment of the area(s) to be affected or created by the alternatives under consideration (40 CFR 1502.15)." The Affected Environment chapter (Chapter 3) includes pages of text describing the affected environment for aquatic invasive species as being '…composed of the Missouri River basin, which is a potential source of AIS, and the Hudson Bay basin, which includes Canada's Lake Winnipeg area and the surrounding communities…" The section goes on to describe the AIS of concern, the aquatic environment they could affect, as well as illustrations and description of their known locations within North America. In addition to the natural environment, the SEIS also includes a section describing the Trans-Border Economics Related to Invasive Species.

The Environmental Impacts chapter (Chapter 4) includes approximately 20 pages of discussion and data on the potential impacts to the environment and economic impacts of each alternative as it relates to AIS. This area of potential effect includes the Hudson Bay basin.

In each of the chapters, the reader is also made aware that information presented in the chapter is a summary of the *Transbasin Effects Analysis Technical Report* which is included as Appendix E of the SEIS. The full text of the report contains additional in-depth discussion, data and illustrations of the analysis completed.

Response 16-5 – As noted in the Draft SEIS, EPA has issued a regulation clarifying that activities conveying or connecting waters of the United States are not subject to the NPDES permitting requirements (40 C.F.R. 122.3). The decision by the U.S. District Judge for the Southern District of New York has been appealed to the Second Circuit Court of Appeals. At this point, the Water Transfers Rule is in effect in the Project area. If any activities included in the Project are subsequently deemed to be discharges requiring an NPDES permit, the State of North Dakota, as the Project sponsor, would work to obtain NPDES permits for the relevant activities.

Response 16-6 – Under the preferred alternative, the volume of water that would be transferred from the Missouri River basin to the Hudson Bay basin is slightly less than what was proposed in the 2008 Final EIS on Water Treatment (Reclamation 2008).

The estimated future average water need is 10.4 mgd (SEIS, Table 2.1). Of this need, 0.3 mgd for the cities of Rugby and Grenora would be served by local groundwater, and would not be connected to the Project's distribution system. To estimate Missouri River withdrawals, the remaining 10.1 mgd need was increased by 20 percent to account for losses (e.g., due to back-flushing filters at the Biota WTP for treatment options that include filtration). This would result in an average withdrawal of 12.1 mgd, or 13,600 acre-feet per year. Note that the volume of water used for back-flushing Biota WTP filters would increase Missouri River withdrawals, but would not increase the volume of water transferred to the Hudson Bay basin above that needed to meet future demands.

The 15,000 acre-feet per year figure cited by the commenter is the amount of water reserved under the Project's water permit issued by the State of North Dakota. This water right was established prior to the latest needs assessment for the Project.
The 29,100 acre-feet per year figure cited by the commenter corresponds to the capacity of the main transmission pipeline (26 mgd). The pipeline is sized to meet the peak daily demand, which is 2.5 times greater than the projected average daily demand. Thus, while 26 mgd could be withdrawn from the Missouri River for only a few days each year under the preferred alternative, this volume would not be withdrawn year-round. As explained in the Draft SEIS, a 29,100 acre-feet per year withdrawal simulation was evaluated solely to provide an upper bound to the maximum possible withdrawal as part of the impact analysis. As explained in Chapter 4-Water Resources-Methods section, it would not be technically feasible to continually operate the alternatives at this volume.
Also note that the Missouri River depletions analysis presented in the SEIS assumes that 100 percent of the future water needs (less 0.3 mgd for Rugby and Grenora) would be met with Missouri River water. As currently designed, however, at least 1.0 mgd of the future need would be met with groundwater from the Minot and Sundre aquifers. Thus, the volume of water that would be transferred from the Missouri River to the Hudson Bay basin, under the preferred alternative, is not more than evaluated in previous NEPA analyses for this Project.

Response 16-7 – Reclamation refers the reader to Response 16-6 for clarification. Furthermore, the concept of an "equivalent volume" of untreated water lacks technical support. Using the commenter's logic, one would assume that human illness caused by waterborne pathogens in drinking water should be commonplace, when in fact such incidents are extremely rare. Under

the Missouri River alternatives, 100 percent of the Missouri River water would be treated prior to crossing the basin divide.

Response 16-8 – See Response 16-6.

Response 16-9 –The risk of transfer and establishment of AIS varies by species, and is dependent upon the life history characteristics of each AIS and the availability of suitable habitat (including susceptible hosts for pathogens and parasites) in the receiving basin, as explained in the AIS section of Chapter 4 and Appendix E. The relative contributions of different pathways to the overall or aggregate risk also vary greatly among AIS. For some species (e.g., *Cryptosporidium parvum*), transfer through natural pathways is indeed inevitable, which accounts for the world-wide distribution of this species, including widespread occurrence in both the Missouri River and Hudson Bay basins. On the other hand, transfer and establishment of *Myxobolus cerebralis* is much less likely to occur through any pathway due to the general lack of suitable hosts in the receiving waters of the Hudson Bay Basin. Project-related risks are not addressed after-the-fact as the comment contends. All known Project-related risks are specifically addressed through incorporation of treatment within the Missouri River Basin and control systems within the main transmission pipeline in each of the Missouri River alternatives.

Response 16-10 – In addition to the pathways noted in the comment, the waters of the Hudson Bay Basin and the Missouri River Basin have been connected through a constructed interbasin diversion from the St. Mary River to the Milk River in Montana for more than 100 years, as described in the Draft SEIS.

When comparing the basins as a whole there are differences in aquatic communities, but these differences cannot be attributed solely to a lack of past species transfers as the comment suggests. The aquatic community of the Churchill River at Churchill, Manitoba is quite different from the aquatic community of the Missouri River at St. Louis, Missouri. This is to be expected, as the tundra and taiga ecosystems in northern Manitoba are very different from anything found in the State of Missouri. Similarly, there are large differences in the aquatic communities within each basin due to climate and geography. Thus, the aquatic community of the Madison River in Wyoming (headwaters of the Missouri River) is very different from the community in the lower Missouri River despite the existence of a continuous surface water connection between them.

It is instructive to note that where the Missouri River Basin and Hudson Bay Basin lie in close proximity to each other, the aquatic communities are marked by their similarities rather than their differences. For example, the aquatic communities in wetlands and small lakes of the Missouri River Basin near Max, North Dakota are indistinguishable from those in similar habitats a few miles away in the Hudson Bay Basin.

Of the 37 AIS evaluated in the SEIS, four have been documented in the Missouri River Basin but not in the Hudson Bay Basin. Of these four, three are invasive species recently introduced to the Missouri River Basin (but not yet recorded in North Dakota).

Response 16-11 – The AIS evaluated cover a range of taxonomic groups, sizes and life history characteristics, including susceptibility to chemical and physical disinfection. This broad range

of potentially invasive microorganisms was selected for analysis so that the Project's control system could be designed and operated to be effective not only for these species, but also for species not known to currently exist in the Missouri River, including unknown and emerging pathogens and parasites. This is explained in Chapter 3, Aquatic Invasive Species section. Thus, the appearance of new invasive species in the Missouri River would likely have little effect on Project-related risks. However, as a precautionary measure, an adaptive management plan would be developed to assess risks of new and emerging organisms and adjust treatment processes if warranted. This is not tantamount to 'closing the barn door after the horse is gone' as the comment asserts, but rather represents a proactive approach to risk management in the face of potentially changing and uncertain future risks.

Response 16-12 – See Response 16-7. The concept of an 'equivalent volume' of untreated water lacks technical support. The preferred alternative would involve the conveyance of treated water through a buried pipeline. USGS (2005a) concluded that such a system would exhibit a very low risk of transfer and establishment of AIS.

Response 16-13 – The quoted excerpt is taken out of context, and its applicability to the Project is highly questionable. The 1977 International Joint Commission (IJC) report addressed the potential consequences of transferring up to 2,000 cfs of untreated water from the Missouri River Basin to the Hudson Bay Basin through an open canal with a mechanical fish screen to prevent transfer of unwanted species. By contrast, the Project would transfer a maximum of 40 cfs of treated water through a buried pipeline. The fish screen alluded to in the quote from the IJC report may well have constituted 'new and untried engineering works' at that time; however, the treatment options evaluated in the SEIS are neither new nor untried. Rather, they rely on existing and well tested technologies used world-wide with proven records of safe and very reliable operation.

Response 16-14 –The commenter raises the specter of 'potential catastrophic consequences' without providing any information or rationale for what those consequences could be, or what invasive species could cause those consequences if transferred. As stated in the SEIS, the *risks* of a biological invasion vary among species and transfer pathways, with Project-related pathways posing a very low risk. The consequences of an invasion vary by species, but not by transfer pathway. Potential environmental consequences and economic consequences are discussed in the AIS section of Chapter 4 and comprehensively described in Appendix E. Thus, the recent invasion of Lake Winnipeg by zebra mussels may have occurred through any of several different pathways, but the consequence will be the same regardless of which pathway was responsible.

Response 16-15 – Reclamation used the best available information to describe the relevant range of potential consequences that could result from the transfer and establishment of AIS of concern in the Hudson Bay basin, including ecological and economic effects. For fish pathogens and parasites, potential population-level and ecosystem-level effects are highly uncertain, and additional studies would not reduce the uncertainty. "Hazarding a guess" at specific impacts is neither scientifically sound nor helpful to decision-making, as this would be entirely speculative and unsupported by available data.

Response 16-16 –Consistent with the NEPA Implementing Regulations, potential environmental and economic consequences of transfer and establishment of AIS of concern in the Hudson Bay basin are thoroughly described on pages 79-116 of Appendix E, the *Transbasin Effects Analysis Technical Report*, and this information is summarized in Chapter 4-Aquatic Invasive Species section of the SEIS. As previously stated, Reclamation used the best available information to describe the relevant range of potential consequences. The *Transbasin Effects Analysis Technical Report* was independently peer reviewed by a panel with expertise in fish pathogens and parasites, ecological risk and consequence analysis, and surface water treatment and disinfection. The peer review report concluded, "Overall, the reviewers found the draft Transbasin Effects Analysis Report to be based on the best available science and its results and conclusions to be supported by that science, given the uncertainties."

Response 16-17 – This comment falls outside the purview of NEPA and a response by the agency is not required.

Response 16-18 –The 1977 International Joint Commission report addressed the potential consequences of transferring up to 2,000 cfs of untreated water from the Missouri River Basin to the Hudson Bay Basin through an open canal with a mechanical fish screen to prevent transfer of unwanted species. By contrast, the Project would transfer a maximum of 40 cfs of treated water through a buried pipeline. Reclamation does not contend that water treatment is infallible as the comment states, but the SEIS statement that failure is highly unlikely is borne out every day by the safe and very reliable operation of thousands of water treatment plants that rely on the same proven technologies evaluated in the SEIS.

Response 16-19 –Reclamation relied on the best available science to take a hard look at the potential risks and consequences of both Project-related and non-Project transfer of invasive species to the Hudson Bay basin. An independent peer review of SEIS Appendix E, the *Transbasin Effects Analysis Technical Report*, found that the report was based on the best available science and its results and conclusions were supported by that science, given the uncertainties. Reclamation has developed a new Appendix M to further explain identified missing and incomplete information and the relevance to evaluating reasonably foreseeable significant adverse impacts on the human environment (40 CFR 1502.22)

Consistent with NEPA guidance (Council on Environmental Quality Forty Most Asked Questions Concerning CEQ's NEPA Regulations #18), Reclamation has not speculated about unknown and unknowable consequences with no technical or scientific basis for doing so.

Response 16-20 – The primary responsibility of the North Dakota State Water Commission is to provide effective management of North Dakota's water resources which includes developing and managing water resources for the future welfare and prosperity of the people of North Dakota. Reclamation worked with the State Water Commission because of their jurisdictional responsibilities in an effort to gather data on the current and future water needs within the Project Area.

All alternatives included in the SEIS were designed at an appraisal level and evaluated equally. Reclamation strongly disagrees with the commenter's opinion regarding the description of the

No Action Alternative and the analysis of alternatives. Without providing a technical basis for this opinion Reclamation cannot respond other than to disagree. Reclamation would direct readers to discussions in Chapter 2 regarding how water needs were evaluated and note that Reclamation used several methods to gather data on water needs, including a survey of the communities and rural water systems. In the survey, water users were asked to identify future plans to meet their water needs and the response was that the proposed project, as a regional bulk water supply system was their plan. This formed the basis for the description of the No Action Alternative and this is appropriate because NEPA does not require an agency to speculate in the absence of information or data.

Response 16-21 – This comment is incorrect. The SEIS includes a detailed description of the Sundre Aquifer in the Water Resources section of Chapter 3. This discussion includes a description of the water quantity, water quality and allocations of the aquifer as well as providing detailed information in Table 3-11, Table 3-12 and Figure 3-12.

Response 16-22 – This comment is incorrect. The appendix states the well data was obtained from the State Water Commission's water data website which includes information for all types of wells; Municipal, Irrigation, Observation, Recorder, etc.

Response 16-23 – A thorough review of published data and information on the Minot and Sundre aquifers was conducted in the preparation of the Water Resources section of Chapter 3. Based on this information, Reclamation concluded that the long-term declining levels in both the Minot and Sundre aquifers are a result of withdrawals.

Response 16-24 – As stated in the Water Resources section of Chapter 3, based on the best available data and scientific knowledge no additional sustained withdrawals would be possible without supplemental recharge. Reclamation has concluded that the declining trend is a result of withdrawals and not natural fluctuations; however the end result is the same, in that the aquifers are not a sustainable source of water for the Project without artificial recharge.

Response 16-25 – The comment misrepresents information quoted from Appendix J – *Draft Appraisal Level Engineering Level Design Report*. To evaluate impacts of the inbasin alternatives, a groundwater model was developed to simulate the aquifer recharge/wellfield system for the Minot and Sundre aquifers. The SEIS and Appendix J clearly state that the groundwater model used is appropriate for assessing impacts at the appraisal level design of the alternatives. The SEIS further explains that if a future decision is made to construct either of the inbasin alternatives additional data collection, modeling, and pilot testing would be needed and this could likely take two or more years at a cost of more than $3.3 million. This additional data gathering and analysis would be part of the feasibility level engineering and design. All of the action alternatives evaluated were designed at the appraisal level. Reclamation has developed a new Appendix M to further explain identified missing and incomplete information and the relevance to evaluating reasonably foreseeable significant adverse impacts on the human environment (40 CFR 1502.22)

The comment is also incorrect in stating that the Missouri River and Groundwater Alternative includes two 2,800 gpm peaking wells in the Sundre Aquifer. Neither of the Missouri River

alternatives proposed and evaluated include new peaking wells; but instead would rely on existing wellfields in the Minot and Sundre aquifers. The alternatives are discussed in Chapter 2 and more detailed descriptions and drawings are included in Appendix J.

Response 16-26 – Reclamation does not concur with this comment and does not agree with the numbers presented in the comment. The preferred alternative does not include peaking wells in the Minot and Sundre aquifers as the comment states and the commenter's estimated withdrawals from these aquifers are incorrect. The comment infers that additional wells in the Sundre Aquifer could provide enough water for the Project; however the analysis presented in the SEIS clearly demonstrates that the quantity of water needed is not available in the aquifer.

Response 16-27 – The commenter's assumption that the withdrawal would increase the same percentage is unsubstantiated. The Project withdraw numbers were established in the *Water Need Technical Report* (Reclamation 2012a) and are based on population and water need projections, not arbitrary percent increases.

Response 16-28 – Reclamation does not concur with the calculations presented in this comment. As documented in the analysis of the SEIS, the groundwater in this area cannot sustain additional withdrawals and has poor water quality. The aquifers would require artificial recharge to provide the amount of water needed for the project; the costs of the inbasin alternatives are included in Tables 2-8 and 2-10 in Chapter 2 of the SEIS.

Response 16-29 – See Response 16-28.

Response 16-30 – As discussed in the Background section of Chapter One, construction of Project components began in the spring of 2002 and it wasn't until many months later that a legal challenge was filed in the U.S. District Court for the District of Columbia. An order issued by the court in 2005, allowed construction to continue so the assertion that construction was 'premature' is inaccurate.

With respect to the comment regarding reimbursement by the State of North Dakota for the costs associated with the Missouri River pipeline, Reclamation presented costs in the SEIS as Total Project costs and did not distinguished between state cost share and federal contributions. The Total Project cost would not change under the scenario presented in the comment.

Response 16-31 – The comment states that additional wells in the Sundre aquifer could provide enough water for the Project; however the analysis presented in the SEIS demonstrates that the quantity of water needed is not available in the aquifer. Commenter is referred to Chapters 3 and 4 as well as Appendix J for further information.

Response 16-32 – Throughout the process, Reclamation has followed implementing guidance provided by the Council on Environmental Quality and Reclamation NEPA Handbook (Reclamation 2012b), including the formation of a cooperating agency team. Cooperating agencies include technical representatives from federal, state and local agencies who have special expertise or jurisdiction relevant to the issues to be addressed. Team members included representatives from the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency,

North Dakota State Water Commission, Garrison Diversion Conservancy District, and the City of Minot. Reclamation also consulted with the U.S. Fish and Wildlife Service on information relative to the Souris River and how the proposed alternatives would impact the National Wildlife Refuges downstream. Cooperating agencies were involved in the development of plans of study for analyses, provided data and technical expertise in the review of all evaluations contained in the SEIS.

The comment notes the number of years through which aspects of this proposed Project have been analyzed and debated. This ongoing dialogue demonstrates the cautious approach taken in the evaluation of alternatives and impacts associated with meeting water needs within the Project area. Throughout these years Reclamation has worked diligently with other agencies within the United States and Canada (federal/state/provincial) to identify and evaluate issues, as well as keeping the lines of communication open in an effort to provide sound scientific analyses to inform the decision maker.

Response 16-33 – Precedence is considered under NEPA (1508.27 (b) 6)) when looking at the context and intensity of actions relevant to significance. The degree to which the action may establish a precedent for future actions with significant effects can be considered. The draft SEIS determined the preferred Missouri River and Groundwater Alternative would have minimal impacts based on the data and analyses conducted. Reclamation determined that, with respect to 'significant effects", this alternative would not establish a precedent. As for setting a precedent for out of basin diversion – this Project would not be the first out of basin transfer. There are many major across basin water transfers in the U.S. and Canada including the following (http://www.swc.state.nd.us/4dlink9/4dcgi/getcontentpdf/pb-1065/interbasinwhitepaper06.pdf):

- Saint Mary's River Project that transfers water for irrigation from the Hudson Bay Basin to the Missouri River Basin (1915)
- Long Lake Project that transfers water for hydro from the Hudson Bay Basin to the Great Lakes Basin (1948)
- Ogoki River Project that transfers water for hydro from the Hudson Bay Basin to the Great Lakes Basin(1943)
- Chicago Sanitary and Ship Canal Project transfers sewage water from the Great Lakes Basin to the Mississippi River Basin (1900)
- Akron Project transfers municipal water from the Great Lakes Basin to the Mississippi River Basin (1998)
- Pleasant Prairie Project transfers municipal water from the Great Lakes Basin to the Mississippi River Basin (1990)
- Churchill River Project transfers water for hydro from the Churchill River Basin to Nelson River Basin (1976)
- Lake Saint Joseph Project transfers water for hydro from the James Basin to the Nelson River Basin (1950s)

Response 16-34 – Data and information for both inbasin and Missouri River water sources (surface water and groundwater) were evaluated in an objective manner as disclosed in the Water Resources section of the Affected Environment chapter, the Water Resources section of the Environmental Impacts chapter, as well as in Appendix J - *Appraisal Level Engineering Design*

Report. The Project would not set a precedent for any future actions involving water withdrawals from the Missouri River.

The comment also states that Reclamation has selected the Missouri River and Groundwater Preferred Alternative. This is not accurate. No decision or selection has been made at this time. The identification of a preferred alternative in the Draft SEIS is permissible under the Council of Environmental Quality regulations for implementing the procedural provisions of NEPA, and is encouraged in Reclamation's NEPA handbook [section 8.6.4] (Reclamation 2012b). The intent of identifying a preferred alternative is to let the public know what the agency is considering. Public comments, new information, or other considerations may result in a change in the preferred alternative. Here, the preferred alternative Biota WTP option was changed in response to comments regarding potential issues with Safe Drinking Water Act compliance. The Record of Decision will document Reclamation's selection of an alternative for implementation.

Response 16-35 –This comment is inaccurate. The volume of water transferred is one factor that affects the risk of transfer and establishment of invasive species, but other factors, including the concentration of potentially invasive microorganisms in the water transferred, the location of the transfer, and the availability of suitable habitat (including susceptible hosts for pathogens and parasites) have much greater effects on the risk as stated in the Aquatic Invasive Species-Pathways for the Introduction of Aquatic Invasive Species of Concern section of Chapter 4. The SEIS does not state or infer that the risk is proportional to the volume of water that would be transferred under Missouri River alternatives as the commenter asserts. The *Transbasin Effect Analysis* includes an analysis of the cumulative risk of biota transfer pathways starting on page 39 of Appendix E). The proposed Red River Valley Water Supply Project is one of several pathways identified, and was considered in Reclamation's analysis of potential cumulative effects of the Project as described in the AIS section of Chapter 4 in the SEIS.

Response 16-36 – All federal agencies, including Reclamation have trust obligations to federally recognized tribes. The trust responsibility is defined by treaties, statutes, Executive Order, and other federal law. The procedures for the Department of the Interior agencies to meet their trust responsibilities are described in Secretarial Order No. 3215, *Principles for the Discharge of the Secretary's Trust Responsibility*. Reclamation exercises its trust responsibility through consultations with tribes in conjunction with the NEPA process.

The SEIS addressed treaty rights and ITAs in the Affected Environment, Environmental Impacts and Consultation and Coordination chapters. This SEIS, however, does not attempt to determine, regulate, or quantify ITAs or any currently unquantified rights that tribes are, or may be, entitled to by treaty or law, nor would it be appropriate for an SEIS for the stated purpose and need of this proposed action to attempt to do so. Determination and quantification of water rights is the province of jurisdictional determination by courts and/or legislative action by Congress.

As stated in the SEIS chapter four, the depletion analysis of Missouri River resources included all future tribal depletions documented in written plans and tribal reserved water rights that have been quantified. Reclamation also recognizes that several tribes with reserved rights to Missouri River resources have not quantified that right and at such time in the future, should they choose

to do so, the volume of water available for other users in the basin may be affected. The question of compensation to the Tribes could only be approached if tribal water rights were quantified, and the Project was shown to be impacting the availability of those water rights to the Tribes. See also Response 16-37.

Response 16-37 – As the trustee, the United States appreciates the Missouri River Basin tribes' position with respect to water rights pursuant to the Winters Doctrine. The tribes in western states, where the prior appropriation doctrine's "first in time, first in right" applies, understand the priority date of one's water right is critical. In times of shortage, the junior (most recent) water rights holders must curtail their usage before senior users. Most Indian tribes benefit from this aspect of western water law given their long histories in their respective territories pre-European settlement and expansion westward. Thus, Indian tribes enjoy a priority date no later than the date of their reservation's establishment. Winters rights are based on what is needed to accomplish the reservation's purposes both for the present and the future, not on initial or even current use of water. Winters rights also cannot be lost for non-use under state-law concepts such as abandonment and forfeiture.

Reclamation has followed the court's directive and taken a hard look at the cumulative impacts of water withdrawals on the Missouri River. As stated in the draft SEIS (page 3-105 to- 106) all tribal reserved water rights that have been quantified or are being quantified were included in the Missouri River depletions analysis. Reasonably foreseeable tribal water supply and irrigation projects were included as noted in Appendix D, Table D-6. NEPA does not require the agency to consider speculative actions when examining impacts. At this time, including unquantified reserved tribal water rights would be highly speculative. It is impossible to consider how possible depletions of an unknown quantity could possibly affect the future water supply and navigation of the Missouri River basin. This is particularly difficult given that climate change modeling for the basin indicates it will generally be wetter in the long-term.

At any time in the future reserved tribal water rights are quantified, or tribes enter into Indian Water Rights Settlements, the volume of water available for other (junior) users in the basin may, indeed, be affected. This statement recognizes and discloses both the potential quantification and exercise of Indian water rights and the potential effect that any such quantification and exercise could have on the amount of water available for other users in the Missouri River basin.

Response 16-38 – See Response 16-37.

Response 16-39 – NEPA is an environmental disclosure law and as noted in the Response 16-37 the SEIS acknowledges Reclamation's trust obligations to federally recognized tribes and discloses that Indian water rights exist on the Missouri River under the *Winters Doctrine*. It was further disclosed that there is an adjudication process to account for those water rights. Reclamation is not aware of any adjudication process for Missouri River tribes beyond those already documented in the SEIS. Therefore, the potential water rights of all Missouri River Tribes referred to by the commenter are not reasonably foreseeable. At any time in the future should additional reserved tribal water rights be quantified, or tribes enter into Indian Water Rights Settlements, the volume of water available for other (junior) users in the basin may,

indeed, be affected. To speculate further is unreasonable considering the endless number of variables leading to adjudication of tribal water rights. Inbasin groundwater sources were thoroughly analyzed in the SEIS, and information on the quantity of water available from these sources, their reliability, and the potential impacts associated with the use of groundwater are discussed throughout the SEIS. Based on those analyses, Reclamation identified a preferred alternative that would use a combination of Missouri River water and inbasin groundwater. The alternatives that would use only inbasin water sources were found to be a much less reliable than the Missouri River alternatives. Reclamation evaluated and considered all alternatives and their potential affects.

Response 16-40 – Reclamation has and will continue to comply with federal laws authorizing the Project as noted in the comment. The International Joint Commission's 1977 recommendations regarding construction of the Garrison Diversion Unit were related to the much larger Garrison program and not specific to the Project as the comment infers. The International Joint Commission has the authority to study and recommend solutions to transboundary issues when asked to do so by the national governments. However, please note there is a difference between the authority/provisions granted by federal law versus a recommendation made by a committee established under a treaty. As acknowledged by the International Joint Committee itself, their recommendations are not binding (http://www.ijc.org).

Response 16-41 – See Response 16-40.

Response 16-42 – Reclamation would like to correct a misstatement in the comment. Reclamation identified a preferred alternative in the Draft SEIS but no selection has been made. A response to this comment is not required under NEPA because the comment does not raise a significant environmental issue (NEPA Regulations 40 CFR 1530.4). The author expressed personal opinions which are not appropriately addressed as part of the NEPA process.

Response 16-43 – See Response 16-42.

Response 16-44 – A response to this comment is not required under NEPA because the comment does not raise a significant environmental issue (NEPA Regulations 40 CFR Part 1503.4). The author expressed personal opinions which are not appropriately addressed as part of the NEPA process.

Comment Sheet for the Northwest Area Water Supply Project Draft Supplemental Environmental Impact Statement

As part of the public hearing process, comments should be sent to Northwest Area Water Supply Project, Bureau of Reclamation, P.O. Box 1017, Bismarck, N.D., 58502-1017. Comments should be postmarked by October 12, 2010.

17

(Please Print Clearly)

Name Keith Fulsebakke

Organization and Address City of Bottineau

115 West 6th Street

Bottineau ND 58318

Phone (701) 228/3620 **FAX** 228/3630 **E-mail** cgarage@utma.com

Comments:

17-1

The City of Bottineau has been signed up to recieve NAWS water since 1989.

In 2004 the City hired the ND water commission to study our wellfield. They determined that we are utilizing our aquifers to their potential. Since than we have lost the use of 3 wells because we can not meet the mcl for gross alpha contained in the radionuclide rule.

Our water quality is not good because of the iron and manganese content. Our water is also 47 grains hard.

In the last 5 years our useage has increased fron 90 million to 102 mgd further taxing our well field.

Because of the quality and the unavailability to get enough water from our well field we desperately need Naws water.

*Attach additional sheets if necessary.

Please mail your comments to the address on the back of this form, or FAX your comments to 701-250-4326, or e-mail your comments to awaters@usbr.gov. Thank you.

The names and comments of those making written or oral statements on this process will become part of a public record. You may request that your name and/or address be withheld from public release. Those requests will be honored to the extent permissible by law.

U.S. Department of the Interior
Bureau of Reclamation

Response 17-1 – This statement has been noted. Please refer to General Response No.1.

Comment Sheet for the Northwest Area Water Supply Project Draft Supplemental Environmental Impact Statement

As part of the public hearing process, comments should be sent to Northwest Area Water Supply Project, Bureau of Reclamation, P.O. Box 1017, Bismarck, N.D., 58502-1017. Comments should be postmarked by October 12, 2010.

18

(Please Print Clearly)

Name Dan Marquardt

Organization and Address Farmer

217 W 8th Street

Bottineau, N.D. 58318

Phone (701) 228-3878 **FAX** _____ **E-mail** _____

Comments:

I strongly support the NAWS Water Project. We need a good quality water supply in Bottineau County, North Dakota.

In mid-summer we came very close to running out of water. We own two farmsteads with residences on them and have no available water from wells just from rural water piped in a

This is a project way overdue for completion. We have been promised water for years and have not seen it carried through.

18-1

Dan Marquardt

Bottineau County Commissioner and Farmer

*Attach additional sheets if necessary.

Please mail your comments to the address on the back of this form, or FAX your comments to 701-250-4326, or e-mail your comments to awaters@usbr.gov. Thank you.

The names and comments of those making written or oral statements on this process will become part of a public record. You may request that your name and/or address be withheld from public release. Those requests will be honored to the extent permissible by law.

Response 18-1 – This statement has been noted. Please refer to General Response No.1.

Comment Sheet for the Northwest Area Water Supply Project Draft Supplemental Environmental Impact Statement

As part of the public hearing process, comments should be sent to Northwest Area Water Supply Project, Bureau of Reclamation, P.O. Box 1017, Bismarck, N.D., 58502-1017. Comments should be postmarked by October 12, 2010.

19

(Please Print Clearly)

Name Bottineau County Board of Commissioners

Organization and Address 314 W 5th Street

Bottineau ND 58318

Phone (701) 228-2225 **FAX** 228-5181 **E-mail** lisa.herbel@co.bottineau.nd.us

BOTTINEAU COUNTY
COMMISSIONER PROCEEDINGS
August 5th, 2014
8:40 A.M.

It was the consensus of the board to pass a Resolution stating "the Bottineau County Board of Commissioners are concerned about our water quality and the availability of getting water to Bottineau County and wish to express their concern about getting the NAWS project completed."

North Dakota and Bottineau County was promised water approximately 60 years ago and this promise has never been fulfilled and there is in need of water quality and water quantity for our entire County. 19-1

We urge you to please complete this project as soon as possible as demands continue to increase.

*Attach additional sheets if necessary.
Please mail your comments to the address on the back of this form, or FAX your comments to 701-250-4326, or e-mail your comments to awaters@usbr.gov. Thank you.
The names and comments of those making written or oral statements on this process will become part of a public record. You may request that your name and/or address be withheld from public release. Those requests will be honored to the extent permissible by law.

U.S. Department of the Interior
Bureau of Reclamation

Don Marquardt
Bottineau County Chairman of Commissioners

Response 19-1 – This statement has been noted. Please refer to General Response No.1.

STATE OF MISSOURI
Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

September 9, 2013

Ms. Alicia Waters
Bureau of Reclamation
P.O. Box 1017
Bismarck, ND 58502

Dear Ms. Waters:

The Missouri Department of Natural Resources (Department) appreciates the opportunity to comment, but before we begin let us communicate our disappointment. We formally requested in our October 8, 2010 letter to *"be included on all communications associated with this SEIS and invited to all meetings between the Bureau and other agencies."* We are discouraged and concerned that our request was ignored. Regardless, we submit the following comments on the Northwest Area Water Supply (NAWS) Draft Supplemental Environmental Impact Statement (Draft SEIS).

The Department has strongly opposed the inter-basin transfer of Missouri River water to the Hudson Bay drainage basin in each of our past comments, which are attached for your reference. Unfortunately, the Bureau of Reclamation (Bureau) selected a Preferred Alternative in this Draft SEIS which utilizes the Missouri River to provide water supply to the Souris River basin without clear justification for its rationale.

First of all, the Bureau has not demonstrated that there is an actual need for this inter-basin transfer given the current and estimated future demand. The Bureau presents flawed population projections, overestimates water demands and ultimately fails to justify the Preferred Alternative. The Bureau relies on anecdotal evidence to substantiate its conclusions regarding population growth and fails to provide any data for the population increase. County-level population projections and water service area population in the Water Needs Assessment report indicate a disproportionate increase in water demand for only a very small population increase. In providing water supply for a net increase of 492 people across the 10 County-region over 50 years, $207 million would be expended for construction and $550 million ($11 million per year over 50 years) for Operation and Maintenance. In other words, the Bureau proposes to spend

20-1

20-2

$757 million to provide water for a net increase of 1 person per county per year (Net increase of 492 people/10 counties/50 years) as shown in the enclosed Table 1. Because population is not a major driver of the increased water demand, it is highly unlikely that water demand will increase over the years. Even if the population projections were accurate, the limited range of alternatives presented in the SEIS does not objectively evaluate potential in-basin alternatives. 20-3 20-4

Nor did the Bureau evaluate implementing conservation measures to help meet water supply demand. To quantitatively assess the Souris River as a potential supply, a Souris River model should have been developed during the decade in which the Bureau has been working on this project. A Souris River Basin model is indispensable to a credible evaluation of alternatives if the Bureau was to have taken a hard look at all of their options. There are five USGS stream gages on the Souris River, with records dating back to 1937 or earlier, to serve as a foundation for development of such a model. The USGS gage on the Souris River above Minot, North Dakota, has a contributing drainage area of 3,900 square miles with an average annual runoff of 129,249 acre-feet for the time period of 1904-2013. This data suggests there is a substantial source of water that can be developed along with sustainable groundwater withdrawals to supply the projected 2060 demand of 10.40 million gallons per day, or just under 12,000 acre-feet demand per year. Unfortunately, the Bureau did not evaluate alternatives that capture some of the river's high flows to provide a more reliable water supply. 20-5 20-6 20-7

A comprehensive quantification of depletions is necessary to effectively analyze the impacts to users in the Missouri River basin. The Bureau has apparently disregarded our previous comments requesting this analysis, so the current depletion estimates continue to remain insufficient. In 2012, the Bureau developed the Depletions Database, modifying their methodology based on hydrologic unit codes (HUCs), rather than 'node basins' and updating depletions estimates to reflect 2007 irrigated acreage. Development of the Depletions Database is a positive improvement; however, the foundation of the Database still relies on assumptions and adjustments to outdated 1978 data gathered by the Missouri Basin States Association. To develop the database, the Bureau relied on the same methodology described in its 2005 report, *A Study to Determine Historic and Present-Level Streamflow Depletions in the Missouri River basin for the Period 1929 to 2002*. The report acknowledges that there are many limitations in the analysis due primarily to time constraints that could have been resolved in the intervening years. Without a comprehensive study of depletions, the analysis of cumulative impacts is flawed. 20-8

The effects of existing depletions already impact Missouri River basin users without the additional withdrawals identified for this project. According to the Depletions Database, the Missouri River has an average of 5.05 million acre-feet (MAF) of existing depletions above Garrison Dam. This amounts to approximately one-third of the average annual volume for the Missouri River at Bismarck, North Dakota (average annual yield 16.2 MAF). It is evident that the Missouri River basin is substantially depleted by consumptive uses today. Therefore, the selection of an inter-basin diversion as the proposed Preferred Alternative for this project is ill-advised and will ultimately be unsustainable as a reliable source of water supply. 20-9

The Bureau excluded potential, but non-adjudicated, Tribal water projects in the futures analysis of future water project depletions as stated in Appendix D. It can reasonably be expected that additional tribal water right adjudications will occur by 2060 as demand for water continues to increase. Six tribes have adjudicated water rights with the State of Montana, most in the last ten years. To identify and yet exclude reasonably foreseeable projects disregards the intent of the NEPA and ignores the court's directive that the Bureau take a "hard look" at the cumulative impacts of water withdrawals on the Missouri River. The need to appropriately evaluate potential Tribal water projects is further evidenced by recent requests from multiple tribes in South Dakota to begin Congressional hearings on preserving water rights for the tribes.[1] 20-10

With the proposed inter-basin transfer, the Bureau has the responsibility to ensure that the project prevents invasive species transfer. The Preferred Alternative fails to fulfill that obligation. The proposed system to control invasive species transfer is insufficient to support the claims made in the Draft SEIS. This is particularly important in that a single instance of species transfer may prove catastrophic for the receiving watershed. The treatment option identified with the Preferred Alternative lacks the redundant system necessary to prevent transfer of aquatic invasive species between watersheds. Relying on a single system with no redundancies poses an unacceptable risk to the watershed in the event of a system failure. No practicable recovery is available after the water is transferred across the basin divide. It is recommended that a "treat and hold" system be analyzed as this type of approach would allow water to be retained until treatment has been assured through testing. No system for such assurance testing is presently included in the Draft SEIS resulting in an underestimate of the operational costs of the system. Therefore, the analysis of environmental impacts is incomplete and is missing significant costs. 20-11

[1] "Native American group wants hearing on water rights they say are preserved by 1908 doctrine" http://projects.registerguard.com/apf/sci/sd-water-woes/

This inter-basin transfer establishes "de facto" water rights for residents of the Souris River Basin over those in the Missouri River basin. This attempted transfer of benefits is very apparent in this study, where the Preferred Alternative guarantees water supply to the recipient basin because the base of intake is located 5 feet below the top of the Lake Sakakawea's Permanent Pool and is without a shut off mechanism. The residents of the Missouri River basin, however, do not have a similar guarantee of water supply. With droughts in the Upper Missouri and the Souris River basins typically occurring at the same time, these "de facto" senior rights will amplify impacts to the users in the Missouri River basin. 20-12

The use of the U.S. Army Corps of Engineers' (Corps) Economic Resource models to determine economic impacts within the Missouri River Basin is inappropriate because the models are outdated. To analyze economic impacts resulting from implementation of the alternatives in the Draft SEIS, current economic impact models should be developed. The Bureau continues to use the Economic Resource models regardless of changes that have occurred in the past 20 years. The Department strongly opposes the use of these outdated models to evaluate cumulative impacts and recommends that the Bureau and the Corps update their models to reflect the contemporary economic conditions. 20-13

It is unclear how the Bureau is calculating the net National Economic Development (NED) benefits. Several critical impacts are not evaluated, such as the impact of additional depletions on the Mississippi River. In the Draft SEIS, the benefits are added to report as total benefits and it appears that the benefits are double-counted. The 1983 Principles & Guidelines requires that the net benefits of a project be reported. The Department recommends that the Bureau report the net benefits and identify how the net benefits differ from total benefits. A benefit-cost ratio of the water supply project cannot be calculated based on the data provided. It is recommended that the Bureau complete a comprehensive Regional Economic Development (RED) analysis for the project and provide a detailed estimate of costs and benefits for this water supply project. 20-14

The Missouri River Reservoir System does not contain storage dedicated for Municipal and Industrial (M&I) water supply. Despite this, the Corps has granted easements over the years to access reservoir water for M&I use without a contract for use of the water. The Corps has begun processes to establish an M&I water supply allocation that would require contracts for use of reservoir water. The Corps estimates in the Surplus Water reports that just over 727,000 acre-feet of newly dedicated water supply storage would need to be established in the reservoir system. The impact of this newly established water supply allocation has also never been fully assessed in the Surplus Water Environmental Assessments or in the cumulative impacts of the Draft SEIS. 20-15

The expense associated with a dedicated M&I water supply allocation in a Corps reservoir is not included in the Draft SEIS. The Preferred Alternative proposes transferring between 13,600 to 29,100 acre-feet per year out of basin for M&I water supply. To provide this yield, the Corps would require approximately 35,000 to 74,800 acre-feet of storage set aside in the reservoir. According to the Surplus Water reports, this storage would cost between $284,550 to $1,648,592 per year depending on the Corps' approach ($8.13 per acre-foot of storage for Lake Sakakawea or $20.04, the average of all Surplus Water storage across Missouri River reservoirs). This expense was not included in the annual cost estimates for the Missouri River out-of-basin transfer alternatives. Therefore, the economic impact of the proposed project is inadequate and misleading. 20-15

In summary, after multiple attempts, the Bureau has failed to complete an adequate cumulative impact assessment and failed to comply with NEPA by not evaluating feasible in-basin alternatives. After viewing the Draft SEIS, the Department is driven to the conclusion that the proposed project is not, and cannot be, justified. 20-16

The Department appreciates the opportunity to comment. We once again request to be informed of and invited to all meetings between the Bureau and other agencies regarding this project. Please contact Ryan Mueller at (573) 751-2867 or ryan.mueller@dnr.mo.gov with any questions regarding these comments.

Sincerely,

DEPARTMENT OF NATURAL RESOURCES

Sara Parker Pauley
Director

Enclosures

APPENDIX

Table 1. Benefits and Costs of Alternatives in Draft Supplemental Environmental Impact Statement

Alternatives	**Annual construction costs**	**Net benefit to people 2060**	**Per Capita Construction Costs**
Groundwater with recharge	$216,600,000	123,890	$1,748.33
Groundwater with recharge and the Souris river	$217,100,000	123,890	$1,752.36
Missouri river and conjunctive use	$205,600,000 - $276,800,000	123,890	$1,659.54 - $2,234.24
Missouri river and groundwater (preferred alternative)	$205,500,000 - $276,800,000	123,890	$1,659.54 - $2,234.25
Operation and Maintenance Costs per year	**Annual Operation Costs**	**Net benefit to people 2060**	**Annual Per Capita Costs**
Groundwater with recharge	$8,800,000	123,890	$71.03
Groundwater with recharge and the Souris river	$8,800,000	123,890	$71.03
Missouri river and conjunctive use	$9,500,000 - $10,800,000	123,890	$76.68 - $87.17
Missouri river and groundwater (preferred alternative)	$9,500,000 - $10,800,000	123,890	$76.68 - $87.18
Total costs preferred alternative over 50 years	**680,500,000 - 816,800,000**	**123,890**	**$5,492.78 - $6,592.95**
	Net People Benefited	**Number of Counties**	**Per Capita Benefit/county/year**
Net Benefit over 50 years	**492**	**10**	**1**

Data Sources from Draft SEIS:

1. Table 2-29 – Summary of Construction Cost Estimates by Alternative
2. Table 2-30 – Summary of OM&R Cost Estimates by Alternative
3. Table 3-26 – Population Projections

Matt Blunt, Governor • Doyle Childers, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

February 29, 2008

Northwest Area Water Supply Project EIS
Attention: Alicia Waters
Bureau of Reclamation
Dakotas Area Office
P. O. Box 1017
Bismarck, ND 58502-1017

Dear Ms. Waters:

I am writing to submit comments from the Missouri Department of Natural Resources (department) on the draft Environmental Impact Statement (EIS) for the Northwest Area Water Supply Project (NAWS). First and foremost, the department strongly opposes the inter-basin transfer of Missouri River water to the Hudson Bay drainage basin under any circumstance. The Missouri basin is already significantly depleted by consumptive uses of water and it is challenging enough trying to address these in-basin water quantity problems. To further add to this burden by creating the first transfer of water into the Hudson Bay drainage is not only unsustainable, it is irresponsible.

The department has provided comments throughout the development of this project. On April 20, 2006, the department provided comments during the scoping period prior to development of the draft EIS. These comments were largely ignored. We are again raising issues addressing the scope and adequacy of the draft EIS, need for the NAWS project, depletion of the Missouri River, and the environmental impacts that will result from this project. However, those comments that address specific environmental impacts of an inter-basin transfer should not be construed as Missouri's acquiescence to such a transfer and should only be viewed as our desire to be thorough.

Adequacy of the Draft EIS

In the draft EIS, the Bureau of Reclamation (Reclamation) summarizes their mandate from the court to "revisit the FONSI upon completion of further environmental analyses." In lieu of perfecting the Environmental Assessment, Reclamation has instead completed a myopic EIS that has failed to even recognize the existence of their original range of alternatives. Reclamation chose to focus on the court's identification of the need for "additional analyses (that) 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." Reclamation then crafted an EIS addressing only those issues specifically identified by the Court. Reclamation has diverted what should have been an EIS on NAWS into a narrowly focused EIS of water treatment methodologies.

This approach, however, fails to satisfy the Court's directive to "comply with the procedural requirements of the National Environmental Policy Act (NEPA) and reach reasoned decisions on issues of environmental concern." The Court goes on to say that "an agency cannot be allowed to avoid producing a thorough EIS by ignoring a possible, but unexplored, environmental issue in the EA." The same standard must apply to this EIS. For this EIS to meet the NEPA standard, it must address all significant issues of environmental concern. Reclamation should thoroughly analyze the need for the project based on current information and data and should consider the impacts associated with depletion of the Missouri River, in addition to addressing inter-basin transfer of invasive species and treatment options.

Purpose and Need

Reclamation states that the purpose of the proposed action is to adequately treat water from the Missouri River basin (Lake Sakakawea) using methods and measures that further reduce the risk of transferring invasive species into the Hudson Bay basin. The department strongly disagrees. This EIS should be a comprehensive and thorough analysis of the NAWS project. Reclamation's statement of purpose and need in the EIS fails to provide a current and compelling justification for the project. The demographic estimates that have been used to support the need for the project are dated and suspect and have not been corroborated by more recent population and demographic data. Two relevant points should be made. First, Minot can currently supply all of the local water needs. Second, the federal government's own current demographic estimates project population decline at least through 2020.

The department strongly urges Reclamation to revisit the purpose and need for the project. Reclamation should consider current estimates of population and need. Reclamation should also consider the infrastructure changes that have already been constructed and develop new cost estimates from this baseline. The department urges Reclamation to examine the full range of options as required under the NEPA and to use as its baseline "No Action Alternative" an option based on the use of local in-basin water sources. The obvious conclusion using this baseline would be that no water treatment plant is needed as no inter-basin transfer is needed. This would eliminate all treatment costs and the environmental concerns related to species transfer through this project.

Missouri River Depletion

Reclamation continues to promote the view that the Missouri River is an endless and reliable source for the NAWS service area. This is not the case, and the department has in fact shown that this would specifically not be true in times of drought, the precise scenario for which the project has been developed. The department refers Reclamation staff to our comments on the draft and final EIS on the Red River Valley Water Supply Project for more details.

The department's scoping comments of April 20, 2006 pointed out that Reclamation appears to look at impacts from each project in isolation, based on the DEIS prepared for the Red River Valley Water Supply Project. NEPA requires a cumulative impact analysis. The department argues that allowing diversion of Missouri River water into another basin sets a precedent that will likely lead to a cascade of withdrawals and become an "irreversible and irretrievable" commitment of resources. Once such a diversion is established, it will create what will

essentially be a water supply surplus because the project will provide far more water than actually needed to meet the current and anticipated demand. Water not needed for the original intended purpose will then be committed to non-project uses and these uses will become established as future claimants of limited water resources.

Risks of Invasive Species

Reclamation fails to address actual system failure and develop any plans to mitigate the result of a system failure. Reclamation argues statistically that the risk of species transfer approaches zero. The attempts in the past year to effectively filter biota discharged from Devils Lake are testimony to the potential for unforeseen outcomes and design failures. However statistically unlikely, failures occur and when the risk is high and the impacts irreversible, the "unthinkable" must be considered and provided for. The NAWS proposed treatment plant can not be considered equivalent to a typical drinking water treatment plant in its operation. Most drinking water plants have recourse to a boil order should a system fail. In the plant proposed in the EIS, no such "recovery" option is available. Considering these realities, Reclamation should assess the need for a "treat and hold" option that would allow water to be retained until treatment has been assured.

Wetlands Impacts

Reclamation's rush to complete the pipelines in order to create an impression of inevitability has now led to compromised design and potential environmental impacts at the site chosen for the water treatment plant. Section 401 of the Clean Water Act requires that wetlands be avoided if possible. Reclamation and its partners have unaccountably selected a site where wetlands occur and must now mitigate impacts to the extent possible. By building the pipelines essentially up to the property designated as the site of the water treatment plant, Reclamation has greatly decreased its ability to meet the legal requirements of the Clean Water Act. Reclamation should spell out more clearly the implications of their earlier decisions on the design, construction and presumably the costs associated with the construction and operation of the water treatment plant.

Thank you for the opportunity to review and comment on this project. The department strongly urges Reclamation to weigh these comments and reconsider the positions taken in the draft EIS. If you have any questions or concerns related to these comments, please contact Mr. Robert Stout of my staff at 573-751-7402.

Sincerely,

DEPARTMENT OF NATURAL RESOURCES

Doyle Childers
Director

DC:rsj

Matt Blunt, Governor • Doyle Childers, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

January 7, 2009

Northwest Area Water Supply Project EIS
Attention: Alicia Waters
Bureau of Reclamation
Dakotas Area Office
P. O. Box 1017
Bismarck, ND 58502-1017

Dear Ms. Waters:

I am writing to submit comments from the Missouri Department of Natural Resources (department) on the Final Environmental Impact Statement (FEIS) for the Northwest Area Water Supply Project (NAWS). As we have stated clearly in each of our past comments and discussions, the department strongly opposes the inter-basin transfer of Missouri River water to the Hudson Bay drainage basin under any circumstance. Our view remains that the Missouri River is already significantly depleted by consumptive uses of water and the establishment of this commitment to transfer water into the Hudson Bay drainage is irresponsible and will ultimately be unsustainable.

After having reviewed the FEIS prepared by the Bureau of Reclamation (Reclamation), the department has been disappointed to find that once again our comments and objections have been dismissed without a defensible explanation. We have consistently raised substantive issues addressing the scope and adequacy of the EIS, the need for the NAWS project, depletion of the Missouri River, and the environmental impacts that will result from this project. Reclamation has consistently chosen to brush these considerations aside. The department is providing additional comments below.

Adequacy of the EIS

Reclamation asserts that the EIS adequately sets forth the environmental impact(s) of the alternatives and that no further analysis or data collection are necessary. The department maintains that in limiting the scope of the EIS to an assessment of water treatment alternatives, Reclamation has failed to satisfy the procedural requirements of the National Environmental Policy Act (NEPA) and failed to address all significant issues of environmental concern. To satisfy the NEPA standard, Reclamation should thoroughly analyze the need for the project based on *current information and data* and should consider the impacts associated with depletion of the Missouri River, in addition to addressing inter-basin transfer of invasive species and treatment options.

Purpose and Need

The department maintains that Reclamation has failed to provide a current and compelling justification for the project. Minot can currently supply all of the local water needs. The department previously pointed out that the demographic estimates that have been used to support the need for the project are both dated and suspect and they have not been corroborated by more recent population and demographic data. The federal government's own current demographic estimates project population decline at least through 2020.

Reclamation has refused to revisit the purpose and need for the project. Reclamation has refused to consider current estimates of population and need. Reclamation has refused to consider the infrastructure changes that have already been constructed and how this might affect cost estimates. Reclamation has failed to consider the use of local in-basin water sources. The department maintains that consideration of these factors would demonstrate that no water treatment plant is needed because no inter-basin transfer is needed. There would be no treatment costs related to species transfer and most of the project's environmental concerns would be eliminated. Under NEPA, Reclamation is required to consider new information and supplement its analysis to address it. Therefore, even if Reclamation's cramped reading of the court's order were correct (and the department does not believe it is), NEPA would still require Reclamation to address the new information that has come to light since the original, inadequate environmental assessment.

Missouri River Depletion

Reclamation has taken exception to the department's assertion that insufficient Missouri River water will be available during times of drought for existing and future water users. In its June 2008 report, "Future Depletions and Sedimentation Effects on the Missouri River Mainstem System", the Corps confirmed that its Red River Valley analysis was flawed. This report states that "In April 2008, a detailed review of the depletion files used in the hydrologic and power modeling determined that the historic (1930-2002) depletion input file was incorrect." The department continues to see the need for Reclamation to revise their assessment of this critical issue. The use of incorrect data to support diversions not only harms the interests of those living in the Missouri River basin, but also threatens the viability of the communities to be served by this project at the very time when the water needs may be most critical. It is irresponsible for Reclamation to continue to make false promises based on bad data and poor analyses.

The department also continues to oppose diversion of Missouri River water into another basin as it sets a precedent that will likely lead to more withdrawals and commit these water resources irreversibly and irretrievably and offers no safeguards to prevent commitment of Missouri River water to new uses. The project would establish future claims for these limited water resources.

Risks of Invasive Species

Reclamation has maintained that control system failures that would result in a biological invasion would be very unlikely and that statistically the risk of species transfer approaches zero. The risk exists and Reclamation's proposed treatment fails to address those risks adequately. The proposed system lacks the adequate safeguards and redundancies such as can be found in a drinking water treatment facility that can issue a "boil order" to minimize the risk after a system failure. The State of North Dakota's inability to take proper action with regard to the Devil's Lake outlet in spite of the promises made concerning proper treatment to prevent species transfer does not inspire confidence. A "treat and hold" option would allow water to be retained until treatment has been assured.

Thank you for the opportunity to review and comment on this project. The department strongly urges Reclamation to reconsider their position on this project. If you have any questions or concerns related to these comments, please contact Mr. Robert Stout of my staff at 573-751-7402.

Sincerely,

DEPARTMENT OF NATURAL RESOURCES

Doyle Childers
Director

DC:rsj

Jeremiah W. (Jay) Nixon, Governor • Kip A. Stetzler, Acting Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

October 8, 2010

Bureau of Reclamation
Dakotas Area Office
Attention: Alicia Waters
P. O. Box 1017
Bismarck, ND 58502-1017

Dear Ms. Waters:

I am writing to submit comments from the Missouri Department of Natural Resources (department) on scoping for the Northwest Area Water Supply Project (NAWS) Supplemental Environmental Impact Statement (SEIS).

The U. S. Bureau of Reclamation (Bureau) has received clear direction from the court to prepare a full analysis of the cumulative impacts of water withdrawals from the Missouri River basin before proceeding with the NAWS project. The required scope of this analysis can not be met by merely pasting together pieces of previous work or by the quick addition of known projects, but must include a full and honest accounting of the existing, proposed and contemplated projects. Only by assessing the Missouri River basin in a comprehensive manner can the Bureau effectively judge the costs and impacts of an in-basin solution against those resulting from the proposed use of Missouri River water. Both the court and the Office of Management and Budget have made their expectations of a more comprehensive analysis clear.

The Bureau must include all projects that it and other agencies have completed, are planning or anticipate submitting for consideration for funding. Consultation with states, tribes and other federal agencies will be necessary in order to compile and assess a complete list of projects. Out-of-basin diversions are particularly impactful as these are entirely consumptive uses of Missouri River water.

There is no current, comprehensive depletion analysis for the Missouri River basin. However, such an analysis is critical to understanding the impacts of projects, such as NAWS, on those living in the Missouri River basin. The most recent study released by the Bureau in 2005 (*A Study to Determine the Historic and Present-Level Streamflow Depletions in the Missouri River Basin for the Period 1929 to 2002)* was very limited and repeatedly describes the limitations of the analysis due to time and financial constraints. There have been new depletions since this report, such as oil development in North Dakota. The SEIS should include an updated depletion estimate, addressing new and projected depletions, and the deficiencies cited in the 2005 report. The U.S Army Corps of Engineers' (Corps) impact models developed as part of its Missouri River Master Manual Review and Update Study were based on conditions in the late 1980s and early 1990s. Since these analyses are outdated and contained significant flaws, the Bureau should not use these models to analyze impacts to the Missouri River.

While tribal claims to water from the Missouri River may not be resolved for years or decades, these claims must be considered in a full assessment of demands on the river. These claims are reasonably foreseeable. In numerous public forums over the course of the past year or so, several tribes have made clear their intention to begin quantifying their tribal water rights. These intentions have been made clear to both the Corps and the Bureau. At the volume of water withdrawals discussed, this effort could result in substantial future depletions with the potential to significantly impact all other uses.

A further impact to available water in the Missouri River basin, beyond withdrawals, is sedimentation in the reservoirs. The Master Manual estimates that approximately 90,000 ac-ft of storage is lost yearly to sedimentation, and the Missouri River reservoir system is approaching a 5% loss in capacity. Continuing sedimentation must be accounted for, as well as any anticipated modifications to the reservoir system completed by either the Corps or the Bureau to mitigate sediment trapping behind the reservoirs.

We strongly encourage the Bureau to work closely with the Corps to examine current uses of the Missouri River and those uses that can be reasonably expected given recent developments. It is in everyone's interest that these two agencies create a comprehensive view of water demands that is consistent with all that is known about the current state of the Missouri River. In addition, a full list of existing and proposed demands on the river can not be completed in isolation. The assessment of Missouri River impacts can not be credible unless the Bureau coordinates this effort with the Missouri River Authorized Purposes Study and the examination of reallocation of waters within the mainstem reservoirs of the Missouri River. In fact, it may well be impossible for the Bureau to even complete scoping before the results of these two studies are known.

The Bureau should work closely with the U. S. Geological Survey (USGS) and state agencies that oversee oil and gas extraction to assure that it creates a defensible projection of current and future use of water for oil and gas well drilling, hydro-fracturing of reservoirs and well operations. Recent, rapid expansion of the use of water to extract energy resources in western North Dakota and other parts of the Missouri River basin threatens to significantly affect Missouri River operations of the Corps and to impact everyone living in the basin, particularly downstream water users. The USGS is developing a greater understanding of the energy resources available in and near the Missouri River basin and the water anticipated to be used in extracting those resources.

The State of Missouri notes that energy extraction was not among the purposes of the proposed project. If the Bureau intends to revise the intended use of the water proposed to be transferred by this project, it must include such a change in a Supplemental EIS and offer interested parties the opportunity to comment on the proposed changes.

The State of Missouri disagrees with the Bureau's decision to limit the geographic scope of its SEIS to the Missouri River's confluence with the Mississippi River. Flows from the Missouri River are critical to the support of uses on the Mississippi River and the impacts of increased depletions from the Missouri River may significantly impact economic activity on the Mississippi River.

Finally, the Bureau must examine the conditions under which water will no longer be removed from the Missouri River basin because the project purposes of the Corps' Missouri River management can no longer be met. While Section 6 of the 1944 Flood Control Act authorizes the Corps to enter into contracts for surplus water, "no contracts for such water shall adversely affect then existing lawful uses of such water." All contracts for water require a determination by the Corps of surplus water in the reservoir. The SEIS must describe the Corps' determination of surplus water for the NAWS project as well as explain how this project, in light of its cumulative impact with other foreseeable depletions, will not adversely affect other lawful uses of Missouri River water now or in the future. In addition, Section 6 allows for only short term use of the water with agreements normally being five years with an extension of five years being possible. If NAWS is intended to be a permanent withdrawal of water from Lake Sakakawea, a permanent storage reallocation would be required in accordance with the Water Supply Act of 1958, and other relevant laws.

The State of Missouri formally requests that it be included on all communications associated with this SEIS and be informed of and invited to all meetings between the Bureau and other agencies and the public meetings. We have noted the scheduled public meetings that were listed in the Federal Register (volume 75; #155, page 48987).

Please contact Dr. Joe Engeln of the Department of Natural Resources should any questions arise. He can be reached at (573) 751-9813 or at joe.engeln@dnr.mo.gov.

Sincerely,

DEPARTMENT OF NATURAL RESOURCES

Kip A. Stetzler
Acting Director

STATE OF MISSOURI
Matt Blunt, Governor • Doyle Childers, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

April 20, 2006

Northwest Area Water Supply Project EIS
U. S. Bureau of Reclamation
Dakotas Area Office
P. O. Box 1017
Bismarck, North Dakota 58502-1017

Re: Comments regarding scoping of the Draft Environmental Impact Statement for the Northwest Area Water Supply Project

Dear Sir or Madam:

I am writing to provide the Missouri Department of Natural Resources' (MDNR) comments on the scoping process for the Draft Environmental Impact Statement (DEIS) for the Northwest Area Water Supply (NAWS) Project.

We note that the preparation of this DEIS is due to the United States District Court for the District of Columbia's ruling that, in preparing the Environmental Assessment that previously served as the basis for the project, the Bureau of Reclamation (Bureau) did not adequately analyze a series of "significant environmental consequences" as is required by the National Environmental Policy Act (NEPA). The State of Missouri participated as amicus in this federal court case filed by the government of the Canadian Province of Manitoba. The State of Missouri has long had concerns about the NAWS project and indeed any project under which water would be diverted from the Missouri River.

The NAWS project, which will cost taxpayers more than $142 million, proposes to pump approximately 26 million gallons of water per day from the Missouri River. The project would transfer this water via pipeline, over the continental divide from the Missouri River Basin to the Hudson Bay drainage basin. The water would first be routed to Minot, North Dakota, and pumped to several communities from that location.

Because the Missouri and Hudson River basins have been naturally separated for hundreds of thousands of years, each basin has developed its own unique ecosystems. The Canadians' (and specifically Manitoba's) concerns are the same for the NAWS project as for other interbasin diversions, namely that, even with treatment, the risk of transfer of invasive species or harmful biota is unacceptable. At risk in Manitoba are the

extensive commercial fisheries on Lake Winnipeg, the tenth largest freshwater lake in the world, and sport fisheries in numerous provincial lakes and rivers. All told, the direct and indirect annual value of those fisheries to the Canadian economy is more than $50 million.

While the concerns over invasive species will be an integral part of the DEIS, we assert that, in order to comply with NEPA, a truly comprehensive analysis of all potential environmental impacts must be conducted. The Missouri Department of Natural Resources submits the following specific comments relevant to the scoping process for the DEIS:

- To reach compliance with NEPA, the DEIS must be comprehensive in its analysis and cannot focus on only one aspect of the proposed project such as biota transfer.

- In the DEIS, the Bureau must assess the cumulative impacts associated with the NAWS project. Based on our experience with the Draft Environmental Impact Statement for the Red River Valley Water Supply Project, the Bureau seems determined to look at each water project in isolation. This approach is in violation of NEPA.

- The U.S. Fish and Wildlife Service (USFWS) has issued a Biological Opinion dealing with three threatened and endangered species (endangered pallid sturgeon and least tern and the threatened piping plover) in the Missouri River basin. In the DEIS, the Bureau must thoroughly assess the endangered and threatened species impacts in the Missouri River basin. The NAWS project could impact habitat and the spring pulse aspects of the USFWS Biological Opinion.

- The Bureau must adequately assess species transfer in the DEIS. We assert that a computer model is not adequate to accomplish this analysis. In the species transfer assessment, the Bureau should use real species and multiple scenarios.

- We note that, in the Draft Environmental Impact Statement for the Red River Valley Water Supply Project, the Bureau used entirely different methods to assess the impacts of that proposed project in the Missouri River Basin than those used to assess impacts in the Red River Basin. In the DEIS for the NAWS project, the assessment of the Missouri River and Hudson River basins must be comparable.

- We note that NEPA requires the Bureau to assess reasonably expected events and consequences. We strongly encourage the Bureau to include an analysis of reasonably expected events and consequences in the DEIS for the NAWS project, including the operation of Red River Valley Water Supply Project Missouri River supply alternatives during prolonged droughts in the Missouri and Red River basins. In addition, the Bureau should include other proposed or reasonably expected growth in diversions from the Missouri River in the assessment.

We appreciate the opportunity to comment during the scoping phase for the DEIS for the NAWS project. If you have any questions or need clarification, please contact me or Mr. Dru Buntin, phone number (573) 751-3195. His address for correspondence is Department of Natural Resources, P.O. Box 176, Jefferson City, MO 65102. Thank you.

Sincerely,

DEPARTMENT OF NATURAL RESOURCES

Doyle Childers
Director

DC:db

STATE OF MISSOURI Bob Holden, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF THE DIRECTOR
P.O. Box 176 Jefferson City, MO 65102-0176

August 16, 2001

Ms. Maryanne Bach
Regional Director
U.S. Bureau of Reclamation
Great Plains Region
P.O. Box 36900
Billings, MT 59107

Dear Ms. Bach:

I am writing to urge your reconsideration of the Finding of No Significant Impact for the Northwest Area Water Supply project in North Dakota. For reasons explained below, I feel this project warrants preparation of an Environmental Impact Statement.

Allen Brown of the Canadian Consulate has informed me of the pending meeting (on August 20) between Canadian officials and U.S. Bureau of Reclamation officials to discuss the Northwest Area Water Supply project. In light of these discussions, I hereby offer my comments.

We have grave concerns about the precedent-setting nature of this project, especially considering the renewed interest in the long-controversial Garrison Diversion project and the existing depletions of the Missouri River basin. I am also aware that in addition to Canada, the state of Minnesota has also been involved in the technical discussions of this project. Canada and Minnesota continue to have serious concerns related to the transfer of biota and invasive species.

The Dakota Water Resources Act of 2000 (under Section 8 pertaining to the Red River Valley Water Supply study) requires the Secretary of the Interior to return to Congress for approval before any transfer of water from the Missouri basin to the Red River basin occurs. It also requires an Environmental Impact Statement. The Act illustrates Congress is aware of the serious policy issues that arise with an interbasin diversion between the Missouri basin and Hudson Bay basin. Since it is an interbasin diversion, the Northwest Area Water Supply project poses concerns similar to the Red River Valley Water Supply project. Therefore, it only makes sense for the Department of Interior and Bureau of Reclamation to consider the broader policy issues involved with the Northwest Area Water Supply project.

The recent controversies involving the Great Lakes basin have shown us that the issue of interbasin diversion is moving to the forefront of water policy issues and is no longer confined to the arid western states. Given the broader policy issues at stake, this project deserves very close scrutiny. This is best achieved through the preparation of an Environmental Impact Statement with its broader and more extensive public involvement.

Sincerely,

DEPARTMENT OF NATURAL RESOURCES

Stephen Mahfood
Director

SM:lcj

Response 20-1 – As documented in the Alternative Development Process-Needs Assessment section of Chapter 2 and Appendix B-Community/Water Systems Data, the *Water Needs Assessment Technical Report* (Reclamation 2012a) was prepared to determine the water needs for the Project area. The report was based on the best available data and reviewed by the Cooperating Agencies; this report was provided as a supporting document for the SEIS.

Response 20-2 – Reclamation does not concur with the statement regarding a disproportionate increase in water demand for only a very small population increase. The *Water Needs Assessment Technical Report* (Reclamation 2012a) estimates the Project population to increase by approximately 4,000 people.

In addition, the Alternatives Development Process-Needs Assessment section of Chapter 2 explains the water needs in the Project area are not related to population increases alone; the current population in this area is now experiencing water shortages, poor water quality, and declining aquifer sources. The estimated Project water need addresses these current issues and future needs and the alternatives were designed to meet future needs.

Response 20-3 – Reclamation does not concur with this statement and the commenter does not provide data to support the claim that it is 'highly unlikely that water demand will increase over the years'. The water needs in the Project area are expected to increase as documented in the *Water Needs Assessment Technical Report* (Reclamation 2012a) and described in the Alternatives Development Process-Needs Assessment section of Chapter 2. See also Response 20-2.

Response 20-4 –Reclamation worked with the cooperating agencies to identify and evaluate all surface water and groundwater sources, specifically including inbasin sources. Through the alternative formulation process some water sources were eliminated from further consideration because they were infeasible as discussed in Appendix C. The commenter did not identify any additional alternatives that should have been, but were not considered.

Response 20-5 – Reclamation evaluated water conservation measures throughout the project area in collaboration with the cooperating agencies during the conceptual design phase of the SEIS. This is discussed in detail in the *Water Needs Assessment Technical Report* (Reclamation 2012a), and summarized in the Alternatives Development Process-Water Conservation section of Chapter 2 and Appendix C. The current water use in the project area is much lower than the national average due to already implemented conservation measures. The opportunities for the Project area to further conserve are then also limited because those measures area already in place. The Water Conservation section of Chapter 2 explains that water conservation was considered but eliminated as a stand-alone alternative because the estimated savings of approximately 750,000 gallons per day due to both passive and active conservation measures would not be enough to provide the Project area with the 26 MGD needed. Additionally, due to the uncertainties associated with estimating water needs 50 years into the future, the Project need estimate was not reduced to account for potential water conservation savings. However, the Project sponsors could continue to implement conservation measures and encourage their users to do so as a means of managing the water resources and reducing costs.

Response 20-6 – Reclamation developed a spreadsheet model to quantitatively assess the Souris River as a Project water supply, and to evaluate impacts of Souris River water withdrawals under the two inbasin alternatives. The model developed by Reclamation used daily streamflow data from the USGS gage above Minot near the locations where Project withdrawals would occur, and three downstream gages to evaluate the impacts of Project withdrawals on the Souris River and related resources. The spreadsheet model developed by Reclamation is appropriate for assessing availability of Souris River water and the impacts of potential water withdrawals based on more than 75 years of historic daily flow data, the same data the commenter recommends Reclamation should consider.

As explained in the Water Resources, Souris River section of Chapter 4, a surface water runoff and reservoir operations models do not exist for the Souris River. Developing such a model would be expensive and require years of effort and Reclamation determined this was an exorbitant cost and the methods used were sufficient for the analysis. Reclamation has developed a new Appendix M to further explain identified incomplete and missing information and the relevance to evaluating reasonably foreseeable significant adverse impacts on the human environment (40 CFR 1502.22).

In addition, Reclamation has no authority to modify operations of upstream dams in Canada or in the United States. Furthermore, the storage capacities of upstream reservoirs are relatively small, and operating them to meet Project water needs would conflict with the flood control and fish and wildlife purposes for which they were constructed.

Response 20-7 – Mean annual runoff into the Souris River above Minot is an inappropriate metric for assessing water availability for the Project. The mean annual flow is greatly influenced by a few years with large flood events, and thus is not representative of the conditions expected to occur regularly over the life of the Project. The mean annual flow does not capture the extreme variation in both annual and seasonal flow demonstrated in the historic record; see the Water Resources section of Chapter 3.

The commenter's statement that Reclamation 'did not evaluate alternatives that capture some of the river's high flows to provide a more reliable water supply' is incorrect. The two inbasin alternatives evaluated would do just that by withdrawing Souris River water during moderate to high flow periods for aquifer recharge and/or direct supply.

Response 20-8 – Reclamation respectfully disagrees. Reclamation has notable expertise in the area of Missouri River depletions and has updated our data and modernized our methods since the original Missouri River Basin States Association (MRBSA) Study was completed in 1982 and the Reclamation 2005 study. This Depletions Database is the most comprehensive analysis available at this time. Reclamation has modernized this effort since the 2005 study. Reclamation will continue to use the best available data and tested methodologies to estimate Missouri River depletions. The Depletions Database used for this SEIS analyses is based on the most recent data available and builds upon both the MRBSA study and Reclamation's 2005 study. Updated data in the Depletions Database includes the top two depletion categories for water diversions – irrigated agriculture and public surface water supply systems, which together account for approximately 94 percent of the total estimated depletions in the basin. CEQ regulations demand

information of ‘‘high quality” and professional and scientific integrity (40 CFR 1500.1, 1502.24). Reclamation believes that meaningful evaluation must be carried out on the basis of whatever data is available so long as it meets the intent of 40 CFR 1500.1 and 1502.24. Analyses used for this SEIS meet the intent for which they were developed and are in compliance with NEPA.

Response 20-9 –Missouri River Department of Natural Resources (MDNR) does not supply information or analysis to support the statement that the Preferred Alternative is an unreliable water supply.

The MDNR comparison of current depletions to average annual yield at Bismarck is not particularly relevant as this yield is only reflective of flows at Bismarck without accounting for the volume of storage in Fort Peck and Garrison Reservoirs. (*Note* - Bismarck is actually located downstream of Garrison dam). The six Missouri River Mainstem dams are operated as a system to meet the authorized purposes of flood control, navigation, irrigation, hydropower, water supply, water quality, recreation, and fish and wildlife. The six mainstem reservoirs have the capacity to store 72.3 MAF of water. Much of the flexibility of the Missouri River System is derived from intrasystem regulation, or the transfer of water from one reservoir to another. The presence of the large reservoirs in the system greatly increases intrasystem regulation flexibility. There are two storage reservoirs, Fort Peck and Garrison reservoirs, accounting for 59 percent of that total Missouri River System storage from which the depletions above Garrison would be withdrawn. The storage available in the carryover multiple use zone of Fort Peck and Garrison Reservoirs is 23.5 MAF (Chapter 3-Water Resources section of the SEIS) and if you add in annual flood control and multiple use storage zones at these reservoirs that may be available for depletions, the storage capacity climbs to 33 MAF. Therefore, current average annual depletions above Garrison Dam (5.56 MAF) are approximately 16% percent of the carryover multiple use zone storage capacity for Fort Peck and Garrison reservoirs combined.

Comparing the average annual yield at Bismarck to the average annual depletions upstream of Garrison Dam is not appropriate because the depletions are not coming out of the flow at Bismarck. The flow at Bismarck is what remains after all upstream depletions have been taken out. In other words, even with an average annual depletion of 5.05 MAF upstream of Garrison Dam, an average of 16.2 MAF of water still flows through Bismarck every year (http://waterdata.usgs.gov/nd/nwis/annual?site_no=06342500&agency_cd=USGS&por_06342500_2=720813,00060,2,1928,2014&year_type=W&referred_module=sw&format=rdb). The historic average annual depletions for the entire Missouri River Basin are 9.94 MAF (summed for all reaches above Hermann, MO). Even with 9.94 MAF of depletions, the average annual yield of the Missouri River at Hermann, MO is 63.3 MAF (http://waterdata.usgs.gov/mo/nwis/annual/?referred_module=sw&site_no=06934500&por_06934500_6=834553,00060,6,1929,2015&year_type=W&format=html_table&date_format=YYYY-MM-DD&rdb_compression=file&submitted_form=parameter_selection_list). By comparison, annual Project depletions of 0.0136 MAF would be 0.14 percent of the historic average total system depletions, and 0.02 percent of the average annual yield of the Missouri River at Hermann, MO.

However, comparisons such as those presented by MDNR using average annual yield or the ones presented here should be considered within the context of how the Missouri River System is operated, which is as an integrated system for all authorized purposes.

Response 20-10 – As the trustee, the United States appreciates the Missouri River Basin tribes' position with respect to water rights pursuant to the Winters Doctrine. The tribes in western states, where the prior appropriation doctrine's "first in time, first in right" applies, understand the priority date of one's water right is critical. In times of shortage, the junior (most recent) water rights holders must curtail their usage before senior users. Most Indian tribes benefit from this aspect of western water law given their long histories in their respective territories pre-European settlement and expansion westward. Thus, Indian tribes enjoy a priority date no later than the date of their reservation's establishment. Winters rights are based on what is needed to accomplish the reservation's purposes both for the present and the future, not on initial or even current use of water. Winters rights also cannot be lost for non-use under state-law concepts such as abandonment and forfeiture.

Reclamation has taken a hard look at the cumulative impacts of water withdrawals on the Missouri River. As stated in the draft SEIS (page 3-105 to- 106) all tribal reserved water rights that have been quantified or are being quantified were included in the Missouri River depletions analysis. MDNR's letter notes six tribes with adjudicated water rights or water rights settlements but Chapter 3 identifies seven (page 3-106 of the Draft SEIS) that were considered by Reclamation in the analyses. Reasonably foreseeable tribal water supply and irrigation projects were included as noted in Appendix D, Table D-6. NEPA does not require the agency to consider speculative actions when examining impacts. At this time, including unquantified reserved tribal water rights would be highly speculative. It is impossible to consider how possible depletions of an unknown quantity could possibly affect the future water supply and navigation of the Missouri River basin. This is particularly difficult given that climate change modeling for the basin indicates it will generally be wetter in the long-term. If at any time in the future reserved tribal water rights are quantified, or tribes enter into Indian Water Rights Settlements, the volume of water available for other (junior) users in the basin may, indeed, be affected. This statement recognizes and discloses both the potential quantification and exercise of Indian water rights and the potential effect that any such quantification and exercise could have on the amount of water available for other users in the Missouri River basin to the extent such information is available.

Response 20-11 – This comment is incorrect, for the Missouri River alternatives, water would be treated within the Missouri River basin at the Biota WTP and conveyed in a buried pipeline to the Minot WTP, where additional treatment would occur prior to distribution. This redundant configuration would ensure a very low risk of Project-related transfer and establishment of invasive species, as documented in the peer reviewed *Transbasin Effects Analysis Technical Report* (Appendix E) for the SEIS and USGS (2007a) which is a supporting document to the Final EIS on Water Treatment (Reclamation 2008). The specter of catastrophic impacts raised in the comment is speculative, and is not supported for any microorganisms known to exist in Lake Sakakawea.

A 'treat and hold' system would provide similar redundancy to the full range of biota treatment options evaluated in the SEIS. The transmission pipeline has been constructed to include

safeguards, as described in the Previously Constructed Project Components section of Chapter 2. Treatment efficacy at the Biota WTP would be ensured by continuously monitoring treatment processes (e.g., chlorine and UV dosages). Because the Biota treatment options already include monitoring, the operational costs presented in the SEIS are appropriate.

Response 20-12 – This comment is incorrect. The interbasin transfer proposed under the Missouri River alternatives does not establish 'de facto' water rights. Project water rights were established through an appropriation from the Office of the North Dakota State Engineer for diversion of up to 15,000 acre-feet per year. Under North Dakota state law, diversions with an earlier date of appropriation would hold senior water rights, while those with a more recent date would be junior. The depth of the Project's water intake in Lake Sakakawea has nothing to do with the seniority of the Project's water right. The Project's water supply could be shut off at any time by simply turning off the pumps needed to convey water from Lake Sakakawea to the main transmission pipeline.

Response 20-13 – Reclamation disagrees that the use of the Corps Economic Resource models for this NEPA analysis is inappropriate. CEQ regulations demand information of ''high quality" and professional and scientific integrity (40 CFR 1500.1 and 1502.24). Therefore, Reclamation sought to collect information to meet the intent of 40 CFR 1500.1 and 1502.24 that supports the NEPA analysis and contracted for an independent and thorough review of the Corps Economic Resource Models looking at their respective capabilities and limitations in addition to potential available alternate approach which might be used for this NEPA analysis. The economic model review found the conceptual basis underlying the economic models is valid and consistent with current economic theory and the models are sufficient to estimate relative changes in benefits among Project alternatives. Reclamation understands that the dollar values or data inputs have changed over time which is why Reclamation chose not to use absolute dollar value estimates of impacts but used the models for a relative comparison of alternatives (see Appendix D and supporting Corps (2013) report - *Report on the Cumulative Impacts to the Missouri River for the Bureau of Reclamation Northwest Area Water Supply Project).* The Corps agreed with this review and assessment. Based on these findings, Reclamation determined that the economic impact models are the best available tools, designed specifically for the Missouri River System, for use in the socio-economic impact analysis. These models have been approved through the Corp's internal model review process in 2011, used in Corps' analyses of post 2011 flood events, and are able to provide a relative comparison of alternatives.

Response 20-14 – Socioeconomic impacts were evaluated and the results disclosed in Chapter 4 of the SEIS. Within this discussion, the methods used to evaluate the potential socioeconomic impacts of the Missouri River are disclosed. This discussion includes the following explanation:

> "As part of the *Missouri River Master Control Manual March Review and Update EIS* (Corps 2004a), models were developed to evaluate economic impacts of changes in Missouri River System operations. …The methodology for this analysis is documented and explained in *Cumulative Impacts to the Missouri River for the Bureau of Reclamation's Northwest Area Water Supply Project* (Corps 2013a)"

This Corps report was provided as a supporting document for the SEIS.

The commenter, having been involved with the Corps in the development of the Master Water Control Manual EIS for operations of the Missouri River Mainstem System is familiar with the

models developed by the Corps including involvement of the use of Total National Economic Development (NED) Benefits model. The Corps explains its use of Total NED benefits for this Project on page 69 of their Cumulative Impacts report noted above. Reclamation also further explained this starting on page 4-186 of the draft SEIS. The use of Total NED benefits is not a double counting but is actually providing a different perspective on the total benefits to the Nation on an average annual basis. These benefits can also be split between those provided within the System and those to the lower Missouri River. The 1983 Principles & Guidelines (P&G) requires that the net benefits of a project be reported – the Corps used these P&Gs in the development of its economic models including Total NED benefits.

Also in the SEIS, the direct, indirect, and induced regional socioeconomic effects of construction and operations primarily were assessed using the U.S. Department of Commerce's Bureau of Economic Analysis (BEA) Regional Input-Output Modeling System (RIMS II) statewide final-demand multipliers for employment, earnings, and output (BEA 2013) - see the Socioeconomics section of Chapter 4. RIMS II is an economic model used to estimate the economy-wide impacts of change in economic activity from the Project. These statewide multipliers are based on 2010 regional data for construction and operation of water, sewage, and other systems. The total average annual costs to complete construction and the total costs for operation are multiplied by these industry multipliers to estimate direct, indirect, and induced employment, wages, and output resulting from each Project alternative.

Finally, Reclamation determined the impacts of additional depletions on the Mississippi River were deminimis and therefore not a substantive issue for analysis.

Response 20-15 –A water supply agreement with the Corps is not required when Reclamation has independent Congressional authority to construct, or direct the construction of, water supply projects and withdraw Reclamation-related project water from the Missouri River.

The comment suggests that the Missouri River Reservoir System does not contain storage dedicated for Municipal and Industrial water supply. This is not accurate. Section 9 of the 1944 Flood Control Act authorized the Missouri River System to be operated for the purposes of flood control, navigation, irrigation, power, water supply, water quality control, recreation, and fish and wildlife. The six mainstem dams are regulated by the Corps as a hydrologically and electrically integrated system for the congressionally authorized purposes of flood control, navigation, hydropower, water supply, water quality, irrigation, recreation, and fish and wildlife. Currently, storage in the reservoirs on the Missouri River mainstem is allocated to the multiple uses the Corps operates for, including water supply. Reclamation acknowledges in the SEIS that the Corps has undertaken a study to evaluate whether it can allocate a portion of that multiple use zone to single use municipal and industrial storage. Reclamation is cooperating with that study.

The storage capacity of the System is divided into four unique storage zones for regulation purposes and provides beneficial service to the congressionally authorized purposes. The storage capacity is divided in individual System reservoirs into regulation zones to obtain service for purposes consistent with the physical and authorizing limitations of the System. Totaling the storage capacity in the respective zones of the individual mainstem reservoir projects provides the total System storage capacity available in each regulation zone for use in System regulation. The Carryover Multiple Use Zone is designed to serve authorized purposes including irrigation,

power production, water supply, recreation, and fish and wildlife. These values are not fixed but vary slightly over time according to changes in reservoir capacity from sediment collection in the reservoirs and shoreline erosion. A severe drought like that of the 1930's might also reduce levels. This is actually discussed starting on page 3-31 in Chapter 3 of the SEIS and diagramed in Figures 3-15 and 3-16.

Response 20-16 – Reclamation does not concur with conclusions expressed in this comment. The SEIS evaluates cumulative impacts using the best available information as required by NEPA. A water needs assessment was completed to evaluate future water supply needs within the project area. The *Water Needs Assessment Technical Report* (Reclamation 2012a) was provided as a supporting document for the SEIS and information from this technical report was summarized in the Alternative Development Process-Needs Assessment section in Chapter 2 of the SEIS.

Reclamation also worked methodically with the cooperating agency team to identify and evaluate surface and groundwater sources within the Souris River basin as potential water sources that could be used to meet estimated future water needs. Based on the best available data and the analyses conducted, two inbasin alternatives were designed and evaluated in the SEIS. The Alternatives chapter provides a full description of these inbasin alternatives and the process by which they were developed. Detailed information and supportive data are provided in Appendix A – Constructed Project Components, Appendix B – Community Water Systems, Appendix C – Alternative Formulation, and Appendix J – *Draft Appraisal Level Design Engineering Technical Report*.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

21

REPLY TO
ATTENTION OF

September 9, 2014

Planning, Programs, and Project Management Division

Alicia Waters
Bureau of Reclamation
304 East Broadway Avenue
Bismarck, North Dakota 58501

Dear Ms. Waters:

The U.S. Army Corps of Engineers, Omaha District (Corps) appreciates having been involved as a cooperating agency with the Bureau of Reclamation (Reclamation) during the course of the planning for the Northwest Area Water Supply (NAWS) Project. During the study, we have been able to provide input to your planning process in the form of data and analysis associated with the operation of the Missouri River, and by participating in regularly scheduled cooperating agency team meetings. After reviewing the Draft Supplemental Environmental Impact Statement we believe that Reclamation has sufficiently evaluated the potential impacts of the NAWS project and therefore offer no comments.

As you know, our agency has permitting authority over any project that may propose the placement of dredged or fill material into waters of the United States (including jurisdictional wetlands) or into "navigable waters" under the authority of Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act respectively. Since 2002, the Omaha District has reviewed various segments of the ongoing pipeline construction and other related construction activities and authorized those project(s) in accordance with various Nationwide Permits. However, new construction activities, such as those that would be associated with the water intake within Lake Sakakawea, would likely require additional section 10/404 authorization

21-1

Please keep us informed as the study becomes final and your agency begins to move into construction. Again, I appreciated the opportunity to be part of the process. If you have any questions or concerns, please contact me at (402) 995-2682.

Sincerely,

Eric A. Laux
Chief, Environmental Resources and Missouri
River Recovery Program Plan Formulation Section

Response 21-1 – This statement has been included as part of the record. Reclamation will continue to coordinate efforts with federal and state agencies to ensure compliance with all applicable laws and regulations.

Great Lakes Environmental Law Center
Minnesota Conservation Federation
National Wildlife Federation
North Dakota Wildlife Federation
South Dakota Wildlife Federation

September 10, 2014

Ms. Alicia Waters
Bureau of Reclamation
P.O. Box 1017
Bismark, ND 58502
awaters@usbr.gov

Re: Northwest Area Water Supply Draft SEIS Comments

Dear Ms. Waters:

Please accept these comments submitted on behalf of the Great Lakes Environmental Law Center, Minnesota Conservation Federation, National Wildlife Federation, North Dakota Wildlife Federation and South Dakota Wildlife Federation (together Conservation Groups) in response to the letter issued by the Bureau of Reclamation (Bureau) regarding the availability of the Draft Supplemental Environmental Impact Statement (Draft SEIS) for the Northwest Area Water Supply Project (NAWS) for review and comment.

I. INTRODUCTION

On March 5, 2010, the United States District Court for the District of Columbia ordered the Bureau to prepare an SEIS, finding that the Bureau had failed to take a "hard look" at the environmental consequences of NAWS as the National Environmental Policy Act (NEPA) requires. While the Draft SEIS does take a hard look at some alternatives to the project, the Conservation Groups have several concerns with the Draft SEIS: (1) the Bureau did not look at water conservation as an alternative; (2) the Bureau did not address the issue of a population decrease in the project area; (3) the Bureau did not look at alternatives to introducing foreign biota into the Hudson Bay Basin; (4) the Bureau did not address concerns regarding the precedent that the project may set; (5) the Bureau must address additional issues related to climate change; and (6) the Bureau did not address potential violations of the Boundary Waters Treaty of 1909.

II. COMMENTS

A. The Bureau Must Look at Water Conservation as an Alternative

While the Bureau has taken a hard look at some alternatives, it failed to address the alternative of water conservation and to explain why it rejected this alternative. The Bureau did look at a No Action Alternative, as required by NEPA; however, there is middle ground between water withdrawal and no action whatsoever, and this middle ground is to conserve water so that withdrawal is not necessary. Because the Bureau did not take a hard look at this alternative, it has failed to analyze all reasonable alternatives which accomplish the objective of the proposed action, which is to provide a sufficient amount of drinking water to meet the needs of residents of northwestern North Dakota. 22-1

B. The Bureau Must Address the Issue of a Population Decrease in the Area

The Bureau based its analysis on a 50 year population projection, assuming that population growth in the area will continue. The current population growth is a new phenomenon, caused largely by expansion of the shale oil industry.[1] In fact, from 1950 until 2010, North Dakota had the second slowest population growth rate in the country,[2] and the state actually saw a population decrease in the early part of the 21st century.[3] With the high amount of uncertainty that surrounds the continued growth of the oil industry in the region,[4] the Bureau must account for the possibility of the population plateauing as it examines alternatives to the proposed project. If the population does not increase at the rate the Bureau expects, non-permanent water supply alternatives could be sufficient to meet the region's needs. The Bureau has failed to discuss alternatives for population increases lower than it expects; in order to take a hard look at reasonable alternatives, the Bureau must discuss these alternatives and explain why it is rejecting them in and assuming the population increase laid out in the Draft SEIS. 22-2

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[1] Mark Mather & Beth Jarosz, *U.S. Energy Boom Fuels Population Growth in Many Rural Counties*, POPULATION REFERENCE BUREAU (Mar. 2014), http://www.prb.org/Publications/Articles/2014/us-oil-rich-counties.aspx.

[2] *Id.*

[3] Jessica Holdman, *North Dakota population tops record 723,000*, THE BISMARCK TRIBUNE (Dec. 30, 2013), http://bismarcktribune.com/news/state-and-regional/north-dakota-population-tops-record/article_0b1e75ce-7178-11e3-9b25-001a4bcf887a.html.

[4] See Ben Casselman, *North Dakota's Oil Bonanza Is Unsustainable*, FIVE THIRTY EIGHT ECONOMICS (Jul. 21, 2014), http://fivethirtyeight.com/features/north-dakotas-oil-bonanza-is-unsustainable/.

C. The Bureau Must Look at Alternatives to Introducing Foreign Biota into the Hudson Bay Basin

The Bureau has failed to examine the issue of foreign biota other than further discussion of the water treatment plans that it analyzed in the initial EIS. The Bureau has still failed to do what the court required—to examine the possibility of pipeline leakage and potential consequences of not treating the Missouri River water at its source. While the SEIS does discuss potential adverse effects of a biota transfer, the Bureau did not analyze the possibility of a leak from the pipeline and instead made conclusory statements that such a leak is unlikely. In order to take a hard look at all reasonable alternatives, the Bureau must analyze alternatives that would completely avoid the introduction of foreign biota to the Hudson Bay Basin. 22-3

D. The Bureau Must Address Concerns Regarding the Precedent that This Project May Set for Future Inter-basin Water Transfers

When inter-basin water transfers occur, there is always a risk of introducing foreign biota into the water basin on the receiving end of the transfer. Transfers via pipeline, without any treatment system, result in a high likelihood of biota transfer.[5] Thus, an effective treatment system is essential to any inter-basin water transfer. Such "transfers are also likely to indirectly influence biota transfers, biological invasions, their attendant outcomes, and potentially affect both source and receiving systems."[6] Because of this risk, inter-basin water transfers must be done in a way that protects both the source and receiving systems.

The Bureau has not addressed concerns regarding the potential precedential effect that the proposed transfer may have on future inter-basin transfers. Such precedent is of particular concern to the Conservation Groups, as "invasive species have significantly changed the Great Lakes ecosystem", which has had rippling effects on those who rely on the Great Lakes for food, water, recreation, and economic benefit.[7] Throughout its analysis of NAWS, the Bureau has been focused on what it deems the unlikelihood of biota transfer into the Hudson Bay Basin; however, as noted above, commenters believe that a reasonable alternative that must be examined is an alternative that would avoid the possibility of inter-basin biota transfer altogether. Even if the chances of biota transfer are small, the damage that can be done necessitates the consideration of alternatives where no inter-basin biota transfer could take place. 22-4 22-5

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[5] GREG LINDER, ED LITTLE, BRUCE PEACOCK, HEATHER GOEDDEKE, LYNNE JOHNSON, & CHAD VISHY, U.S. GEOLOGICAL SURVEY & NATIONAL PARK SERVICE, RISK AND CONSEQUENCE ANALYSIS FOCUSED ON BIOTA TRANSFERS POTENTIALLY ASSOCIATED WITH SURFACE WATER DIVERSIONS BETWEEN THE MISSOURI RIVER AND RED RIVER BASINS 6-1 – 6-2 (Jul. 2005).

[6] *Id.*

[7] United States Environmental Protection Agency, *Invasive Species* (last updated May 13, 2011), http://epa.gov/greatlakes/invasive/index.html.

E. The Bureau Must Address Additional Issues Related to Climate Change

The Bureau failed to address two crucial issues related to climate change. The first issue is the possibility that increased precipitation may eliminate the need for water withdrawal altogether. As the Bureau laid out in the Draft SEIS, climate change research predicts increased heavy precipitation events in the region caused by increased deep convection associated with an overall warmer climate. While one effect of such increased precipitation could be flooding, the Bureau could also develop a plan to capture this increased precipitation so that it can be used in lieu of the proposed water withdrawal. This method could be even more effective if combined with conservation of water. Although predictions surrounding climate change, including those of increased precipitation, are uncertain, the Bureau cannot use this uncertainty to simply overlook the issue; thus, the Bureau must analyze the possibility of water storage from increased precipitation as an alternative to water withdrawal. 22-6

The Bureau also failed to address the potential for climate change to weaken ecosystems in a way that makes them more vulnerable to invasive species. Because of increasing temperatures, habitats for some species are expanding northward;[8] this migration can cause native species to become more vulnerable and create an environment that is more hospitable to invasive species.[9] Because the Hudson Bay Basin is to the north of the Missouri River Basin, this northward shift in habitable range exacerbates the potential negative impacts that introducing foreign biota to the Hudson Bay Basin could have. A weakened ecosystem would be yet another reason that a preferred alternative is one that completely avoids the introduction of foreign biota. The Bureau must examine the potential impacts that climate change will have on the region's ecosystems and the effects that introducing foreign biota could have as a result of these potential ecosystem changes. 22-7

F. The Bureau Must Address Potential Violations of the Boundary Waters Treaty of 1909

Finally, the Bureau has failed to address concerns that NAWS violates the Boundary Waters Treaty of 1909. As the GLELC advocated in its comments to the Draft EIS,[10] the Bureau should completely avoid the risk of biota transfer, rather than simply reduce it. Article IV of the Boundary Waters Treaty of 1909 mandates that "waters flowing across the boundary shall not be 22-8

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[8] United States Environmental Protection Agency, *Climate Impacts on Ecosystems*, http://www.epa.gov/climatechange/impacts-adaptation/ecosystems.html#Range (last visited Sept. 9, 2014).

[9] Institute for Tribal Environmental Professionals, *Climate Change and Invasive Species: What It Means to Tribes and How We Can Adapt* (Aug. 15, 2012), http://www4.nau.edu/itep/climatechange/docs/om_InvasiveSpeciesFactSheet_081512.pdf.

[10] Great Lakes Environmental Law Center, *Northwest Area Water Supply Draft EIS Comments* (Jan. 23, 2008), http://www.usbr.gov/gp/dkao/naws/DEIS/comments_deis/great_lakes_env_law_center.pdf.

polluted on either side to the injury of health or property on the other."[11] In 1975, the International Joint Commission (IJC) gave a recommendation regarding a diversion project, saying that it could only go forward if the proposed project would "eliminate the risk of biota transfer, or if the question of biota transfer is agreed to be no longer a matter of concern".[12] Considering that this Draft SEIS has come about as a direct result of litigation between a Canadian province and the United States government, it is quite clear that Canada is still concerned with biota transfer. Therefore, we recommend that the Bureau follow the IJC's past instruction and only proceed with this project in a way that eliminates the risk of biota transfer. Such an interpretation of the Boundary Waters Treaty is also in line with the interpretation of the Manitoba government, which cited the 1975 IJC report in its comments to the Bureau regarding the Red River Valley project.[13] As shown by the litigation between Manitoba and the Department of the Interior, U.S. – Canada relations are already threatened by the proposed course of action the Bureau wants to undertake. To continue to disregard the IJC's interpretation of the Boundary Waters Treaty will only cause additional strain on that relationship, and the Bureau should adopt the IJC's past recommendation that an international project should only go forward if it can be done without any risk of biota transfer.

22-9

[11] Treaty Between the United States and Great Britain Relating to Boundary Waters, and Questions Arising Between the United States and Canada, U.S.-Gr. Brit., May 5, 1909, 36 Stat. 2448.

[12] INTERNATIONAL JOINT COMMISSION, TRANSBOUNDARY IMPLICATIONS OF THE GARRISON DIVERSION UNIT 121 (1997).

[13] Manitoba Water Stewardship, *Draft Report on Red River Valley Water Needs and Options* (Oct. 3, 2005), http://www.usbr.gov/gp/dkao/redriver/rrvwsp/Appendixes/letters/mws.pdf.

III. CONCLUSION

The Conservation Groups hope that these comments will be helpful to the Bureau as it finalizes its SEIS and in any further considerations of the NAWS proposal, and your consideration regarding this matter is appreciated.

Respectfully submitted,

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Nathan Inks
Student Attorney
Great Lakes Environmental Law Center

Response 22-1 – Water Conservation was evaluated throughout the Project area and is discussed in detail in the *Water Needs Assessment Technical Report* (Reclamation 2012a) which is included as a supporting document to the SEIS. In addition, water conservation is discussed as part of the Alternatives Development Process in Chapter 2 and in Appendix C. The current water use in the project area is much lower than the national average due to already implemented conservation measures. The opportunities for the Project area to further conserve are then also limited because those measures area already in place. The Water Conservation section of Chapter 2 explains that water conservation was considered but eliminated as a stand-alone alternative because the estimated savings of approximately 750,000 gallons per day due to both passive and active conservation measures would not be enough to provide the Project area with the 26 MGD needed. Additionally, due to the uncertainties associated with estimating water needs 50 years into the future, the Project need estimate was not reduced to account for potential water conservation savings. However, the Project sponsors could continue to implement conservation measures and encourage their users to do so as a means of managing the water resources and reducing costs.

Response 22-2 – A specific study was dedicated to the analysis of population changes and water demands into the future for the entire Project area. A summary of this information is presented in the SEIS and the complete analysis is documented in the *Water Needs Assessment Technical Report* (2012a) where U.S. Census data through 2010 were used. The report acknowledges and the data account for the nature of the current increasing trend in population as a result of energy development in North Dakota. The technical analysis documented in the *Water Needs Assessment Technical Report* (Reclamation 2012a-see Table 4) concluded that the majority of Project members would have stable or declining populations. The report also documents that the exiting water supplies cannot sustain the Project area from either a quality or quantity perspective.

Response 22-3 – The risk of pipeline leakage was thoroughly analyzed in USGS (2007), which was a supporting document to the *Final EIS on Water Treatment* (Reclamation 2008). The findings and conclusions of USGS (2007) are incorporated by reference in the SEIS, which supplements the *Final EIS on Water Treatment* (Reclamation 2008). Both Missouri River alternatives evaluated in the SEIS include treatment of the water within the Missouri River basin.

The SEIS evaluates two inbasin alternatives that do not involve any transfer of Missouri River water to meet Project needs. The inbasin alternatives would completely avoid the potential for a Project-related introduction of invasive species into the Hudson Bay basin. The risk of introduction through non-Project pathways would continue under all alternatives, including the two inbasin alternatives and No Action Alternative.

Response 22-4 – The proposed Project is not precedence setting for two reasons: (1) it does not set precedence as defined by under NEPA, and (2) multiple out of basin projects already exist.

Precedence is considered under NEPA (1508.27 (b) 6) when looking at the context and intensity of actions relevant to significance. The degree to which the action may establish a precedent for future actions with significant effects should be considered. The Draft SEIS found the preferred Missouri River and Groundwater Alternative had minimal impacts. Reclamation did not find

this alternative to establish a precedent in regard to significant effects. As for setting a precedent for out of basin diversion – this Project would not be the first out of basin transfer. There are many major across basin water transfers in the U.S. and Canada including the following (http://www.swc.state.nd.us/4dlink9/4dcgi/getcontentpdf/pb-1065/interbasinwhitepaper06.pdf):

- Saint Mary's River Project that transfers water for irrigation from the Hudson Bay Basin to the Missouri River Basin (1915)
- Long Lake Project that transfers water for hydro from the Hudson Bay Basin to the Great Lakes (1948)
- Ogoki River Project that transfers water for hydro from the Hudson Bay Basin to the Great Lakes (1943)
- Chicago Sanitary and Ship Canal Project transfers sewage water from the Great Lakes to the Mississippi River (1900)
- Akron Project transfers municipal water from the Great Lakes to the Mississippi River (1998)
- Pleasant Prairie Project transfers municipal water from the Great Lakes to the Mississippi River (1990)
- Churchill River Project transfers water for hydro from the Churchill River to Nelson River (1976)
- Lake Saint Joseph Project transfers water for hydro from the James River to the Nelson River (1950s)

Even when considering the precedence of other out-of-basin diversions this Project would have a greater degree of protection against biota transfer in place than existing diversion projects. Biota treatment options and other controls, management options and system monitoring reduce minimal project-related risk. Existing non-Project pathways that could introduce AIS to the Hudson Bay basin are numerous and diverse and would continue under all the proposed alternatives and exhibit far greater risk than the Preferred Alternative.

Response 22-5 – See Response 22-3. The SEIS thoroughly evaluates two inbasin alternatives where no interbasin biota transfer could take place through a Project-related pathway.

Response 22-6 – Reclamation does not concur with this comment. The inbasin alternatives use artificial aquifer recharge to capture and store high flows in the Souris River, including potential increased flows due to climate change. Other options for water storage were considered during the alternative development process conducted with the cooperating agency team. These options included both off-stream and in-stream reservoir storage, aquifer storage and recovery, and artificial groundwater recharge. Based on the analysis completed at this phase of alternative development, only the artificial groundwater recharge option was considered feasible for further evaluation in the SEIS.

Response 22-7 – Reclamation examined the potential effects of climate change on the transfer and establishment of AIS which is discussed in the Biota Transfer Pathways section of Appendix E and summarized in the Aquatic Invasive Species section of SEIS Chapter 3.

Response 22-8 – In 2001, the Secretary of the Interior, in consultation with the Secretary of State and the Administrator of the Environmental Protection Agency, determined that chlorination within the Missouri River basin, the treatment process selected in the 2001 Finding of No

Significant Impact, would provide adequate treatment to meet the requirements of the 1909 Boundary Waters Treaty.

In the 2008 Final EIS, a full range of reasonable alternatives was evaluated which included disinfection, inactivation, and removal (filtration) treatment processes in different combinations. At that time Reclamation identified disinfection and inactivation as the preferred treatment process, adding additional protection to the treatment previously determined to meet the requirements of the treaty.

In this SEIS, Reclamation has re-evaluated the treatment options considered in the 2008 Final EIS as well as others. Reclamation has also conducted additional analyses regarding the potential risks and consequences of AIS transfer. Analyses conducted for the SEIS have not identified new or unique risks that would substantively affect the 2001 Secretarial determination.

The preferred alternative identified in the Final SEIS includes the Conventional Treatment biota WTP option within the Missouri River basin. This Biota WTP option was changed in response to concerns about the potential formation of disinfection byproducts from treatment processes included in some of the biota WTP options, for compliance with the Safe Drinking Water Act. While the proposed treatment level (Chlorination with UV Inactivation option) in the Draft SEIS was sufficient to address concerns regarding AIS transfer, the Conventional Treatment Biota WTP option includes a filtration process that would reduce the Project-related risk of aquatic invasive species transfer even further than the Preferred Alternative identified in the Draft SEIS.

Thus, the Final SEIS Preferred Alternative poses a lower risk of AIS transfer than the process previously determined to be meet treaty requirements. Therefore, Reclamation and Interior have determined that the Preferred Alternative is within the scope of the original compliance determination and a new Secretarial determination is not warranted.

Response 22-9 –U.S. – Canada relations have been respected throughout the planning of this Project. Representatives of the U.S. and Canadian federal governments have met and discussed various aspects of this Project throughout the past few decades. Upon the signing of the Finding of No Significant Impact in 2001, the U.S. Department of State formally consulted with the Government of Canada. As required by the authorizing legislation for this Project, the Department of the Interior consulted with EPA and the State Department. These consultations resulted in a determination by the Secretary of the Interior that the Project, as proposed at that time, complies with the Boundary Waters Treaty. See Response 22-8.

Conservation and Water Stewardship

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September 10, 2014

Ms. Alicia Waters, Bureau of Reclamation
P.O. Box 1017
Bismarck, North Dakota 58502
E-mail: awaters@usbr.gov

Dear Ms. Waters:

Thank you for the opportunity to provide comments to the Bureau of Reclamation ("BOR" or "the Bureau") on behalf of the Government of Manitoba on the Draft Supplemental Environmental Impact Statement (SEIS) for the Northwest Area Water Supply Project ("NAWS" or the "Project") in accordance with the Notice of Availability published in the *Federal Register* on June 27, 2014 (79 *Fed. Reg.* 36556), and the Notice of Extension published on August 5, 2014 (*79 Fed. Reg.* 45459). The review and resulting comments reflected in the attached detailed report was completed with input from a team of experts including water and wastewater treatment engineers from AECOM Canada Ltd., environmental scientists from Stantec Consulting Ltd., and our own departmental experts. Our review of the draft SEIS concludes that it does not adequately address concerns that have been expressed by Manitoba in the past with respect to transfer of water from the Missouri River Basin to the Hudson Bay Basin.

NAWS would be the first-ever Federal project to artificially connect the Missouri River Basin, which drains south to the Gulf of Mexico, to the Hudson Bay Basin, which drains north to Hudson Bay and in which Manitoba is located. The Missouri River and Hudson Bay watersheds are unique, separate and ecologically distinct and are notable for their different species compositions, including pathogenic species such as bacteria, viruses, protozoa, fungi and other microscopic plant and animal parasites. The Project could move significant quantities of water from the Missouri River Basin to the Hudson Bay Basin. In so doing, it would threaten to introduce non-native and potentially destructive organisms into the Hudson Bay watershed and thus, into the Manitoban and Canadian environment. In these circumstances, the Bureau must undertake the most comprehensive review to ensure that it fully considers all alternatives, including the no-action alternative, and that it acts with a full understanding of the risks and consequences of the Project. 23-1

Manitoba has long-standing concerns about inter-basin diversions of water because of the costly and irreversible economic and environmental damage that may occur. Manitoba has consistently raised such concerns regarding any parts of the Garrison Diversion project, including NAWS, which involve inter-basin transfers of water. For more than a decade, Manitoba has participated (a) in public processes related to compliance by the BOR with its

obligations under the National Environmental Policy Act, 42 U.S.C. § 4321, *et seq.* ("NEPA"), in connection with the Project, and (b) in litigation challenging such compliance. *See Government of the Province of Manitoba v. Norton*, 398 F. Supp. 2d 41 (D.D.C. 2005) ("*Manitoba 1*"); *Government of the Province of Manitoba v. Salazar*, 691 F. Supp. 2d 37 (D.D.C. 2010) ("*Manitoba 2*"). The current draft SEIS is the direct result of Judge Rosemary Collyer's March 5, 2010 decision in *Manitoba 2*.

The thrust of both the *Manitoba 1* and *Manitoba 2* decisions was that the Bureau had failed adequately to assess the consequences of biota transfer into the Hudson Bay Basin. In *Manitoba 2*, the Court underscored that "[t]he *consequences* of the release of foreign biota should a breach occur . . . might be catastrophic and should inform Reclamation's course of action." 691 F. Supp. 2d at 50 (emphasis in original). It noted, "When the *degree* of potential harm could be great, *i.e.*, catastrophic, the *degree* of analysis and mitigation should also be great." *Id.* (emphasis in original). The Court stressed that, without an in-depth study of consequences, the Bureau "cannot evaluate whether its water treatment proposals sufficiently address and mitigate for such potential consequences as NEPA demands." *Id.* Finally, the Court indicated that an integral part of the Bureau's analysis must be an assessment of impacts "in Canada." *Id.* at 51.

Consistent with Judge Collyer's rulings, Manitoba strongly believes that the risks and consequences of biota transfer from the Project must be comprehensively assessed to ensure that the potential for irreversible harm to Canadian waters and ecosystems is fully understood and that, if the Project ultimately proceeds, these risks are mitigated to the fullest extent possible.

As detailed in the attached report, Manitoba's primary concern with the draft SEIS relates to the inadequate assessment of the risks and consequences related to the transfer of foreign biota to the Hudson Bay Basin in Manitoba and Canada. The draft SEIS fails to assess the risk and consequences of accidental biota transfer, including a weak and insufficient evaluation of potential consequences in Canada that contains extensive errors and omissions. The draft SEIS abandons previous attempts to quantify the risk of transfer of biota of concern and purportedly uses a qualitative risk assessment. However, not only is an adequate quantitative risk assessment still needed, but also the qualitative risk assessment does not follow standard protocols for such assessments, most notably those issued by the US Environmental Protection Agency, and lacks references and definitions for the assignment of risk. These deficiencies render the purported risk assessment in the draft SEIS both subjective and inadequate. The draft SEIS also inadequately evaluates the risks and consequences associated with the five Biota Water Treatment Plant options and overestimates the effectiveness of the UV treatments by failing to acknowledge the need for filtration to meet the stated UV goals.

As in previous documents assessing the NAWS project, the draft SEIS acknowledges that the alternatives that use Missouri River water add an additional pathway for biota of concern to enter the Hudson Bay Basin but dismisses the consequences of this additional risk since non-Project pathways for biota transfer already exist. This logic is flawed and fails to recognize several key points:

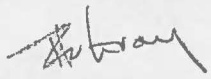
- Biotic communities have remained largely distinct between the Missouri River and Hudson Bay Basins for thousands of years and thus the existence of purported non-Project pathways is largely irrelevant.

- The Missouri River alternatives could transfer biota of concern to the Hudson Bay basin that might not otherwise be transferred through non-Project pathways.
- Given the significant effort currently underway across the jurisdictions to reduce the risk of transfer of biota of concern from human action, the relative importance of the Project pathway might actually increase over time.

Ultimately, the flawed analysis in the draft SEIS leads to the selection of a preferred alternative that does not acknowledge the risks and consequences of Project-related biota transfer. The preferred alternative fails to provide adequate and fail-safe water treatment in the Missouri River Basin to respond to the risks and consequences associated with inter-basin transfers.

We hope that these comments are useful to the Bureau. We look forward to working with the Bureau as the NEPA process proceeds.

Sincerely,



Bruce Gray
Assistant Deputy Minister
Water Stewardship Division

Enclosure

c: Grant Doak, Deputy Minister, Conservation and Water Stewardship
Nicole Armstrong, Director, Water Science and Management

Manitoba's Comments on the draft Supplemental Environmental Impact Statement for the Northwest Area Water Supply Project

September 10, 2014

Contents

1.0 History of Manitoba's Involvement in the Project

Manitoba has participated in the public processes related to the Northwest Area Water Supply Project ("NAWS" or the "Project") and compliance by the Bureau of Reclamation (the "Bureau") with its obligations under the National Environmental Policy Act of 1969, 42 U.S.C. § 4321, *et seq*. ("NEPA"), for almost two decades.

The Bureau began its NEPA review for the NAWS Project with the release of a Draft Environmental Assessment (the "Draft EA") in June 1997. Manitoba Environment (now the Department of Conservation and Water Stewardship) submitted extensive written comments on the Draft EA on July 24, 1997. Following release of the Bureau's Final Environmental Assessment, on April 30, 2001 (the "Final EA"), Manitoba, together with Environment Canada, filed an administrative appeal with the Bureau, and, in the context of an administrative hearing held on August 20, 2001, presented the Bureau with a comprehensive written submission, including a legal analysis and technical analysis.

Since 2001, Manitoba has remained deeply involved in the administrative review of the Project under NEPA. On May 5, 2006, Manitoba commented on the scope of the NEPA review the Bureau was then just undertaking in response to the first of the court orders finding its compliance inadequate. Thereafter, on March 26, 2008, Manitoba submitted comments on the December 21, 2007 Draft Environmental Impact Statement (the "draft EIS") for the Project. These comments were supported by a detailed technical review from TetrES Consultants Ltd. and Earth Tech Canada. The Bureau's Final Environmental Impact Statement (the "final EIS") was released on December 5, 2008. In a January 11, 2009, letter to the Bureau, Manitoba provided a critique of the final EIS. Subsequently, on October 26, 2010, Manitoba submitted comments on the scope of the Bureau's supplemental environmental impact statement (the "SEIS"). All Manitoba's prior comments remain relevant today. They are incorporated herein by reference. 23-2

Finally, Manitoba has been involved in litigation challenging the agency's compliance with NEPA. *See Government of the Province of Manitoba v. Norton*, 398 F. Supp. 2d 41 (D.D.C. 2005) ("*Manitoba 1*") (holding Final EA inadequate), and *Government of the Province of Manitoba v. Salazar*, 691 F. Supp. 2d 37 (D.D.C. 2010) ("*Manitoba 2*") (holding final EIS inadequate). These judicial decisions underlie many of Manitoba's comments today and must deeply inform the Bureau's approach to its obligations under NEPA.

2.0 The International Joint Commission and the Boundary Waters Treaty

At the outset, it is important to stress the failure of the draft SEIS to take full and appropriate account of US obligations under the Treaty Between the Government of the United States of America and the Government of the United Kingdom for the Dominion of Canada Concerning Boundary Waters, done at Washington, D.C., January 11, 1909, TIAS No. 548 (the "BWT" or the "Treaty"), and prior reviews by the International Joint Commission (the "IJC") under the Treaty.

The NAWS Project is part of the Garrison Diversion Unit's Municipal, Rural and Industrial ("MR&I") Water Supply Program, which Congress authorized on May 12, 1986, under the Garrison Diversion Unit Reformulation Act of 1986, Pub. L. No. 99-294, § 5 (the "Act"). *See, e.g*., draft SEIS, page 1. Because of concerns about the potential impact of North Dakota MR&I projects on the Canadian environment, the Act, as amended by the Dakota Water Resources Act of 2000, Pub. L. No. 106-554, App. D., Title VI (Dec. 21, 2000) (the "DWRA"), provides in Section 1(h)(1),

> Prior to construction of any water systems authorized under this Act to deliver Missouri River water into the Hudson Bay Basin, the Secretary [of the Interior], in consultation with the Secretary of State and the Administrator of the Environmental Protection Agency, must determine that adequate treatment can be provided to meet the requirements of the [Boundary Waters Treaty of 1909].

For its part, the Boundary Waters Treaty provides, in Article IV, that "boundary waters and waters flowing across the [US-Canada] boundary shall not be polluted on either side to the injury of health or property on the other side." The draft SEIS barely acknowledges the existence of the Boundary Waters Treaty, blandly asserting that the requirement for a determination of Boundary Waters Treaty compliance has been met and that Bureau's analysis "fulfills the directive of the Boundary Waters Treaty and . . . the [DWRA]." draft SEIS, pages 4-1 – 4-2. These assertions fail to take into account the outdated nature of the Department of the Interior's original DWRA determination and the extensive review by and conclusions of the International Joint Commission in 1977 regarding the Garrison Diversion Project (International Joint Commission 1977).

First, while the Secretary of the Interior (the "Secretary") purported to make the requisite determination under the DWRA on January 19, 2001, it is obvious that such a determination, made on the basis of a manifestly inadequate environmental record at that time and now almost fourteen years old, is entirely outdated and can scarcely be relied upon as a predicate for Bureau action today.[1] Indeed, the environmental record at the time of Secretary Babbitt's 2001 DWRA determination consisted primarily of a seriously flawed Final EA, which was subsequently overturned in 2005 by Judge Rosemary Collyer of the US District Court for the District of Columbia. In her decision in *Manitoba 1*, Judge Collyer stressed that a signal failure of the Bureau was that there had been "no study of the *consequences* of leakage from the pipeline," 398 F. Supp. 2d at 63 (emphasis in original) -- consequences which, the Court indicated, could be "catastrophic," *id*. at 65 -- stating further, "Absent some measurement of the quantum and intensity of any ecological effect . . . , it cannot be said that the risk of environmental impacts is reduced to a minimum." *Id*. at 65. And, again in 2010, in reviewing the Final EIS in *Manitoba 2*, Judge Collyer underscored, "Because Reclamation has not studied the potential consequences from pipeline leakage or breach -- which are to be anticipated -- it cannot evaluate whether its water treatment proposals sufficiently address and mitigate for such potential

[1] Manitoba would also emphasize that the "analysis" in the SEIS does not suffice to fulfill the Congressional directive: a formal determination by the Secretary of the Interior, in consultation with the State Department and the Environmental Protection Agency, is necessary to comply with the mandate of Section 1(h)(1) of the DWRA.

consequences . . . ," 691 F. Supp. 2d at 50, noting, in particular, that the Bureau had never addressed "the consequences of biota transfer in Canada." *Id*. at 51.

If the Bureau did not understand the consequences of system failure in 2001, the Secretary could not possibly have rationally determined that the treatment system chosen at that time was adequate to meet US obligations under the Boundary Waters Treaty. Further, in the almost fourteen years since 2001, much has been learned about the threats of invasive species and the methodologies for eliminating or reducing these threats. There is an entirely new record, consisting of the Bureau's own analysis in the draft SEIS, extensive comments from outside parties on both the Final EIS and draft SEIS and numerous, new scientific studies and reports on what is increasingly recognized as one of the major environmental problems facing both Canada and the United States, namely, the transfer of alien and invasive species from one watershed to another. It is inconceivable that the Bureau could proceed now under the DWRA without taking these new developments into account in a formal Secretarial determination. Indeed, Congress could not have contemplated that the Secretary's DWRA determination and any final decision on the Project would be separated by a span of a decade and one-half and that the latter might be made without any effort to update the former in light of the voluminous new information developed over that period. Thus, before the Bureau can proceed with the Project, a new Secretarial determination under Section 1(h)(1) of the DWRA is required. This must be properly acknowledged in the SEIS. 23-3

Second, throughout the period the Project has been under consideration, concerns have been raised with respect to US compliance with its obligations under the Boundary Waters Treaty. In 1977, after several years of study, the International Joint Commission, an intergovernmental body established under the Boundary Waters Treaty, issued its *Report on the Transboundary Implications of the Garrison Diversion Unit* (the "1977 IJC Report") (International Joint Commission 1977). The conclusions of the 1977 IJC Report are still pertinent today, but they are never addressed in the draft SEIS. The 1977 IJC Report determined that introduction of non-indigenous species from the Missouri River Basin could cause a reduction of 30 % to 75 % of the commercially valuable species in Lake Winnipeg and Lake Manitoba, stating, "Reductions of this magnitude would threaten the existence of the commercial fishery of Lakes Manitoba and Winnipeg." 1977 IJC Report, page 56. It explained that, once such species are established in their new environment, they can produce changes in the aquatic ecosystem that can include a decline in the abundance of native species, extirpation of rare or endangered species, introduction of new diseases to native populations, alteration of the gene pool of native species and reductions in reproductive success, genetic integrity and biodiversity. Aboriginal peoples, and their cultural and subsistence uses, may be particularly at risk. It pointedly noted, "Unlike some other adverse consequences that can be minimized by additional mitigation measures or by cessation of operation of the Project, remedial measures to control unwanted exotics are oftentimes futile, and, what makes it even more difficult, is that it may some years before the full adverse impact is apparent." 1977 IJC Report, page 102. It is for such reasons that the International Joint Commission concluded, "In fact, *overriding everything else, as it turns out, has been the necessity that such introduction be prevented at all cost*." *Id*. (emphasis added). The International Joint Commission went on to state, "The Commission believes it must advise the two Governments to be conservative and proceed very 23-4 23-5

cautiously with new and untried engineering works, the failure of which might seriously affect the equilibrium of a large natural system such as the Hudson Bay Drainage Basin that has been achieved over many centuries." 1977 IJC Report, pages 108-109. Although there is even more information available today regarding the potentially catastrophic consequences of non-aquatic species on an ecosystem, nowhere in the draft SEIS can one find an acknowledgment of this precautionary philosophy.

Third, even more important than the International Joint Commission's conclusions about risk are its recommendations for *consultation* among the two governments and *concurrence* that the risks of any actual proposed project are acceptable. The 1977 IJC Report recommended (at page 121) that construction of elements of the Garrison Diversion Unit like NAWS should not take place until "the Governments of Canada and the United States agree that methods have been proven that will eliminate the risk of biota transfer, or if the question of biota transfer is agreed to be no longer a matter of concern." Thereafter, the Garrison Diversion Unit Commission, in its December 20, 1984, final report, underscored that MR&I systems should provide treatment "to avoid biota transfer into Canada" (page 2), and stated, "The Commission recommends that the terms and conditions of the Boundary Waters Treaty be honored . . . . Missouri River water conveyed into the Hudson Bay drainage . . . shall be treated in a manner determined acceptable pursuant to United States-Canadian consultations" (pages 7-8).

In light of these conclusions and recommendations that water diversion projects should proceed only after appropriate studies and bilateral consultations and upon the agreement of the two parties, it is scarcely appropriate for the Bureau to assert that US obligations under the Boundary Waters Treaty have been met. Indeed, it is noteworthy that, by letter dated May 25, 2001, from Canadian Ambassador Michael Kergin to then Secretary Gale Norton, Canada formally expressed the view that "[it] is highly unlikely this project would satisfy Treaty requirements." Canada, moreover, again stressed in its January 12, 2009 comments to the Bureau on the Final EIS that consultation among the two governments was imperative before any final decision was made. In such circumstances, it is obvious that the Government of Canada has not agreed that methods have been proven that will eliminate the risk of biota transfer by the NAWS Project, nor has it agreed that the question of biota transfer no longer is a matter of concern for the Project. The draft SEIS's assertions with regard to Boundary Waters Treaty compliance, simply ignoring the conclusions and recommendations of the International Joint Commission and the position of the Government of Canada, are thus wholly unwarranted. To meet the recommendations of the International Joint Commission, a new consultation is plainly required now before the Bureau can proceed with the Project.

3.0 Assessment of the Risk and Consequences of Accidental Biota Transfer

Perhaps the most glaring flaw in the draft SEIS is the inadequacy of the Bureau's analysis of the environmental risks and consequences of accidental biota transfer. Under NEPA, an agency's environmental review must fully explore the "environmental consequences" of the proposed action and its alternatives. 40 C.F.R. § 1502.16.

23-6

The major fault of the Bureau's prior NEPA reviews, as found by Judge Collyer in both *Manitoba 1* and *Manitoba 2*, has been the Bureau's failure to take any serious look at the environmental risks and consequences of accidental biota transfer. Instead, the Bureau largely dismissed these consequences by characterizing the risks of such a transfer as low. Judge Collyer has twice determined that this was impermissible. Referring to the Bureau's mid-1990s decision to rely on pre-treatment south of the basin divide, she stated in *Manitoba 1*:

> That decision has never been seriously re-visited. Instead, BOR and North Dakota have dedicated themselves to reducing the likelihood of pipeline releases and have refused -- despite EPA's warnings, despite Canada's position, despite Manitoba's TetrES report, and, most critically, despite acknowledging that chloramination will not prevent Cryptosporidium, WD, and other pathogens from crossing the divide -- to change their position. Whether this is the wisest action is not for litigation to decide. What has resulted from this obduracy, however, is a two-fold problem: there has been no study of the consequences of leakage from the pipeline . . . and, therefore, no evaluation of the consequences of failure compared to more complete treatment at the source. 398 F. Supp. 2d at 64.

The Judge concluded:

> Federal Defendants argue that the risks of leakage are low and, therefore, that no further study is necessary. They repeatedly provide varied estimates that more than ninety-nine percent of biota will be disinfected under NAWS. While facially compelling, the argument ignores the fact that certain biota have been identified that may be impervious or highly-resistant to the planned treatment measures. Therefore, even a low risk of leakage may be offset by the possibility of catastrophic consequences should any leakage occur. Without some reasonable attempt to measure these consequences instead of bypassing the issue out of indifference, fatigue or through administrative legerdemain, the Court cannot conclude that BOR took a hard look at the problem. *Id*. at 65.

In her decision of March 5, 2010, Judge Collyer faulted the Bureau for brushing aside biota transfer risks "under the mistaken impression that it could forego such an analysis because '[g]iven the pipe materials and countermeasures such as cathodic protection incorporated into the pipeline's construction, conveyance risks for each alternative would be considered low.'" 691 F. Supp. 2d at 49. However, as the Court explained, "The agency cannot avoid taking a 'hard look' at water transmission risks from a pipeline breach simply because the potential for a breach does not vary under the agency's proposed alternatives . . . . . The consequences of the release of foreign biota should a breach occur . . . might be catastrophic and should inform Reclamation's course of action. * * * When the *degree* of potential harm could be great, *i.e*., catastrophic, the *degree* of analysis and mitigation should also be great." *Id*. at 49-50 (emphasis in original). The Court went on, "Because Reclamation has not studied the potential consequences from pipeline leakage or breach -- which are to be anticipated -- it cannot

evaluate whether its water treatment proposals sufficiently address and mitigate for such potential consequences . . . ." 691 F. Supp. 2d at 50.

The Bureau had the opportunity in the SEIS to remedy these deficiencies by undertaking a "reasonable attempt to measure . . . [the] consequences" of its actions. Unfortunately, despite the Court's admonitions, the draft SEIS perpetuates the errors that were included in the Bureau's prior environmental reviews.

3.1 Adequacy of the Risk Assessment

The ecological and economic consequences associated with the expansion of non-indigenous aquatic species are well established and are global in nature. The US Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 -- Title I of Pub. L. No. 101-646 (104 Stat. 4761, 16 U.S.C. § 4701, enacted November 29, 1990) established a broad Federal program to prevent introduction of, and to control the spread of introduced, aquatic nuisance species. By November 29, 1991, the Aquatic Nuisance Species Task Force was directed to identify and evaluate approaches for reducing the risk of adverse consequences from introductions and report to Congress. The Task Force, composed of Federal agencies and representatives of States and regional entities, was to develop and implement an aquatic nuisance species program to prevent their introduction and dispersal in waters of the US. The United States Geological Survey Nonindigenous Aquatic Species Database (located on the internet at http://nas.er.usgs.gov), the Gulf States Marine Fisheries Commission's Gulf & South Atlantic Regional Panel on Aquatic Invasive Species (located on the internet at http://www.gsarp.org/), and the 100th Meridian Initiative (located on the internet at http://www.100thmeridian.org/) are examples of the attempts to identify and track threatening biota in the US. The Nonindigenous Aquatic Nuisance Prevention and Control Act was re-authorized in 1996 and became the National Invasive Species Act (NISA). Internet databases, like the Invasive Species Specialist Group (ISSG) Global Invasive Species Database (Managed by the International Union for Conservation of Nature (IUCN) Species Survival Commission (SSC) at http://www.invasivespecies.net/database/species), track the expanding nature of this global problem.

The draft SEIS acknowledges the serious nature of the issue of inter-basin transfer of invasive biota and notes (page 4-103) that "*nonindigenous species may become invasive, reproducing and spreading rapidly with significant adverse consequences*". The draft SEIS goes on to note that "*Nonindigenous species can alter populations, communities, and ecosystem structure and function"* and Appendix E (page 80 and onwards) describes potential impacts including mass mortality of native aquatic species, cascading negative impacts throughout a food chain, and monetary losses.

The draft SEIS notes (page 1-7) that "*Reclamation has conducted new analysis to comply with the court's order to take a hard look at the cumulative impacts of water withdrawal on the water levels of Lake Sakakawea and the Missouri River and the consequences of biota transfer into the Hudson Bay basin, including impacts in Canada*." In recognition of this direction and the serious nature of inter-basin transfer of biota, the Bureau has completed what it calls a risk assessment: "*The risk assessment is based on the trans-basin effects analysis included in Appendix E, entitled "Trans-basin Effects Analysis Technical Report.*" It is further stated that "*… the risk assessment of inter-basin biota transfers conducted by the*

USGS (2007) in support of the previous Project EIS … provided a foundation for the current study." (page 4-95).

However, despite the preceding claim, the draft SEIS further states that, "*…a **qualitative** assessment was selected as the **best** and most practical approach to evaluate the risk of AIS [Aquatic Invasive Species] inter-basin transfer"* (emphasis added) (page 4-95). This decision was arrived at despite the existence of the previously prepared ***quantitative*** risk assessments (USGS 2007; BOR 2008), which although deficient (Manitoba Water Stewardship 2008), provided at least the basis for development of a potentially competent quantitative analysis. The draft SEIS has therefore not addressed the concerns detailed in Manitoba Water Stewardship (2008) about the adequacy of the Bureau's initial quantitative risk assessment. Worse, from the perspective of what constitutes "best practice" in environmental impact assessment, and given the potential severity of the consequences of AIS becoming introduced and established in Manitoba, the Bureau has formally abandoned any attempt to provide a quantitative assessment of these risks and their consequences (as in USGS 2007). The decision to undertake a qualitative risk assessment represents a significant reduction in analytical rigor in comparison with previous risk-assessment efforts (e.g. USGS 2007; BOR 2008). It is not in any way "best practice" or consistent with the analytical "state of the art" in risk assessment. Being qualitative and generic, it undermines the possible rigour of the related subsequent required analyses, of the type and magnitude of impact consequences, and of the type, magnitude and significance of cumulative effects. This one decision represents a cascade of consequential deficiencies in analyses that render the draft SEIS a deeply flawed body of work. 23-7

Further, the decision to retreat from the process of building a competent quantitative risk assessment in favour of building a far less rigorous qualitative assessment, especially when taken in response to the challenges made to date of the adequacy of the initial quantitative assessment, amounts to a formal and deliberate abandonment of effort to fully address the potential consequences of aquatic invasive species becoming established in Manitoba. In choosing to adopt a less rigorous approach to assessing risks to Canada, and more specifically to Manitoba, it is an inadequate effort, an insufficient analysis and a refusal to follow the direction of Judge Collyer who specifically required a new "hard look" at the consequences of AIS in Manitoba and Canada.

Details and critical requirements regarding both quantitative and qualitative ecological risk assessment are very well established across global regulatory regimes (e.g. USEPA 2000; USEPA 1998). For a qualitative risk assessment specific to the NAWS Project, the well-established minimum (that is, critical) required steps include the following: 23-8

a) <u>Problem Formulation</u> – This includes the explicit statement of assessment goals, selection of assessment "endpoints" (usually the measurable parameters of "effect"), preparation of a conceptual model of causal and indirect pathways on sensitive "receptors", and development of an analysis plan. These steps must be undertaken for three risk scenarios, including for this Project, the No Action scenario, the Project scenario, and the No Action + Project scenario.

b) Analysis – This includes the identification of hazards and development of linkages between hazards and their direct and/or indirect ecological effects. Hazards specific to the Project are defined as potential transfer mechanisms of AIS from the Missouri River Basin to the Hudson Bay Basin.

c) Risk Characterization – This includes the specification of the type and estimation of the magnitude of ecological risks, discussions of impact reversibility or capacity to be mitigated, discussions about the overall degree of confidence in the risk estimates, citation of evidence supporting risk estimates and/or interpretation of data, interpretation of the consequence of ecological risks, and communicating the results of the risk assessment. Each of these listed items is an essential and critical component of a competent risk assessment. Described in greater detail specific to the Project, these steps would include the following:

1. Qualitative Risk Estimation (consistent with methods set out in USEPA 1998)

    i. Likelihood of establishment of AIS for each identified hazard

    - High, medium, low
    - Narrative explanation of likelihood

    ii. Consequence of establishment of AIS

    - High, medium, low
    - Narrative explanation of likelihood

    iii. Uncertainty of analysis of risk estimation

    - High, medium, low
    - Narrative explanation of uncertainty

    iv. Overall risk estimation

    - High, medium, low
    - Narrative explanation of uncertainty

2. Risk Description (USEPA 1998)

    i. Evaluation of the lines of evidence supporting the risk estimation

    ii. Interpretation of the significance of the adverse effects on the assessment endpoints, including their reversibility and mitigability

3. Reporting Risks (USEPA 1998)

i. Estimation of ecological risk

ii. Confidence in risk estimation

iii. Lines of evidence supporting risk estimation

iv. Interpretation of the consequences of ecological effects

Each of the components of a competent risk assessment is of critical importance and must be included and competently undertaken within the overall risk assessment process for that process to be considered adequate, competent and valid (USEPA 1998; USEPA 2000). Unfortunately, this is not the case for the purported risk assessment documented within the draft SEIS. Described below are some of the deficiencies within the purported risk assessment, some of the incorrect interpretation present within the Bureau's risk assessment process, and some of the critical omissions within the Bureau's qualitative approach to risk assessment in this case.

3.1.1 Incorrect Identification of Hazards

The draft SEIS lists 17 distinct pathways by which aquatic invasive species could be transferred from the Missouri River Basin to the Hudson Bay Basin. The 17 pathways are listed in Table 3-19 and in Figure 4-42 in the draft SEIS, and in Figure 4 in Appendix E. The pathways are further discussed in the draft SEIS on pages 3-62 to 3-65, and in Appendix E, on page 36 to 49. The risk assessment in Appendix E (page 73) concludes that, "*The risk of transfer and establishment exists for all of the pathways evaluated, as well as others not yet identified*." In addition, the draft SEIS considers the Project pathway as a separate category. However, as discussed previously (Manitoba Water Stewardship, 2008) some of these identified pathways are not relevant to the Project.

While some pathways have been removed from the draft SEIS (for example, domestic animals gone wild (BOR 2007)) pathways such as aquarium trade and ballast water from international shipping are still included. The draft SEIS notes that "*since many aquarium species are raised at warmer temperatures, the majority of establishments in the wild occur in tropical and sub-tropical zones*" (Appendix E, page 44) and yet aquarium trade is listed as a "principal pathway" for introduction of invasive species in Canada (Appendix E, page 112) and is included in Figure 4-42 as a non-Project pathway for AIS introduction. Canada, and particular the Hudson Bay Basin, lacks tropical and sub-tropical zones. Also, Appendix E (page 43) states that because the Hudson Bay Basin contains just one single navigable waterway at the Port of Churchill, "*ballast water does not generally represent a direct link between the HBB [Hudson Bay Basin] and adjacent basins*", Appendix E of the draft SEIS goes on to repeatedly discuss ballast water as a potential pathway: 23-9

- Page ES-8 – "*Bait buckets, aquaculture, ballast water discharge, fish stocking, animal transport, and other pathways represent mechanisms with inherent risk for facilitating AIS spread between basins. These pathways are generally not equipped with controls or other measures to prevent AIS transfers and could lead to direct transport of AIS-laden water or material into HBB waterbodies."*

- Page 68 – "*Dispersal of AIS may occur via aquatic pathways including: ballast water discharge; shipping canals and channels; or attachment of AIS to hulls, anchors, and exterior surfaces of shipping vessels or barges."*
- Page 73 – "*Ballast water discharge, animal transport, and fish stocking represent extremely important potential transfer pathways. Ballast water discharge also has the potential to introduce more exotic species compared to other biota transfer pathways (e.g., international vessel transportation).*"
- Page 73 – "*The successful introduction of an AIS in the HBB is much more likely to be caused by a high-probability pathway, such as those that involve relatively large transfers of untreated water or that occur repeatedly (such as the discharge of ballast water…*".
- Page 112 – *"Shipping is considered to be the single most important source of new invasive aquatics introductions in Canada, primarily by the discharge of ballast water taken on in foreign ports"*

23-10

Finally with respect to ballast water, Appendix E of the draft SEIS (page 43) cites Kerr et al. (2005) who concluded that the greatest potential risk of invasive aquatic species spread is associated with ballast water, the live food fish industry, and the ornamental pond/aquarium trade. Not noted is that the Kerr et al. (2005) study is an assessment of the potential pathways for introduction of aquatic invasive species into the Province of Ontario. While this paper and its conclusions are relevant for the Province of Ontario, which encompasses large portions of the Great Lakes Basin, including Lakes Ontario, Superior, Huron and Erie, it is not relevant for the Hudson Bay Basin where ballast water is not a direct source of aquatic invasive species.

3.1.2 Incorrect and Incomplete Assessment Process

Despite the use of a qualitative assessment, Appendix E (Page 68) states that, "*For this Trans-basin Effects Analysis, risk was evaluated in two ways: 1) the contribution of each potential biota transfer pathway, including Project-related, to the overall risk of AIS introduction; and 2) the threat posed by AIS to potential ecological receptors of concern in the HBB…*".

However, as noted above, specific methodological details and prescriptions regarding competent ecological risk assessment are well established (USEPA 2000; USEPA 1998), and with a qualitative approach to risk assessment, it is not possible to determine the '*contribution*' of each potential biota-transfer pathway, except to determine either that the pathway exists or that it does not exist (Item b above), and to then provide a subjective, qualitative judgment as to the *level* of risk for each individual pathway (Item c.1.i above). The central approach to risk assessment as explicitly stated within the draft SEIS is therefore not only incorrect, but is also an insufficient response to the abundant regulatory prescriptions and guidance.

Despite the requirement within the prescribed risk-assessment methods to undertake analysis of (at least) three scenarios (as discussed in Section 1.1 above), the draft SEIS states that, "*The economic impact analysis focuses on the potential incremental impacts of AIS introduction in the Hudson Bay basin that could have adverse economic effects*." The draft SEIS further states that, "*Potential influence from the Project is limited to the increased or incremental transfer risk associated with the action alternatives compared to the condition under No Action*." (page 4-96). The risk assessment within the draft SEIS

therefore actually only examines the No Action scenario and compares it to the No Action + Project alternative scenarios, therefore completely ignoring assessment of the Project scenario itself**.** The draft SEIS risk assessment as presented is therefore incomplete. 23-11

3.1.3 Critical Deficiency in Qualitative Risk Assessment Process

Because the draft SEIS provides only a qualitative assessment, it is not possible to numerically compare the various risk pathways to seek understanding of their relative magnitudes, and the differences in their potential significance (one consequence of which is a fundamental inability to support evaluation of candidate mitigation measures). Instead, the method requires that a subjective, qualitative *level* of risk (e.g., High, Medium and Low) be developed based on best professional judgment and applied to each identified hazard. Included in this approach is the essential requirement for a narrative describing the bounds specific to each level of risk (as outlined in Item c.1.i above). 23-12

Examination of the draft SEIS' discussion of the various risk pathways, however, indicates that no 'qualitative' assessment of risk has actually been provided. There is no definition of risk categories within the draft SEIS and no associated narrative related to each risk category, as required by USEPA (1998) and many other jurisdictions. The various discussions (page 3-59 to 3-65: Appendix E; page 36 to 49) merely provide a catalogue of hazards and a degree of evidence that linkage pathways exist, absent of any discussion of the qualitative risk associated with each identified pathway. Rationalization for this critical deficiency is provided in Appendix E, where it is simply stated that, "*Uncertainty limits the ability to assign unique transfer risk probabilities to any of these biota transfer pathways*" (page 73). However, the declaration that the process is difficult and fraught with uncertainty in no way abrogates responsibility for undertaking a competent and complete qualitative risk assessment as outlined in USEPA documents (USEPA 1998; USEPA 2000). The decision by the Bureau is a direct rejection of the Judge's instruction to undertake a fresh "hard look" at aquatic invasive species risks for Manitoba and Canada (USEPA 1998, 2000). 23-13

Therefore, methodologically speaking, because not even a qualitative risk assessment has actually been completed within the draft SEIS, there is no rationale or justification for the following list of unjustified and unsubstantiated concluding statements;

"*… based on a qualitative assessment of the basin linkages and competing pathways, the risk of AIS transfer by the Project is considered to be extremely low compared to non-Project pathways*." (Appendix E; pages 73-74).

"*… based on a qualitative assessment of the basin linkages and competing pathways, the risk of AIS transfer by the Missouri River alternatives is considered to be extremely low compared to non-Project pathways*." (page 4-102).

"*The risk of a Project-related transfer and establishment of AIS would be much smaller than the risk of transfer and establishment through existing non-Project pathways*." (page 2-61).

It appears that the draft SEIS bases the preceding and numerous other identical conclusions on merely the purported large number of identified "non-Project" hazards (Figure 4-42) relative to the

single Project hazard. The draft SEIS states that, "*Figure 4-42 illustrates the relative contribution of the AIS transfer risk exhibited by the Missouri River alternatives compared to non-Project pathways*." (page 4-102). However, Figure 4-42 simply lists all the identified pathways, and provides no information on '*relative contribution*'. Separate and apart from the fact that a competent and thorough qualitative risk assessment was not undertaken within the draft SEIS (see above), which was a formal requirement of both Best Practice and the Judge's instructions, this is an invalid assessment in its own right, because it simply assumes and baldly states that the risk of aquatic invasive species transfer is identical for each pathway and that all pathways provide additive risk. It is extremely unlikely that either of these assumptions is valid. Within the purported risk assessment in the draft SEIS, there is not even an attempt to determine whether these are valid (or even marginally realistic) assumptions. 23-14

Despite the lack of information on the relative contribution of each non-Project pathway, the draft SEIS and its Appendix E include a number of misleading statements regarding the relative risk of transfer of biota. For example, Appendix E (page 47) states that *"Bensley et al. (2011) examined the risk of transferring pathogens and parasites associated with the construction of a water outlet connecting Devils Lake (a closed basin) in North Dakota to the Red River and Lake Winnipeg in the HBB. They concluded that the risk of transfer by piscivorous birds was **greater** than that posed by the outlet, which is not equipped with treatment mechanisms to prevent the movement of microorganisms"* (emphasis added). In fact, the Bensley et al. (2011) study classified both the probability of transfer of parasites and pathogens through fish eating birds and the Devils Lake outlet as "high" with no assignment of relative ranking. It is also important to note that the Bensley et al. (2011) study did not quantify the risk of transfer but asked eight fish pathologists to assign a ranking of unlikely, low or high based on their best professional judgment and relevant scientific information. The Bensley et al. (2011) study also suffered from a lack of a predetermined narrative describing the bounds specific to each level of risk (as outlined in Item c.1.i above). Based on this single assessment, Appendix E concludes that "*the probability of passive dispersal of AIS to the HBB, especially via avian-mediated mechanisms is an **important** non-Project pathway*" (emphasis added) with no quantification of the importance. 23-15

In summarizing the Project risks, the draft SEIS states (Appendix E, page 72):

> *"The geographically-separated components of the proposed water transmission and treatment system would collectively work to reduce risks of interbasin transfer of AIS. Simultaneous failures at the Biota WTP and the main transmission pipeline or Minot WTP would be required for a release of untreated or undertreated water into a contributing drainage in the HBB. Potential failures of these components would likely be independent and uncorrelated. For example, equipment malfunction or power outage at the Biota WTP would not affect the integrity of the transmission pipeline or the operation of the Minot WTP. With multiple independent barriers in the proposed system, risk of release of Missouri River water would be **low.**"* (emphasis added).

Appendix E goes on to state that "*Further, the probability of an organism introduced to a subsurface soil (e.g., from a ruptured transmission pipeline) 'migrating' through a contributing region to*

the HBB, finding an appropriate host organism, successfully establishing itself in an ecosystem, and causing adverse effects to ecological receptors is also ***extremely low****"* (page 72) (emphasis added). These statements are not substantiated and the assessment of "low" risk is not defined. These statements also fail to recognize other Project pathways such as the South Prairie Storage Reservoir, non-catastrophic pipeline leakages, wastes from the Minot Water Treatment Plant (see below), and improperly disposed wastes from the Biota WTP. Regardless, the authors dismiss these "low" Project risks and move on to a description of non-Project risks. 23-16

However, when describing the risk of biota transfer from non-Project pathways (Appendix E, pages 72 and onwards) the authors stress the importance of even "low risk" pathways suggesting that "*However, in the long-term, even low probability events have the potential to eventually occur*" and that "*Even a small amount of biomass (in a small volume of transfer water) can distribute potential disease agents including viruses, bacteria and protozoans."* Appendix E is full of contradictions that underestimate Project risks and overestimate non-Project risks leading to a biased risk assessment. 23-17

The qualitative risk assessment as developed in the draft SEIS is incomplete, misleading and invalid and provides no adequate rationale, justification or basis on which to determine the relative risk or contribution of Project vs. non-Project aquatic invasive species transfer mechanisms.

3.1.4 Non-Project Transfer Risk and Measures Underway to Mitigate the Risk of Non-Project Transfer Pathways

Manitoba has previously provided information to quantitatively explore the relative contribution of non-Project vs. Project pathways (see Manitoba Water Stewardship 2008). For example, the draft EIS (Bureau 2007) indicated that the Project was permitted to withdraw 15,000 acre feet per year or 18.5 million cubic metres per year from the Missouri River at Lake Sakakawea. This volume of water can then be compared with the volume of water expected to be transferred by non-Project pathways. For example, the draft SEIS lists bait buckets and bilge water as a source of aquatic invasive species (Appendix E, pages 44 and 45). Manitoba Water Stewardship (2008) calculated the relative risk of movement of water from angler's live bait buckets and bilge water as follows:

> *Assuming each bucket or boat transports about 2 US gallons, or 10 litres of water, it would require 1.85 billion boats/buckets per year (all moving north only) to transport the same volume of water from the Missouri River to the Hudson Bay drainage as the Project will transport in one year.*

Weather related events are also listed a non-Project pathway for the transfer of AIS. Tornados are included in Appendix E, Figure 4 on the conceptual risk framework as weather related phenomenon. Manitoba Water Stewardship (2008) indicated that while there is no information available to quantify how much water a tornado could lift, or how far it would carry it for discussion purposes:

> *Assuming a tornado can lift a 70 tonne truck and therefore, assuming that it can successfully carry this load as water (without any loss) from the Missouri River to the Hudson Bay Basin, it would require over 250,000 tornadoes per year, or on average,*

nearly 750 per day, or one every two minutes to transport the same volume of untreated water between the basins as the Project does in a single year.

23-18

The draft SEIS indicates that "Additionally, basin divides may overflow naturally during flood conditions (Davies et al. 1992), providing a potential conduit for biota movement to neighboring drainages." (Page 3-60). However, the Davies et al. (1992) reference provides no mention of weather-related events as a means of transferring AIS between large basins particularly ones that are separated by continental divides. Storm events, major floods, and high winds are not the main focus of this paper that actually calls for an improved environmental assessment process for proposed inter-basin transfer projects. The draft SEIS goes on to state that "Storm events, major floods, and high winds can provide natural pathways for dispersal of invasive organisms across hydrologic basin boundaries. During high-water and flood events, inter-basin water exchange can occur through wetlands, rivers, and streams. The proximity of waterbodies and drainage basins may influence the probability of biota transfers (Davies et al. 1992; Ferguson et al. 2003)." (Page 3-64). Similarly, the Ferguson et al. (2003) paper does not support this statement. This paper is a literature review that summarizes different types of water borne diseases, describes the extent of waterborne diseases, summarizes pathogen fate and transport case studies and describes how scale is important. It does not suggest that storm events, major floods and high winds can transfer AIS across continental divides.

The assertion that non-Project aquatic pathways are substantial and dominant vectors of movement for water-borne potential biota of concern has been repeatedly refuted, is contrary to the scientific literature, and is well beyond even the most generous application that is reasonably possible. This is one of the reasons why biotic communities have remained largely distinct between the Missouri River Basin and the Hudson Bay Basin and the reason that the spread of invasive species has greatly accelerated over the last several decades due to human-induced pathways.

With respect to human-induced pathways, as noted in Manitoba and Canada's 2001 comments on the 2000 Comparative Risk Analysis (CRA) "…*the historical levels of risk posed by non-project pathways have also been identified as being unacceptable and numerous actions are underway by jurisdictions in the project region… to reduce these existing levels of risk*." (page 14, Manitoba and Canada 2001). Examples of actions to reduce biotic transfers including in North Dakota include the following:

State of North Dakota Actions:

- Enactment of Aquatic Nuisance Species Regulations that include (http://gf.nd.gov/ans/#resources and http://www.legis.nd.gov/information/acdata/pdf/30-03-06.pdf?20140829101941):

    - All aquatic vegetation must be removed from boats, personal watercraft, trailers, and fishing and hunting equipment such as fishing poles, bait buckets, duck decoys, and waders before leaving a body of water.
    - All water must be drained from boats and other watercraft, including bilges, livewells, baitwells, and motors before leaving a water body.
    - Live aquatic bait or aquatic vegetation may not be transported into North Dakota.
    - All water must be drained from watercraft prior entering the state.
- A Statewide Aquatic Nuisance Species (ANS) Management Plan that highlights objectives and strategies including (http://gf.nd.gov/gnf/fishing/docs/ndansmgmtplan.pdf):
    - Coordination and implementation of management plan
    - Prevention of introduction of invasive species into North Dakota
    - Detecting pioneering invaders and monitoring existing populations
    - Educational campaign to prevent the spread of invaders
    - Inspection of recreational boats, commercial vessels, and equipment used in aquatic environments
    - Where feasible, control and eradication of pioneering or established invaders that have significant impact on native or desirable species
    - Informing policy makers about risks and impacts of invaders
    - Increasing the ANS knowledge base in North Dakota through data, research, and informational publications

State of Minnesota Actions (http://files.dnr.state.mn.us/natural_resources/invasives/2013-ais-annual-report.pdf):

- Enactment of invasive species legislation that makes it (http://www.dnr.state.mn.us/invasives/laws.html):
    - Illegal to possess, import, purchase, transport, or introduce prohibited invasive species in Minnesota.
    - Illegal to transport all aquatic plants, zebra mussels and other prohibited species
    - Illegal to place or attempt to place into waters of Minnesota a boat, seaplane , trailer, or aquatic based equipment that has invasive species attached
    - Mandatory for all water to be drained from water-related equipment, including bait containers, live wells, and bilges before transporting the watercraft and equipment from a water body
    - Mandatory for all plugs, bailers, valves, or other devices used to control the draining of water from ballast tanks, bilges and live wells must be removed or opened while transporting watercraft and water-related equipment
    - Possible for the DNR to designate waters containing invasive species as infested waters resulting in further regulations to apply to activities in those infested waters
    - Illegal to transport water from infested waters

    - Illegal to release live bait into a water body or release aquatic animals from one water body to another
    - Illegal to import live bait such as minnows into Minnesota
    - Illegal to transport live native or invasive crayfish from one water body to another within the state of Minnesota unless by permit issued by the DNR
- Provision of core funding for relevant programming
- Public education regarding invasive species
- Inspection and enforcement
- Mitigation of invasions
- Training and permits
- Prevention and containment
- Monitoring and management of invasive species
- Funding research projects related to invasive species and the control of them
- Partnerships at the state, regional, national, and international level

Province of Manitoba Actions:

- Public awareness campaign regarding dangers of invasive species
- Highway billboards for public education
- Enactment of invasive species legislation
- Drafting enhanced invasive species legislation
- Watercraft inspections at the Border crossings
- Enhanced monitoring program
- Participation on various panels and councils
- Partnerships at the local, provincial, national, and international level
- Eradication and control where feasible
- Prevention and containment: increased watercraft inspection stations

United States Federal Government Action:

- The Aquatic Nuisance Species (ANS) Task Force is an intergovernmental organization dedicated to preventing and controlling aquatic nuisance species, and implementing the Nonindigenous Aquatic Nuisance Prevention and Control Act (NANPCA) of 1990. The various NANPCA mandates were expanded later with the passage of the National Invasive Species Act (NISA) in 1996. The ANS Task force consists of 13 Federal agency representatives and 12 Ex-officio members, and is co-chaired by the US Fish and Wildlife Service and National Oceanic and Atmospheric Administration. The ANS Task force coordinates governmental efforts dealing with ANS in the US with those of the private sector and other North American interests via regional panels and issue specific committees and work group (http://www.anstaskforce.gov/default.php).

Government of Canada Action:

- Developing Federal Aquatic Invasive Species Regulations with the objective to provide a full suite of enabling regulatory tools, under the Federal Fisheries Act, to prevent the introduction of aquatic invasive species into Canadian waters, and to control and manage their establishment and spread, if already introduced (http://isdm-gdsi.gc.ca/ais-eae/regulatory-eng.asp).
- Developed a Canadian Action Plan to Address the Threat of Aquatic Invasive Species (2004) which was developed by the Canadian Council of Fisheries and Aquaculture Ministers Aquatic Invasive Species Task Group (http://www.dfo-mpo.gc.ca/science/enviro/ais-eae/plan/plan-eng.htm).

Clearly, human induced pathways of biota transfer have been acknowledged as being harmful, and processes have been implemented to reduce, mitigate and eliminate, wherever possible, the harmful effects of these historical non-Project practices and activities. 23-19

3.2 Omissions from the Assessment of Risks and Consequences

3.2.1 No Consideration of Water Treatment Plant Wastes/Sludge

Whichever water treatment process is selected for the biota and Minot water treatment plants, any removed biota will pass into the waste streams generated by that process and in many cases, remain active. Water treatment plant sludge arises as a result of several different processes in the treatment plant including periodical or constant cleaning of post-coagulation settling tanks, rapid filter washing, carbon filters, and periodic cleaning of preliminary or intermediate ozonation chambers (Rak and Kucharski 2009).

In the USGS (2007) assessment cited frequently in the draft SEIS, the authors state *"…sludge and (potentially) biosolids that are derivatives of the source water treatment process are briefly considered...since the type of treatment process will influence the characteristics of these materials… A focused analysis of risk associated with treatment residuals should be deferred until alternatives of choice have been winnowed..."* (page 43). Based on the fact that an analysis was not conducted by the USGS, this is something that should have been remedied in the draft SEIS. 23-20

In fact, the conceptual risk diagram in the draft SEIS (Appendix E, page 38 Figure 4) recognizes water treatment plant solids as a primary risk pathway when sludge is improperly disposed. However, the assessment of Project related risks in Appendix E does not consider water treatment plant sludge disposal (page 69 and onwards). There is, indeed, no assessment of the risk associated with survival and movement of pathogens that may be associated with those sludge materials after their removal from the raw water treated in both water treatment plants. As previously stated in the 2001 Appeal of Environmental Assessment and Finding of No Significant Impact for the Northwest Area Water Supply Project (DF-600-97-03) (Manitoba and Canada 2001), "*Sludge treatment at Minot will likely still leave disinfection-resistant pathogens concentrated to high densities within both the backwash water and the sludge.*" 23-21

A complete assessment of the risk of biotic transfers would have included considerations for sludges that may contain elevated concentrations of pathogens such as *Cryptosporidium,* which have been found at concentrations as high as 15,000 oocysts/L in filter-backwash water (USEPA 2001). Failure 23-22

to do so represents a Project pathway that was not considered in the EIS process and, therefore, indicates again that the risk assessment is inadequate.

23-23

The draft SEIS consistently fails to recognize this issue and it likewise does not offer any information as to how these still contaminating waste streams can be safely disposed without presenting a continuing threat to the Hudson Bay Basin. Disposal of sludge from the Minot Water Treatment Plant is briefly mentioned in the draft SEIS (Chapter 2 and Appendix I, page I-9). However, the document indicates that for the chlorination, chlorination with UV and enhanced chlorination with UV options that, the due to the presence of biota from the Missouri River Basin, "*the waste stream at Minot WTP would be contained and disposed of in the Missouri River basin or at an approved inbasin landfill*" (page 2-49). No information is provided regarding proposed containment and disposal methods.

Manitoba has repeatedly expressed that all biota water treatment must occur within the Missouri watershed and that all wastes from biota treatment must remain within the Missouri watershed. It is of little benefit if water is transferred out of the Missouri watershed by pipeline for treatment at the Minot water treatment plant within the Hudson Bay Basin and the treatment wastes containing active biota (particularly wastes from the filtration process) are then disposed within the Hudson Bay Basin.

3.2.2 No consideration of South Prairie Storage Reservoir

The draft SEIS indicates that both Missouri River alternatives would include a reservoir (called the South Prairie Storage Reservoir) situated on the transmission pipeline between the Biota Water Treatment Plan (Biota WTP) and the Minot Water Treatment Plant (Minot WTP) in the Hudson Bay Basin. The purpose of this 3-million-gallon aboveground storage reservoir would be to provide operational and emergency storage for the Project. Water to fill the reservoir would be supplied from the Biota WTP booster station, and the reservoir would feed the north section of the transmission pipeline to Minot WTP by gravity. As per Chapter 2 of the draft SEIS, all biota are not removed by the Biota WTP with the preferred alternative (chlorination with UV) or the chlorination and enhanced chlorination with UV options (see pages 2-47, 2-49 and 2-50). Therefore, with these three treatment options biota will be moved through the transmission pipeline to the South Prairie Storage Reservoir.

23-24

Very limited information is provided in Appendix J regarding the design details for the South Prairie Storage Reservoir and no information is provided with respect to the risks and consequences of biota transfer from the storage reservoir. Presumably this storage reservoir could be subject to corrosion and leakage over the life of the Project that could allow a direct pathway for the movement of biota from the Missouri River Basin to the Hudson Bay Basin. Failures at the reservoir could be catastrophic and/or non-catastrophic leakages that based on the volume of the reservoir could lead to the release of 3 million gallons of water to the Hudson Bay Basin. Since the South Prairie Storage Reservoir is downstream of the biota WTP but upstream of the Minot WTP, the presence of biota of concern in the 3 million gallons of water will depend on the level of treatment at the Biota WTP. Presumably the reservoir could also be subject to flooding. Failure to assess the risk and consequences

associated with the South Prairie Storage Reservoir represents a project pathway that was not considered in the EIS process and, therefore, indicates again that the risk assessment is inadequate.

3.2.3 No consideration of Non-Catastrophic Pipe Failures

In the risks associated with the "Missouri River Alternatives", it appears that only a catastrophic pipe failure was considered in reference to the water transmission pipeline; other forms of non-catastrophic failure appear to have been ignored. While the Bureau has conducted significant analysis on the quality and installation of the pipeline (BOR 2008), the long-term pipe condition, particularly with regards to corrosion, does not appear to have been fully taken into account. Specific issues and deficiencies in analysis are as follows: 23-25

- One of the references used by Linder et al. (USGS 2007) to evaluate risk of pipeline failures stated the need to control corrosion rates in water mains for the prevention of leaks (Deb et al. 1995). Minimizing these risks requires sufficient measures to enforce pipe maintenance, which is not incorporated into the risks stated in the draft SEIS, nor are there any stated measures for evaluating water corrosiveness to pipe.

- Page 4-111 of the draft SEIS states that "…*some pipe materials may be more supportive of microbial growth, influenced by organic matter in a system, or susceptible to corrosion by certain water chemistry variables both internally and externally*." This statement is not accompanied by any sort of method to address, manage, minimize or preclude these forms of pipeline leakage.

- The Bureau has also published updated reports on underground pipeline failures (e.g., von Fay et al. 1994), which supersede the study used in the draft SEIS.

    - In 2004, the Bureau published a Technical Memorandum entitled *Corrosion Considerations for Buried Metallic Pipe*, which involved assessing the service life of such pipes (BOR 2004). Unaccountably, the Bureau's own report was not incorporated into any analysis of pipeline-failure risk in the draft SEIS. This is the same criticism made in respect of the original Findings of No Significant Impact (FONSI), and ever since. 23-26

    - The aforementioned Technical Memorandum was also reviewed by the National Research Council to assess the effectiveness of corrosion protection for ductile iron pipe (National Materials Advisory Board 2009). This review evaluated the failure rates of large water transmission lines based on data provided by the Bureau of Reclamation and the Department of Transportation's Office of Pipeline Safety. The review concluded that under certain soil conditions, ductile iron pipe (DIP) will ***not*** likely provide a reliable 50-year service life (National Materials Advisory Board 2009). This is highly relevant to the NAWS Project since DIP has been identified as a likely component of the proposed alternatives (Appendix J). The failure to consider the implications of long-term corrosion-related pipeline leakage as a pathogen vector is another fundamental deficiency of the purported Risk Assessment. 23-27

- Descriptions of the selected treatment processes at the Biota WTP and their effect on internal corrosion are also absent from the DRAFT SEIS. 23-28
    - The future transmission pipeline will likely be constructed of either DIP or steel (Appendix J), both of which tend to be susceptible to internal corrosion. DIP is susceptible to non-uniform corrosion, such as pitting and tuberculation, as well as surface corrosion. Steel piping tends to be susceptible to uniform surface corrosion (AWWA 2011; Schock and Lytle 2011).
    - Chlorine is generally not considered to be the main cause of corrosion, although it tends to have greater corrosive effects on newer pipe. Dissolved oxygen has greater oxidative properties than chlorine and tends to be present after ozonation and in areas exposed to air (AWWA 2011; Schock and Lytle 2011).
    - Treatment of iron and steel corrosion is generally addressed by adding corrosion inhibitors to the process stream, increasing buffering capacity of the process stream, and reducing the presence of oxidants such as chlorine or dissolved oxygen (Schock and Lytle 2011). Such measures are not evident in the assessment of non-catastrophic pipeline failure scenarios.
- Industrial research organizations have also published the results of large-scale studies regarding pipeline management and failure. These effects have not been cited in the draft SEIS as part of the risk analysis for the Project. These reports include: 23-29
    - *Distribution System Performance Evaluation*, which develops a method by which utilities can assess their distribution systems based on performance indicators such as adequacy, dependability, and efficiency (Deb et al. 1995)
    - *Risk Management of Large-Diameter Pipe Mains*, which presents methods to estimate a pipeline's rate of deterioration based on data collected from inspections (AWWA 2005)
    - *External Corrosion and Corrosion Control of Buried Water Mains*, which presents a wide-ranging review of external corrosion as it related to water distribution (AWWA 2004).

In the risk analysis by Linder et al. (USGS 2007), it is acknowledged that "*Pipeline breaks and their role in evaluating the 'life cycle' of a water transmission and distribution network should not be **undervalued, particularly given stakeholder concerns*** (emphasis added) …" (page 96). Additionally, the authors indicate that **undetected leaks are the most likely occurrences** in these systems, even if maintenance schedules are devised and implemented, and avoiding pipeline failures requires a long-term commitment of resources (USGS 2007, page 71). Failure to assess the potential risks of non-catastrophic pipeline leaks or breaks represents a substantial additional deficiency in the risk analysis.

3.3 Cumulative Impacts – Risk Assessment

The draft SEIS must consider "cumulative impacts." 40 C.F.R. § 1508.25(b)(2)). As defined by regulation, "'Cumulative impact' is the impact on the environment which results from the incremental

impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period time." 40 C.F.R. § 1508.7. In the context of NAWS, consideration of cumulative impacts must at a minimum involve the Red River Valley Water Supply Project (the "RRVWSP"). The RRVWSP could have serious and irreversible effects on Manitoba's aquatic environment. As planned, it would transfer about six times more Missouri River water than NAWS across the divide into the Hudson Bay Basin and is estimated to cost in excess of $900 million. While the RRVWSP does not at this time appear to be under active consideration by the Bureau, it is being actively considered by the State of North Dakota, which may finance the RRVWSP exclusively with State funds. Indeed, in June 2014, CH2MHill completed a *Project Alternative Route Engineering Study* for the RRVWSP (CH2MHill 2014). Additional studies are now being undertaken. The State appears poised to complete these studies in time for consideration by the State Legislature in 2015, and the Governor has indicated every intention to move forward. The RRVWSP, therefore, is certainly a "reasonably foreseeable future action" whose implications must be analyzed by the Bureau under applicable NEPA regulations.

23-30

The draft SEIS includes just one topic with respect to cumulative impacts - the cumulative impacts of water withdrawals on Lake Sakakawea and the Missouri River from the Project. The draft SEIS does not specifically consider the cumulative impacts of the RRVWSP on the risk and consequences of inter-basin transfer of biota of concern. Appendix E describes the RRVWSP along with other inter-basin connections and water diversions as potential non-Project biota transfer pathways (page 39) but does not assess the risks and consequences of the cumulative impacts associated with the RRVWSP and the proposed Project.

3.4 Use of Adaptive Management rather than a Precautionary Approach to Manage Risk

The draft SEIS described the following approach to preventing or mitigating transfer of aquatic invasive species "*If a Missouri River alternative was selected in the Record of Decision, an adaptive management strategy also would be developed to assess the effectiveness of the water treatment systems in reducing risks of transfer of non-native species.*" (page 4-6). The draft SEIS provides several pages of text describing the concept of adaptive management and noting that "*application of adaptive management is intended to support actions when the scientific knowledge of their effects on ecosystems is limited* " (page 4-5). However, much is known about the effects of aquatic invasive species on ecosystems. As noted previously, the draft SEIS acknowledges the serious nature of the issue of inter-basin transfer of invasive biota and describes that "*nonindigenous species may become invasive, reproducing and spreading rapidly with significant adverse consequences*" (page 4-103). The draft SEIS goes on to note that "*nonindigenous species can alter populations, communities, and ecosystem structure and function*" and Appendix E (page 80 and onwards) describes potential impacts including mass mortality of native aquatic species, cascading negative impacts throughout a food chain, and monetary losses. The draft SEIS also acknowledges that actions such as the "*interbasin diversions*" proposed in this Project are a primary source of microorganisms including invasive aquatic organisms of concern. Given that much is known about the serious effects of aquatic invasive species on ecosystems and inter-basin diversions are understood to be a source of aquatic invasive species of concern, there is

no need for an adaptive management approach – action can be taken now to mitigate the risk and consequences.

Appendix F of the draft SEIS (page F-8) notes that "*Reclamation would consult with the U.S. EPA and other stakeholders as appropriate to develop an adaptive management plan to assess control system efficacy and make modifications to the control system if the risk changes significantly."* Given that the risk of biota transfer has been poorly described in the draft SEIS and has not been quantified, it is unclear what information will be used to assess "*risk changes*" in the future and what timing and frequency might be considered "*appropriate*" for consultation with USEPA and other stakeholders, or whether Canada and Manitoba would be considered "stakeholders" in such a process.

The concept of adaptive management when applied to the prevention of the inter-basin transfer of aquatic invasive species is particularly concerning given the lack of success experienced world-wide in mitigating these impacts after introduction. To attempt to manage the issue after an inter-basin transfer occurred presents no opportunity to be effective at risk prevention. Prevention of inter-basin biota transfer is the only management option available that can provide effective control.

Finally, in sharp contrast with the adaptive management approach proposed in the draft SEIS, the conclusions of previous study on the issue of inter-basin transfer in this region required a precautionary philosophy. Nowhere in the draft SEIS can one find an acknowledgment of this precautionary philosophy. 23-31

3.5 Summary of Flawed Logic Regarding the Risks and Consequences of Biota Transfer

In the section of the draft SEIS on the environmental impacts of the Project, the Bureau argues that the alternatives that use Missouri River water "*would add an additional pathway for AIS* [aquatic invasive species] *to enter the Hudson Bay basin and therefore would increase the risk of these species becoming established in this basin. Each of the biota treatment options would reduce this risk. However, the impacts of implementing these alternatives would be essentially the same as described for the No Action Alternative because AIS pathways already exist, and the impacts of an establishment would vary according to which AIS was involved and not the source of introduction. Thus, the Missouri River alternatives would neither cause new types of impacts nor cause more severe impacts than could occur under the existing pathways*." (page 4-108). This logic is flawed and allows the Bureau to completely dismiss the consequences/impacts of the introduction of biota of concern through the Project. As described previously, the draft SEIS fails to recognize that biotic communities have remained largely distinct between the Missouri River Basin and the Hudson Bay Basin. The Bureau's logic also fails to recognize the tremendous efforts underway across the jurisdictions (as described above) to reduce the risk of transfer of biotic of concern through human induced non-Project pathways.

Each sentence in the Bureau's summary of the environmental impacts associated with the Project and aquatic invasive species (page 4-112) contains subjective and unsubstantiated wording that highlights the Bureau's utterly inadequate assessment of risks and consequences.

> "*The risk of AIS introduction to the Hudson Bay basin could be slightly increased if one of the Missouri River alternatives were implemented because they would add one, very-low-probability*

pathway to the already wide variety of pathways that currently exist." – there is no evidence in the draft SEIS to support the assignment of "*very-low-probability*" and the assessment misses a number of project risks as described above. 23-32

"*The probability of a release of water from the implementation of one of these alternatives that would result in the potential transfer of AIS and subsequent establishment in the Hudson Bay basin would be minimal, however, because of the controls included in the design of each of these alternatives and management actions that would be undertaken to minimize the potential risk.*" – there is no evidence in the draft SEIS to support that the "*probability*" is "*minimal*" and the review of the options for treatment at the biota WTP indicate that the proposed alternative will not minimize the potential risk because of the lack of filtration. 23-33

"*An adaptive management plan would also be implemented, which would further minimize the potential risks.*" – as described above, adaptive management is not an appropriate approach to minimizing the potential risks of an inter-basin transfer of biota of concern. A precautionary approach is required.

"*Conversely, the numerous and diverse non-Project pathways that are already present and would continue under the No Action Alternative exhibit a far greater risk for introducing AIS (which are present in adjacent drainage basins) to the Hudson Bay basin. For example, birds, fish, and mammals can transport AIS across large geographic distances.* – there is no evidence in the draft SEIS to support the statement that the non-Project pathways exhibit a "*greater*" risk for introducing AIS. If birds, fish and mammals were dominant vectors for transfer for AIS between basins then why have biotic communities remained largely distinct between the Missouri River Basin and the Hudson Bay Basin? 23-34

"*Constructed interbasin water diversions also have the potential to transport invasive species across drainage basins, and there are no standards for treatment of interbasin water transfers to control invasive species.*" – Manitoba agrees that inter-basin transfers have the potential to transport invasive species but standards exists such as those that have been repeatedly proposed by Manitoba for treatment to reduce the potential for transfer of aquatic invasive species. 23-35

"*The potential impacts from Project-related AIS introductions and establishment in the Hudson Bay basin would be comparable to those that would occur under the No Action Alternative because numerous pathways for AIS transfer already exist, and these alternatives would not create new types of impacts or increase the severity of impacts that could result from AIS transfer under the current pathways."* – The Missouri River alternatives could transfer aquatic invasive species to the Hudson Bay Basin that might not otherwise be transferred through non-Project pathways. In addition, given efforts underway to reduce human-caused non-Project transfer pathways, the relative importance of the Project pathway might actually increase over time.

4.0 Consequences in Canada

The Project poses significant risks to the environment of Canada, and even impacts within the United States cannot truly be understood without understanding what consequences may occur within Canada. Judge Collyer's 2010 decision is crystal clear that NEPA requires the Bureau to consider these impacts. Faulting the Bureau for its failure in the final EIS to consider "the consequences of biota transfer in Canada," 691 F. Supp. 2d at 51, Judge Collyer stated, "NEPA requires agencies to consider reasonably foreseeable transboundary effects resulting from a major federal action taken within the United States. Accordingly, when analyzing the consequences of biota transfer in the Hudson Bay Basin, Reclamation must include in its analysis the impact in Canada." *Id*. The language of the Court could not be plainer as to what NEPA requires. 23-36

The draft SEIS does purport to "take a hard look at . . . consequences of biota transfer into the Hudson Bay Basin, including Project effects in Canada." draft SEIS, page 5. Manitoba acknowledges that the draft SEIS represents an improvement with respect to the assessment of risks and consequences in the Canadian environment in that aspects of the Canadian environment are actually described in the draft SEIS. While the insufficiency of this supposed "hard look" is discussed in this document, the Bureau's characterization of its legal obligations is nothing less than astonishing. The draft SEIS baldy states, "The NEPA does not require federal agencies to carry their impact analysis into the sovereign territories of foreign governments. However, in order to comply with the court's direction, Reclamation has done so in this particular case only." draft SEIS, pages 5-6, 1-7. In short, notwithstanding the express language of Judge Collyer's opinion, the Bureau appears to reject the precise holding by the Judge in *Manitoba 2,* including her order. While the Bureau acknowledges that it must comply with what it calls the Court's "direction," it does not address and mischaracterizes its broader obligations under law as expressed in the NEPA. This impression is not helped by the Bureau's deficient analysis of potential environmental consequences to the environment in Canada. 23-37 23-38

4.1 Koi Herpes Virus

The koi herpes virus disease (KHV) is a highly infectious disease found in common carp and koi. It can result in significant mortality in those populations (Manitoba Water Stewardship 2009). KHV is a federally reportable disease in Canada (CFIA 2014), but this requirement has not yet been promulgated in the US. A case was confirmed in wild carp in Lake Manitoba in 2008 (Manitoba Water Stewardship 2009). In addition, KHV is considered an Aquatic Nuisance Species for North Dakota (North Dakota Game and Fish Department 2014). Unaccountably, notwithstanding this designation by North Dakota, this potentially serious viral vector was not considered as part of the risk analysis, despite the presence of common carp (*Cyprinus carpio)* in the Hudson Bay Basin (Table 3-18, DSEIS), and the fact of its importance to the sport fishing industry centered on Selkirk, Manitoba and the Netley Marsh (both just north of Winnipeg on the Red River), where a demonstrated high-profile carp "trophy" fishery exists. 23-39

The failure to identify this vector in this purported risk assessment mirrors a key failure in the Bureau's previous purported assessment of AIS risk when a critically important high-profile vector (*Myxobolus*) to salmonids was unaccountably missed. The pattern of missing even obvious vectors of 23-40

risk is a disturbing aspect of the Bureau's approach to assessing aquatic invasive species risk, and is moreover indicative of the lack of thoroughness present in the draft SEIS.

While not a commercial-quota species, substantial catches of carp are part of Manitoba's commercial fishery activities and therefore, should have been considered as part of the assessment of risks and consequences on the Canadian environment. Carp and carp roe represented, on average, an admittedly modest 3% and 0.1% of annual total production (by weight) for the province's commercial fishing production from 2002 to 2012 (Manitoba Conservation and Water Stewardship 2013). The value of the carp meat and roe fisheries combined was approximately $250,000 in both 2013 and from May through July in 2014 (Manitoba Conservation and Water Stewardship 2013), so a significant die-off of carp due to KHV would have a modest economic effect on the province's carp fishery, but a more serious effect on the circumscribed set fishers that concentrate on catching carp. 23-41

In the sport fishery, on the other hand, the carp "trophy" fishery is very strong in the Winnipeg region. The "Master Angler" awards announced each year indicate that significant biological productivity is being sustained in this fishery, as the record sizes of each year's Master Angler awards for carp attest. Of the top 10 largest common carp recorded through the Master Angler program, 5 have been caught since the year 2000, and 3 were from Lake Winnipeg. The lengths of these fish are up to ~110 cm, and the chance to catch these fish attracts people from across Canada and internationally (i.e. "sport fishing tourism"), as evidenced by the top 100 results (Master Angler Awards 2014). The combination of the commercial and sport-fishing values for carp is economically significant. Further, the health of the carp sport fishery, and the consistent large sizes of the fish awarded "Master Angler" status, means that the value of the fishery to sport fishers is very high, as is evident in the records of where various years' Master Anglers originate across Canada and the US.

Based on the presence of common carp in both basins (BOR 2014; USGS 2013), the importance of the carp fisheries, and the recognition of this virus as a concern within both Canada and the US, it should clearly have been included in the assessment of risk associated with the NAWS Project. The fact that this pathogen was omitted from the draft SEIS suggests again that there was not a careful evaluation of information published post-2008 and changing circumstances within the basins has not been accounted for in the risk analysis. Failure to address all relevant AIS is another deficiency in the EIS and an inadequate consideration of risks of inter-basin biota transfer to Canada and Manitoba.

4.2 Consideration of all Important Fish Genera and Species and their Vulnerability to Disease

Fish species in the Hudson Bay Basin considered by the Bureau to have recreational and commercial importance are listed in Table 3-18 of the draft SEIS. The list includes many salmonid species of economic importance, including; Brook Trout, Brown Trout, Lake Trout, Lake Whitefish, and Rainbow Trout. However, the list does not include Cisco, Round Whitefish, Arctic Grayling, and Arctic Char, which are all important fish species either economically, ecologically, or both. The list of key fisheries resources of the Hudson Bay Basin in Manitoba and Canada is therefore deficient and incomplete. 23-42

The list also erroneously includes Chinook Salmon, which is yet another example of the errors in fact that afflict the risk assessment and the assessment of the consequences of AIS movement into and 23-43

establishment in the Hudson Bay Basin. Table 3-18 also includes no source references for the information contained within the table, including no reference to at least one seminal reference work on the fishes of Manitoba namely, Stewart and Watkinson (2004).

Furthermore, a discussion of whirling disease, which impacts salmonids, is found on page 3-56 and on page 4-105 to 4-106 of the draft SEIS. The discussion briefly describes the distribution of salmonids in the Souris River watershed, and suggests that Rainbow Trout is the only abundant salmonid found there. However, this statement, is incorrect because both Brown Trout and Brook Trout are also reported as being present in the same area (Stewart and Watkinson 2004). 23-44

The discussion on whirling disease in the draft SEIS also indicates that many of the salmonids found within the Hudson Bay Basin are either resistant to infection or that the available information is contradictory and inconclusive at the present time. However, this statement is supported by a scant six references, ranging in publication date from 1992 to 2011. It is an error to conclude that risks are "low" while noting that information is contradictory, limited or inconclusive. Given the importance of the devastating effects of whirling disease, a thorough examination of the literature regarding susceptibility of all the species found within the Hudson Bay Basin should have been undertaken. 23-45

4.3 Misleading and Incorrect Evaluation of Economic Impacts

In the evaluation of potential economic consequences of inter-basin biota transfers presented in the draft SEIS (page 4-107 to 4-108), only Lake Winnipeg is referenced and only those impacts expected to be associated with Lake Winnipeg fisheries are described. This is misleading in that it undervalues the total potential economic impacts of AIS from the NAWS Project by excluding mention of other water bodies that are part of the Hudson Bay Basin and that have potential to be affected. There are roughly 300 lakes, in addition to the 3 major waterbodies in Manitoba – Lakes Winnipeg, Manitoba, and Winnipegosis, that are included in the commercial harvest schedule (Manitoba Conservation and Water Stewardship 2013). Considering only those commercially fished downstream water bodies that directly receive outflow from Lake Winnipeg, potentially affected fisheries would include those in: Cross, Duck, Kiskitto, Kiskittogisu, Playgreen, Sipiwisk and Split Lakes and the Nelson River. The commercial fisheries on these waterbodies have a combined economic value of at least $523,000 annually. These fisheries are located in areas with extremely limited alternate economic opportunities and losses to these fisheries would have large impacts on local communities. 23-46

The potential impacts on the recreational fishery are completely underestimated. There is a large recreational fishery based on Lake Winnipeg, which is the most frequently cited angling destination for anglers fishing in Manitoba (Travel Manitoba 2012). The fishery includes both open water, primarily shore based, fishing for walleye, white bass, sauger, yellow perch and freshwater drum and a rapidly developing recreational winter ice fishery for trophy walleye on the south basin of the lake. More than 90 Master Angler walleye of 28 to 33 inches were reported angled from Lake Winnipeg in 2013, including four of the 10 largest walleye taken in Manitoba that year. The winter ice fishery draws large numbers of both local and international anglers. Assuming angler expenditures are distributed in proportion to stated angler destinations, the value of the Lake Winnipeg recreational fishery to the Manitoba economy is estimated at $44.6 million dollars annually. 23-47

Further, the draft SEIS ignores potential impacts on recreational fishing in the Red River, and in particular, the potential consequences for the thriving recreational fishery between the communities of Lockport and Selkirk. The internationally renowned trophy channel catfish and fall walleye fishery in this 10 km reach is the 10th most cited fishing destination in the province, and has an estimated economic value of $13.3 million dollars annually. The trophy channel catfish fishery in this section of the Red River is considered to be the best in North America in terms of overall size of fish and catch rates. Additional economic benefits, not estimated herein, accrue from recreational fishing activities both up and downstream from this reach of the Red River, including in the City of Winnipeg. Master Angler records document that over 450 channel catfish of 34 to 44 inches total length and more than 80 walleye of 28 to 34 inches were reported captured in the Red River in 2013, including the largest walleye angled in the province that year. This area, along with Lake Winnipeg, is part of the primary area that could be impacted by the inter-basin transfer of aquatic invasive species. 23-48

While Lake Winnipeg comprises ~70% of the landed harvest value, it constitutes only ~50% of the province's production by weight. The total average annual value of the Manitoba commercial fishery from 2000-2012 was almost $27,000,000. In contrast, the valuation of potential economic impacts of NAWS provided in the draft SEIS suggests that "…*direct consequences on fishery employment would be limited to some portion of the 1,000 to 1,100 total Lake Winnipeg licensed fishers and hired helpers*" and "*every 1 percent incremental reduction in catch rates in Lake Winnipeg could potentially reduce the value of the angler experience in the range of $30,000 to $60,000 annually*" (page 4-107 to 4-108). Using portions of jobs as a metric of economic value is misleading in that it doesn't state a numeric value. Also, given that Lake Winnipeg comprises ~70% of a $28 million industry in Manitoba, every 1% reduction in production from that lake would be about $196,000 somewhere between 3 and 6 times more than the underestimated value offered by the Bureau. A similar, if not greater, understatement of lost value was applied to the recreational fishing sector. 23-49

Further, and as stated in the assessment, only direct effects are described. There is no assessment of indirect effects, or the significance of such consequences in conjunction with any other fishery-related impact (e.g. reduction in quotas, increase in costs of commercial licenses, etc.). 23-50

There are also a number of errors in fact in the assessment of consequences on Lake Winnipeg's commercial fisheries. For example, Appendix E of the draft SEIS incorrectly states that "*Most fishing in Lake Winnipeg is in the South Basin, near the convergence of the Red River"* (page 106) when in fact, commercial fishing occurs across the length and breadth of Lake Winnipeg and it is not concentrated near the mouth of the Red River (Brian Parker, Director of Manitoba Fisheries Branch, personal communication). 23-51

Finally, there is also no consideration of the economic impacts of the sustainability of Aboriginal fisheries upon which many downstream First Nations and Metis communities rely. There is no regard for the socio-cultural effects of an impacted fishery, either commercial or domestic, especially on the many First Nations and Metis fishers who predominate in the fishery, and whose Treaty Rights and Entitlements would be adversely affected. 23-52

Clearly, by focusing on Lake Winnipeg fisheries and disregarding others, by stating commercial impacts in terms that are inconsistent with the other types of economic impacts assessed, the draft SEIS presents a misleading picture of the economic implications of transfer of AIS from the Missouri River to the Hudson Bay Basin. Most distressing to the downstream Aboriginal peoples engaged in the commercial and domestic fisheries in the Hudson Bay Basin, impacts on legally enshrined Rights and Entitlements are ignored. 23-53

4.4 Socioeconomic information is Outdated in Appendix E

Socioeconomic information presented in Appendix E (for example on page 98 and onward) is outdated. For example, population and income statistics are cited from 2006 for First Nations communities and therefore, these data are eight years old. Interestingly, the draft SEIS suggests elsewhere that information provided by Earth Tech and TetrES in 2005 is outdated (Appendix E page 4) and yet the draft SEIS makes frequent use of references that are 10 plus years old. For example, the draft SEIS states that "*The Corps **recently** completed an EIS (Corps **2004**a) on operation of the Missouri River dams*" (emphasis added). 23-54

5.0 Inadequate Consideration of In-Basin Alternatives

Under NEPA, agencies must "rigorously explore and objectively evaluate all reasonable alternatives." *See* 40 C.F.R. § 1502.14; 43 C.F.R. §§ 46.415(b), 46.420(b),(c). The analysis of alternatives is indeed the "heart" of an environmental impact statement and must be full, fair and unbiased. 40 C.F.R. § 1502.14. The draft SEIS fails to meet these standards in part because it inadequately assesses the in-basin options. Only two in-basin options are considered in the draft SEIS despite the range of potential alternatives listed in Appendix C including options such as enhancement of existing groundwater systems and enhancement of existing surface water systems. Options are summarily dismissed with a paragraph of text in Appendix C. For example, enhancement of existing groundwater systems is dismissed because of quality and quantity concerns. However, the SEIS notes that a sufficiently detailed regional groundwater model has not been developed for the Minot and Sundre aquifers, limiting the Bureau's ability to accurately and reliably assess long-term sustainable yield and therefore quantity (page 4-28). In addition, it is noted in the draft SEIS that quality concerns could be addressed with reverse osmosis technology. Yet no effort is made in the draft SEIS to assess the cost and feasibility of reverse osmosis technology which is commonly used elsewhere across the Prairies, in both Canada and the US, to meet drinking water quality standards for groundwater (and surface water sources). Data from Manitoba suggests that 34 reverse osmosis and/or nanofiltration drinking water plants treat surface and groundwater supplies (including those under the influence surface water) to meet drinking water standards and remove for example, total dissolved solids and arsenic (Manitoba Office of Drinking Water personal communication). Interestingly, it is also noted on page 2-59 of the draft SEIS that the public specifically requested exploration of reasonable alternatives including the use of reverse osmosis technologies. 23-55 23-56

Similarly, the SEIS and its Appendix C dismiss the use of reverse osmosis at the Minot Water Treatment Plant following the 10 percent design because the costs were high and the cost-benefit ratio

for using this technology was very low. However, no evidence is provided to support this statement. Given that finished water quality was a major factor in the process of identifying a preferred alternative, it is surprising that the use of reverse osmosis to meet the US Environmental Protection Agency's (USEPA) Safe Drinking Water Act primary standards was not evaluated as an alternative (page C2-3). Exclusion of the reverse osmosis information is an example of bias against the in-basin alternatives and a failure to "rigorously explore and objectively evaluate all reasonable alternatives." 23-57

6.0 Inadequacy of Evaluation of Treatment Options

One of Manitoba's primary concerns with the draft SEIS relates to the Biota WTP options described for the Missouri River alternatives and in particular with the assessment of risks and consequences associated with each of the Biota WTP options. The Bureau has failed to assess the different risks and consequences of the five treatment options to biota transfer into the Hudson Bay Basin and thus has not met its obligations under NEPA nor the direction from the Court. In this section, various concerns related to the Biota WTP are described.

6.1 Failure to Establish Specific Minimum Water Treatment Performance Goals and Impact on Treatment Process Selection

The draft SEIS fails to establish specific water treatment goals that must be met by the biota water treatment process. Manitoba (Letter from Williamson to Waters dated May 5, 2006) has previously submitted its views on this issue and recommended water treatment goals based on a review of the biota threats, their potential impact on Canadian watersheds, and the current state of knowledge concerning their treatability by various treatment processes. Manitoba's March 26, 2008 comments on the draft environmental impact statement further stated these goals and provided an update based discussions with the Bureau (see below). 23-58

Parameter	Proposed Treated Water Goals Prior to Inter-Basin Transfer for the Comprehensive Biota Pre-Treatment Alternative	Comments
Turbidity	<0.3 NTU	This is necessary to ensure effectiveness of disinfection agents such as chlorine against viruses.
Disinfection-resistant protozoa such as *Myxobolus cerebralis*	2.5 log (99.9 %) removal	This should be achieved in a minimum of two separate barriers prior to

		transfer across the continental divide from the Missouri River Basin to the Hudson Bay Basin.
Other Protozoa with similar characteristics as *Giardia* and C*ryptosporidium*	4 log (99.99 %) total removal/inactivation with a minimum of 2.5 log by removal	This should be achieved in three separate barriers prior to transfer across the continental divide from the Missouri River Basin to the Hudson Bay Basin.
Viruses	4 log (99.99 %) inactivation	This can be achieved through disinfection.

The draft SEIS appears to accept the need for a Biota WTP for those alternatives involving the cross basin transfer of raw water drawn from within the Missouri River Basin and discharged into the Hudson Bay Basin. On page 2-30 the draft SEIS states that "*the purpose of the Biota WTP is to further reduce the risk of a project-related transfer of Aquatic Invasion Species (AIS) into the Hudson Bay Basin*". Appendix E (page 56) also notes that *"Biota treatment is integral to the Project water diversion to reduce the risk of AIS transfer to the HBB."* Appendix E (page 117) also notes that "*Water diversions with minimal or limited biota treatment systems, engineering controls, and mitigation response systems (unlike the Project) were determined to exhibit higher risk for AIS interbasin transfer.*" This statement is in sharp contrast to the preferred alterative which "*does not include the removal of biota"* (draft SEIS page 2-49) and therefore is a water diversion that presumably would exhibit a higher risk for aquatic invasive species inter-basin transfer. However, as described previously, the lack of definition of the various levels of risk makes comparisons difficult and unreliable. 23-59

While Appendix J of the draft SEIS includes Biota WTP general design criteria (Table 3-4), these general design criteria were not applied to all of the Biota WTP options. For example, the chlorination option does not meet the general design criteria for the removal or inactivation of *Cryptosporidium* or *Myxobolus cerebralis*. 23-60

Instead of creating relevant and plant specific treatment goals the draft SEIS takes the approach of:

- identifying 5 treatment options;
- comparing the performance of each option only for the removal or inactivation of viruses, *Giardia, Cryptosporidium* and *M. cerebralis*; and

- identifying the operating and capital cost for each treatment option.

The options selected for review in the draft SEIS were:

- Chlorination
- Chlorination-UV
- Enhanced chlorination–UV wherein pressure filtration is added upstream of the chlorination process
- Conventional treatment (incorporating coagulation, DAF, Filtration) followed by chlorination and UV
- Microfiltration-Chlorination–UV

On page 2-46, the draft SEIS states *"The options were designed to provide a range of treatment methods, starting with disinfection and incrementally adding water treatment technologies to target different pathogens and biota, and increasing the level of protection with each option."* The performance of each process was then assessed using *Giardia*, viruses, *Cryptosporidium* and *M. cerebralis* as surrogates for the selected aquatic invasive species to quantify the level of inactivation that could be achieved.

This approach is seriously flawed. There is no justification for assuming that because a process is effective in removing or inactivating *Giardia*, viruses, *Cryptosporidium* and *M. cerebralis* that it will be similarly effective in removing any or all the aquatic invasive species that are of concern. Also the approach does not follow the best practices that are regularly used within the water and wastewater treatment industry for the design and operation of treatment plants. 23-61

In Chapter 2, the draft SEIS acknowledges the shortcomings of three of the five biota treatment plant options to remove biota. The description of the chlorination, chlorination with UV inactivation, and enhanced chlorination with UV inactivation options includes the following statements that acknowledge that biota removal does not occur or is incomplete:

"Since this option does not include removal of biota…" page 2-47 (chlorination)

"Since this option does not include removal of biota…." page 2-49 (preferred alternative)

"Since this option does not include removal of biota at all times,..." Page 2-50 (enhanced chlorination with UV inactivation)

The industry's best practices for treatment process selection normally involve each of the following steps.

23-62

- identifying the treated water quality targets that must be met, including the identification of acceptable concentrations in the treated water for a wide range of physical, chemical and biological parameters;
- undertaking chemical, physical and biological analyses of the raw water over multiple years and seasons, and thus identifying the concentration of each parameter within the raw water and how that concentration might vary due to both natural seasonal changes and unusual events such as flooding, drought or contamination;
- identifying parameters of concern that must be addressed to meet the water quality targets, as well as all applicable regulations, and thus the production of very specific treatment goals for the plant;
- identifying a range of suitable treatment processes, each one of which must be capable of meeting the treatment goals and achieving the treated water targets fully and reliably; and
- selecting the final treatment process based on consideration of a wide range of parameters including, but not necessarily limited to, reliability, tolerance to unusual conditions, treatment performance, environmental impacts, ease of operation, and capital and life cycle costs.

It is Manitoba's position that the treatment approach proposed for the Biota WTP by the draft SEIS is inadequate as it has not been developed by following normal Best Practices and does not satisfactorily protect the Hudson Bay Basin against the risk of transfer of aquatic invasive species from the Project.

It is also Manitoba's long-standing position that, should the Project ultimately proceed, the Biota WTP must include a "multiple barrier" incorporating, as a minimum, conventional treatment using coagulation, clarification and filtration, followed by UV irradiation and chlorination. The plant must also be located within the Missouri River Basin so that all biota removed by the plant and transferred to the plant waste streams remain within the Missouri River Basin.

6.2 Requirement for Filtration Prior to Disinfection

The draft SEIS evaluated five treatment options for the Missouri River alternatives. These treatment options were designed to, "*…further reduce the risk of a Project-related transfer of AIS into the Hudson Bay basin…*" (page 2-46). The preferred option included chlorination and UV inactivation with no filtration (page 2-61). The rationale for selection of this option included the statement that, "*…this alternative… provides protection against the organisms of concern…*" (page 2-46). Scientific support for this statement was purported to be provided within Appendix E: Transbasin Effects Analysis Technical Report.

However, the effectiveness of UV irradiation is widely acknowledged to be adversely impacted by elevated levels of turbidity and organics. The *Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse* (National Water Research Institute 2012) state that,

"For filtered surface waters and groundwaters, the impact of particulate matter on UV disinfection is minimized." "Particulate matter in unfiltered surface waters and variations in transmittance can shield micro -organisms from UV disinfection. For these water supplies, site-specific equipment validation is recommended to assess the impact of variations in water quality."

In Appendix E of the draft SEIS (page 64) it is stated that "*High turbidity can reduce the efficacy of chlorination (LeChevallier et al. 1981) and UV disinfection (USEPA 2006)*". Health Canada (2012) notes that, "*LeChevallier et al. (1981) studied the efficiency of chlorination in inactivating coliforms in unfiltered water supplies and found a negative correlation with turbidity. A model predicted that an increase in turbidity from 1 NTU to 10 NTU would result in an eight-fold decrease in the disinfection efficiency at a fixed chlorine dose*." The USEPA (2006) notes that, "*For unfiltered systems, the Surface Water Treatment (SWTR) allows turbidity up to 5 Nephelometric units (NTU) immediately prior to the first point of disinfection application (40 CFR 141.71)*." (USEPA 2006).

However, even after citing these two references (LeChevallier et al. 1981; USEPA 2006), the authors of Appendix E completely and inexplicably ignore the findings and state that, "*For unfiltered water, the UV dose-response is generally not affected when the turbidity is less than 10 Nephelometric turbidity units (NTU) (Oppenheimer et al. 2002; Passantino et al. 2004)*." (Appendix E; page 64). 23-63

A value of 5 NTU is also generally considered by the water treatment industry to be the threshold beyond which chlorination's effectiveness can be reduced by masking. Also, while each site demonstrates site-specific characteristics it is probable that UV irradiation is more susceptible to masking than chlorine, as chlorine is able to diffuse into particles, while UV light can only be absorbed if the optical path is completely unobstructed.

The authors of Appendix E go on to state that in a pilot study at the Snake Creek Pumping Plant, "*The turbidity ranged from 3-10 NTU from April to December, 2006*." (Appendix E, page 64 and Figure 6 and below in this Figure 1). They further indicate that monthly mean turbidity at the Renner Bay intake was below 8 NTU from November 2005, to November 2011, (Appendix E, Figure 7).

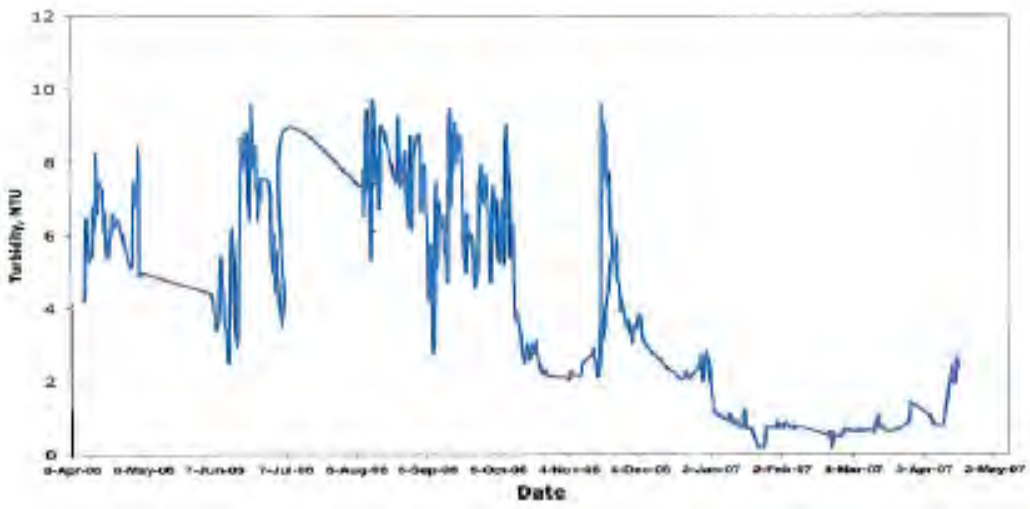


Figure 1. Raw Turbidity at the Snake Creek Pumping Plant (from draft SEIS, Appendix E, Figure 6)

Based on these statements and presentations of the water-quality data, the authors of Appendix E conclude that (page 65), "*These data and results of the pilot study suggest that turbidity of source water for the Project should not limit the efficacy of UV disinfection*."

However, this conclusion is directly contradictory to previous references in the report (i.e., LeChevallier et al. 1981; USEPA 2006), and further, was based on only two references (Oppenheimer et al. 2002; Passantino et al. 2004), only one of which was peer reviewed. The analysis on the effects of turbidity on UV disinfection contained within Appendix E therefore inexplicably ignored the extensive, robust and well-developed scientific literature on the subject. A fairly detailed, but not complete, list of recent studies examining the effect of turbidity and other factors on UV disinfection includes; Amoah et al. (2005); Cantwell et al. (2008); Cantwell and Hofmann (2008); Caron et al. (2007); Christensen and Linden (2003); Hess-Erga et al. (2008); Mamane and Linden (2006); Templeton et al. (2006); Templeton et al. (2005); Wu et al. (2005). In addition to these reports, there have been at least two major reviews on the efficacy of UV disinfection in the scientific literature (Mamane 2008; Templeton et al. 2008), and a recent and comprehensive review by Health Canada (Health Canada 2012). 23-64

Results of these studies and reviews indicate that particulate material at even low concentration can have significant effects on the efficacy of UV disinfection. The studies also find that there are many factors related to particulate material that could affect efficacy of UV disinfection including; light scattering and/or absorbance (Amoah et al. 2005; Passantino et al. 2004; Christensen and Linden, 2003), UV absorbance by natural organic matter (Templeton et al. 2005), coating of organisms with natural organic matter (Cantwell et al. 2008), coating of organisms with iron particles (Wu et al. 2005; Templeton et al. 2006), and entrainment and association of organisms with particulates (Templeton et al. 2008; Mamane and Linden 2006). The studies indicate that light scattering is likely the least important of the interactive effects, and importantly, this was the only factor examined in both the Oppenheimer et al. (2002) and Passantino et al. (2004) papers relied upon in the draft SEIS. The 23-65

rationale provided within Appendix E is therefore a superficial and inadequate examination of the issue of turbidity and UV disinfection.

It should be noted that:

- The turbidity data presented in the draft SEIS for water drawn from Lake Sakakawea routinely shows turbidity levels well in excess of 5 NTU.
- The raw turbidity data presented in the draft SEIS only relates to a 9 month period from April to December 2006.
- The draft SEIS presents no long term raw turbidity data, particularly for significant flood or drought events when much higher turbidity levels can be reasonably expected.
- The draft SEIS presents no data addressing either concentrations of dissolved organics, which can adversely impact the UV transmittance, or on UV transmittance itself.

Health Canada (2012) concluded that, "*Where filtration is not required to meet pathogen removal goals, it is best practice to keep turbidity levels below 1.0 NTU to minimize the potential for interference with disinfection.*", and that, "*The value of 1.0 NTU is identified as "**never*** (emphasis added) *to exceed*" because readings above this value suggest "*…subsequent disinfection efficacy may be impacted*." The USEPA has also published an ultraviolet disinfection guidance manual in response to the Final Long Term 2 Enhanced Surface Water Treatment Rule (USEPA 2006), which stated (8 years ago) that, "*For unfiltered systems, the Surface Water Treatment (SWTR) allows turbidity up to **5** Nephelometric units (NTU) immediately prior to the first point of disinfection*...". This is somewhat higher than the regulatory requirement of Health Canada, but still considerably below the 10 NTU considered protective within Appendix E.

Examination of Figure 6 and Figure 7 in Appendix E indicates that turbidity of the source water almost always exceeds 1.0 NTU, and exceeds 5.0 NTU approximately 50 % of the time. Further, Figure 7 provides *monthly* mean values, when what is of importance is maximum turbidity values and intermittent spikes in turbidity, as can be experienced hourly or daily. For examples, it was found in a prior study that turbidity of Missouri River water spiked at levels of up to 40 NTU (Tetr*ES* 2008). These documented turbidity levels are considerably higher than current regulatory limits and are within the range of NTU levels found and reported to impact UV disinfection within the scientific literature (see references above). 23-66

The statement in the draft SEIS that suggests that chlorination and UV inactivation alone (without any filtration), "… *provides protection against the organisms of concern…*" is not supported by water-chemistry data from the Project area, is not supported by the extant scientific literature, and is not supported by recent regulatory documents developed both in the United States (USEPA 2006) and Canada (Health Canada 2012). The associated result is the certainty that the preferred solution will not be able to meet the stated Log-Inactivation of target biota and therefore, will not reduce the risk of inter-basin transfer of biota of concern.

It is therefore Manitoba's position that:

- The draft SEIS fails to satisfactorily address the impact of elevated concentrations of turbidity and reductions in UV transmittance that are demonstrated by the limited available raw water quality data, and which will prevent chlorine disinfection and UV irradiation achieving the assumed log removals that are quoted in Tables 4, 5 and 6 of Appendix E. 23-67

- Industry best practices and the SWTR regulations published by the USEPA recognize these issues and require all utilities that experience raw water turbidity in excess of 5 NTU to install filtration. 23-68

- The only secure means of ensuring the effectiveness of both UV and chlorination is to first pre-treat the water using conventional treatment. This will reduce the turbidity and dissolved organics levels in the feed water to the UV and Cl_2 systems and also maximize the UV transmittance of the raw water thus ensuring far greater reliability and effectiveness of the UV and Cl_2 systems. 23-69

- The filtration system should target a filtered water quality of no more that 0.3 NTU, thus rendering it far more representative of the "well water" used by Hedrick et al. (2008) (see discussion below). 23-70

6.3 Failure to Address Potential for Reactivation of Aquatic Invasive Species after UV Treatment

While it is widely acknowledged that UV treatment can effectively inactivate waterborne pathogens (see review by Hijnen et al. 2006), there are also many examples of the ability of pathogens to repair themselves and become reactivated following UV treatment (e.g., Harris et al. 1987; Oguma et al. 2004; Zimmer and Slawson 2002). Reactivation following exposure to UV radiation has been documented in *Escherichia coli* (Zimmer and Slawson 2002), *Legionella pneumophila* (Oguma et al., 2004), and *Giardia* (Belosevic et al. 2001), which are all highly relevant to the NAWS Project and concerns for downstream water quality in the Hudson Bay Basin. Harris et al. (1987) reported that when photoreactivation was considered, the dose of UV required to achieve 99.9% inactivation of *E. coli* and *S. faecalis* was twice that required when reactivation was not taken into account. Therefore, the potential for reactivation of pathogens after receiving UV treatment is an important consideration for the optimization of water-treatment trains. Unaccountably, this phenomenon was almost completely ignored in both the risk analysis and in the assessment of treatment options.

In the 2007 risk analysis performed by USGS and frequently cited in the draft SEIS, it was stated that "*Although treated waters will be relatively free of organisms, product water entering the transmission module from the water treatment module may contain organisms that survive the treatment process (e.g., recovering from UV treatment will occur...)*" (USGS 2007, page 123). Despite the explicit mention of this concept, there is no indication that reactivation or recovery of pathogens was considered in the risk analyses presented in both the FEIS and the draft SEIS. As evidenced by the studies cited above, there is demonstrated and proven potential for aquatic invasive species to survive UV treatment. This is particularly important for species that may be more resistant to chlorination, such as the devastating diseases caused to fish by *Myxobolus cerebralis* and to people (especially the immunocompromised) by *Cryptosporidium* (page 4-99). The use of several treatment technologies (i.e., chlorination and UV treatment) will provide more protection again pathogen reactivation than UV alone, 23-71

but the potential for reactivation does require that appropriate doses are used to ensure inactivation goals are achieved (Harris et al. 1987; Oguma et al. 2004). Therefore, the potential reactivation of aquatic invasive species should have been considered as both part of the risk analysis for transfer of biota from the Missouri River Basin to the Hudson Bay Basin and in selection of the treatment technologies and goals for the Preferred Alternative. Because they were not, these deficiencies constitute fundamental inadequacies in both analyses and deeply compromise any confidence in the selected "preferred alternative."

6.4 Treatment for Aquatic Invasive Species of Concern

The draft SEIS only reviews each treatment option for the removal of viruses, *Giardia*, *cryptosporidium* and *M. cerebralis*. Tables 4, 5 and 6 in Appendix E demonstrate the assumed removals for treatment options 1 to 3. While Manitoba does not accept the stated removals for those parameters given the concerns described above with respect to turbidity, it is also apparent that the draft SEIS fails to consider the ability of the selected treatment processes to remove all of the aquatic invasive species of concern, including those listed in Table 3-17, in the main body of the SEIS and which summarizes aquatic invasive species that are present in the Missouri River Basin but "unknown" within the Hudson Bay Basin. 23-72

Appendix E further identifies and discusses the treatability of a wide range of aquatic invasive species and summarizes these findings in Table 3. However, the right hand column of this table entitled **"**Water Treatment and Physical Removal Options" is misleading and open to misinterpretation. Many times in this column several separate processes are indicated as being appropriate but the table fails to identify whether one process may be less effective than another, the degree of removal or inactivation that might be expected by each process, and in the case of UV and chlorine, the UV or chlorine doses required to achieve satisfactory performance and whether or not these doses are met by the proposed design. Also, while one process might be acceptable for one stage of the life cycle of a particular aquatic invasive species, it may be completely unsuitable for another stage (as discussed later for *M. cerebralis*).

Table 3 also indicates that filtration or micro-filtration are required to remove the following:

- Bacterial Kidney disease
- Columnaris disease
- Edwardsiella spp
- Enteric redmouth disease
- Mycobacterium
- New Zealand Mudsnails
- Zebra mussel
- Quagga Mussel
- All stages of *M. cerebralis*
- Polipodium hydriforme
- Parasitic copepods
- Helminths
- Fungi

- Saprolegnia spp
- Branchieomyces.spp
- P Herbarum.spp
- Exophiala.spp
- Cyanobacteria
- Anabena flos-aquae
- Aphanizomenon flos aque
- Mycrocystis aeruginosa

It is thus apparent from the draft SEIS's own findings in Appendix E that a filtration step is an essential stage in any treatment process designed to prevent the transfer of aquatic invasive species.

6.5 Treatment for *M. cerebralis* (Whirling Disease)

The draft SEIS reports on page 3-56 that "*Whirling disease has been found in the upper Missouri River basin, including Montana and Wyoming, but has yet to be detected in North Dakota or Canada*." It also states on the same page that: "*Whirling disease presents a serious threat to coldwater fisheries in North America and has been implicated in the decline of sensitive trout populations*."

The draft SEIS therefore accepts that whirling disease is not present within the Hudson Bay Basin, but is present in the Missouri River Basin, and that the treatment process must therefore ensure the inactivation of *M. cerebralis* which is the causative agent for whirling disease.

6.5.1 The Life Cycle of *M. cerebralis*

The SEIS fails to adequately detail the full life cycle of *M. cerebralis* nor address effective treatment against every stage of that life cycle and in particular, the essential role played by the intermediate host *T. tubifex.*

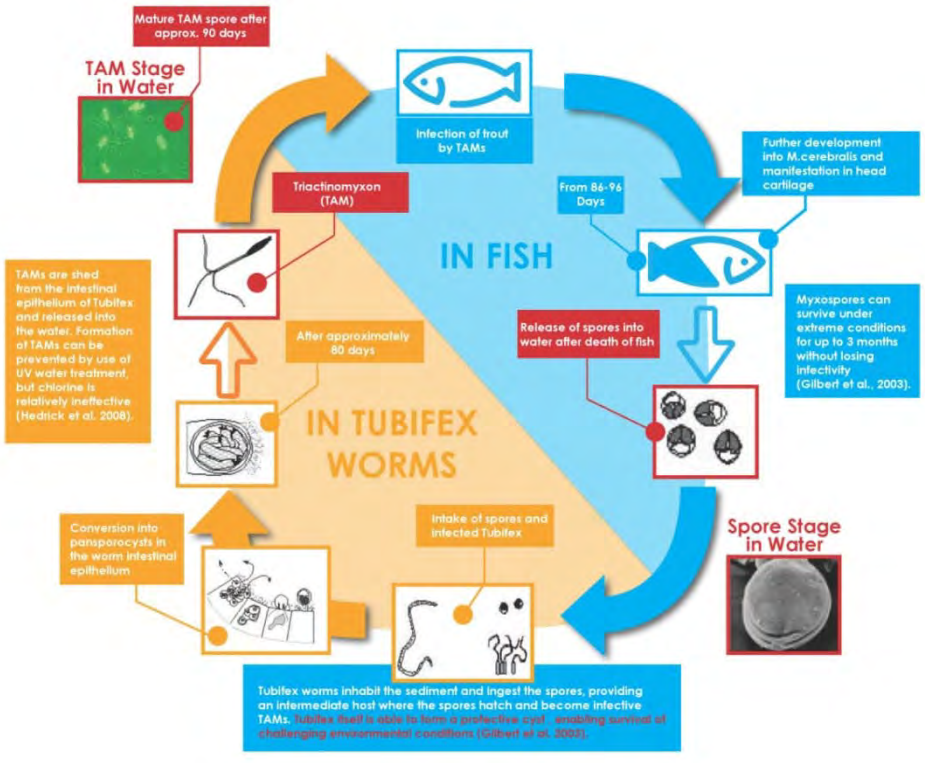


Figure 2: Life Cycle of *M. cerebralis*

The life cycle of *M. cerebralis* is well described in a paper by Gilbert et al. (2003) and is summarized in Figure 2. Previous work has indicated that Triactinomyxons (TAMs) produced during the infective stage of the lifecycle can be inactivated by UV irradiation and research by Hedrick et al. (2008) shows that under specific laboratory conditions the myxospore stage can also be addressed by UV irradiation.

However, it should be noted that a significant part of the *M. cerebralis* lifecycle is its residence within the intermediate host *T. tubifex*. Gilbert's paper discusses the role played by *T. tubifex* and makes the following related statements.:

> *"Tubifex tubifex also have a unique ability to survive drought and food shortages by secreting a protective cyst and lowering the metabolic rate. Cysts containing live T. tubifex have been recovered from a cattle pond after 5 months of drought and worms in the laboratory survived 6 months of starvation in cysts."*
>
> *"Some researchers have speculated that T. tubifex can be dispersed to new locations in these cysts. If worms infected with M. cerebralis could use this type of dispersal mechanism it could have significant impacts on efforts to control the spread of whirling disease."*

Manitoba has been unable to identify any research that proves cysts of *T. tubifex* are inactivated by either UV irradiation or chlorine. Therefore it is our position that: 23-73

- This part of the life cycle of *M. cerebralis* is not addressed by the treatment process proposed within the draft SEIS;
- The proposed treatment process does not address all potential avenues for the transference of whirling disease into the Hudson Bay Basin.
- It is also Manitoba's position that the only effective means of removing *T. tubifex* is a well-designed and effective filtration process.

6.5.2 Treatment of *M. cerebralis* Myxospores by UV irradiation

The SEIS proposes to use only UV irradiation for the inactivation of *M. cerebralis* and bases this approach on the research conducted by Hedrick et al. (2008)

The work conducted by Hedrick et al is respected research and Manitoba does not dispute its findings within the limits pertaining to the actual test conditions under which it was done. However, it is Manitoba's position that the research's environmental conditions cannot be considered as representative of the actual conditions that will be experienced by the Biota WTP and so it is imprudent to apply Hedrick's findings to a "real-life" application. Hedrick's research has not proven that UV irradiation will be similarly effective under the actual water quality conditions pertaining to the Biota WTP, nor in our knowledge, has Hedrick's research been validated by independent researchers. 23-74

As noted above, UV irradiation is known to be adversely affected by dissolved, suspended and particulate material and organics, as generally measured by "turbidity", and by "UV transmittance". The

Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse (National Water Research Institute 2012) state:

> *"For filtered surface waters and groundwaters, the impact of particulate matter on UV disinfection is minimized." .... "Particulate matter in unfiltered surface waters and variations in transmittance can shield micro -organisms from UV disinfection. For these water supplies, site-specific equipment validation is recommended to assess the impact of variations in water quality."*

Hedrick's research used "well water" for suspending the myxospores of *M. cerebralis* when investigating the impacts of UV irradiation. His paper states that:

> *"Effects of UV irradiation.—Myxospore suspensions prepared as previously described from four rainbow trout heads were diluted 1:5 with well water, and larger particulates were then removed by passage through 20-and 10-lm Nitex screens. Myxospores were collected by centrifugation at 500 3 gravity (g) for 10 min and then resuspended in well water. Replicate 50-mL suspensions, each containing 2.5 3 105 myxospores in well water, were placed onto petri dishes for UV treatments at five different doses delivered by a low pressure mercury vapor lamp in a collimated beam apparatus. The methods used for UV treatments of myxospores were the same as those previously described by Hedrick et al. (2007) for TAMs of* M. cerebralis*."*

It should therefore be noted that:

23-75

- Hedrick's research used "well water" under closely controlled laboratory conditions;
- the well water was filtered to remove larger particulates prior to UV irradiation;
- the paper does not elucidate further on the specific water quality of the well water and in particular the concentrations of turbidity or the UV transmittance. These are suspected to have been significantly less challenging than those that will be experienced under real life conditions by the Biota WTP.
- Hedrick's work did not review the impacts of elevated levels of turbidity or organics on the efficiency of the UV inactivation process. It is normally accepted that elevated levels of turbidity and organics can seriously diminish the effectiveness of UV.

It is thus the position of Manitoba that:

- Hedrick's paper, on which the selection of UV is based, does not provide adequate and comprehensive research to prove the effectiveness of UV under all the raw water conditions that will be experienced by the Biota WTP.
- The Biota WTP must address all stages of the life cycle for *M. cerebralis* not just the infectious TAM stage and the myxospore stage.
- The Biota WTP must also provide effective removal or inactivation of *T. tubifex,* including the cyst stage of *T. tubifex.*
- UV irradiation alone cannot be considered a reliable process for the inactivation of all stages of *M. cerebralis*.

- An effective treatment process must also include filtration to address the removal of the intermediate host *T. tubifex* and to ensure the quality of the raw water fed into the UV reactors is much more closely representative of the laboratory conditions prevailing within Hedrick's research.

6.6 Specific Comments on the Biota Water Treatment Plant Options

6.6.1 Option 1 - Chlorination (Page J-37)

23-76

The log removal credits identified in Table 3.6 are questionable as they do not address the significant adverse impacts on chlorination presented by elevated levels of turbidity. It is repeated that the USEPA, under the Enhanced Surface Water Treatment Rule, requires all utilities who experience turbidity levels in excess of 5 NTU to install filtration. The log credits quoted in Table 3-6 are neither achievable, nor credible when the turbidity exceeds 5 NTU.

7.6.2 Option 2 – Chlorination- UV (Page J-41)

23-77

The log removal credits identified in Table 3.7 are questionable as they do not address the significant adverse impacts on chlorination and UV presented by elevated levels of turbidity. It is repeated that the USEPA, under the Enhanced Surface Water Treatment Rule, requires all utilities who experience turbidity levels in excess of 5 NTU to install filtration. The log credits quoted in Table 3-7 are neither achievable, nor credible when the turbidity exceeds 5 NTU.

Also, as discussed earlier, Hedrick's research, on which the UV system design is based, does not support the assumption that results similar to those observed under laboratory conditions are achievable under the significantly different conditions prevailing in raw water drawn from Lake Sakakawea at any time of the year.

Also the log removal credits claimed for *M. cerebralis* are not achievable when it is resident within the intermediate host *T. tubifex*.

6.6.3 Option 3 - Advanced chlorination – (pressure filtration, UV, CL2)

23-78

It is noted that the filters are proposed to operate only when turbidity exceeds 7 NTU. This means that for significant periods the filters will not operate and that no protection is provided against the aquatic invasive species of concern that can only be effectively removed by filtration.

The filtration rate indicated in Table 3-9 is approximately 29 m/hr or 12.0 USgpm/ft^2 which is very high and at the upper limit of normally accepted rates. It is unlikely that effective performance will be achievable at this filtration rate, especially when the feed turbidity levels exceed the "filter start" level of 7 NTU. Filtration rates of this magnitude are normally only achievable on water with turbidity levels lower than approximately 2 NTU. In this application, pretreatment by clarification (similar to the "conventional treatment" process in option 4) would be needed.

The log removal credits identified in Table 3-10 are questionable as they do not address the significant adverse impacts on chlorination and UV presented by elevated levels of turbidity. It is repeated that the USEPA, under the Enhanced Surface Water Treatment Rule, requires all utilities who

experience turbidity levels in excess of 5 NTU to install filtration. The log credits quoted in Table 3-7 are neither achievable, nor credible when the turbidity exceeds 5 NTU.

Also, as discussed earlier, Hedrick's research, on which the UV system design is based, does not support the assumption that results similar to those observed under laboratory conditions are achievable under the significantly different conditions prevailing in raw water drawn from Lake Sakakawea at any time of the year.

Also the log removal credits claimed for *M. cerebralis* are not achievable when it is resident within the intermediate host *T. tubifex*.

6.7 The Essential Need for Filtration

Manitoba's primary position is that the risks of inter-basin transfer of water outweigh the benefits and that in-basin alternatives should be fully investigated. It is also Manitoba's position that an effective filtration stage must be included within the overall treatment process in the Missouri River Basin prior to transfer. Pre-treatment by conventional treatment or micro-filtration is essential to:

- Remove those aquatic invasive species of concern that are not susceptible to inactivation by UV or chlorine.
- Address all stages of the *M. cerebralis* life cycle including when resident within *T. tubifex* and the cysts of infected *T. tubifex.*
- Provide adequate protection against elevated levels of turbidity in excess of 5 NTU and in particular against the more severe water quality conditions created by flood or drought events that were neither identified nor addressed by the draft SEIS.
- Reduce prevailing levels of turbidity (to 0.3 NTU or less) and dissolved organics so that the downstream UV and chlorination stages will operate reliably and effectively.
- Provide a multiple barrier approach such that should one stage fail or perform less effectively, then a reduced (yet still effective) degree of treatment remains available.

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Response 23-1 – The proposed project is not the "first-ever Federal project to artificially connect the Missouri River Basin, which drains south to the Gulf of Mexico, to the Hudson Bay Basin". There are many major transbasin water transfers in the U.S. and Canada, including the Milk River Project which transfers water for irrigation from the Hudson Bay Basin to the Missouri River Basin. This project was authorized in 1905, and has been diverting water from the Hudson Bay basin to the Missouri River basin for over 100 years. Section VI of the 1909 Boundary Waters Treaty governs apportionment of water from the St. Mary River and the Milk River between the United States and Canada. A list of major across basin water transfers in the U.S. and Canada can be found at http://www.swc.state.nd.us/4dlink9/4dcgi/getcontentpdf/pb-1065/interbasinwhitepaper06.pdf:

Response 23-2 – While the comment is noted, it does not provide a basis for Reclamation to respond to or modify the Draft SEIS as the agency moves the document to a Final SEIS. Reclamation continues to appreciate Manitoba's comments provided on the Scoping Notice for the EIS, the Draft EIS, the Final EIS and the Scoping Notice for the SEIS. Responses to the comments were made and issued, where appropriate, and those responses continue in effect, unless new information was obtained and disclosed in the compilation of this SEIS.

Response 23-3 – The analysis and changes to the Project since 2001 are well within the scope of the Secretarial Determination. The Secretarial Determination signed by Secretary Babbitt outlines six features that are to be incorporated into the Project design. Those include:

- Raw water from either Lake Sakakawea or Lake Audubon will be disinfected to inactivate 3 logs of Giardia and 4 logs of virus prior to crossing the continental divide.
- Appropriate engineering controls and fail-safe systems will be incorporated (including an appropriate number of automated pipeline isolation valves) to minimize the accidental release of pre-treated water from spills and pipeline breaks in sensitive areas.
- Adequate facility inspection, operation, maintenance, and capital replacement plans to minimize the potential for facility degradation and breakdowns.
- Contingency plans, emergency response procedures, and periodic exercises to address response to accidental releases of water or sludge.
- Adequate controls to contain any accidental spills of recycled backwash or softening clarification supernatant within a covered perimeter of the treatment plant facility, and prevent any release from the site.
- Sludge resulting from the filter backwash and softening clarification process will be either treated to inactivate disinfectant-resistant pathogens, or transported for disposal at an appropriate disposal facility (preferably within the Missouri River basin).

Each of those design elements is present in the current Project plans and will continue to move forward with the Project through any future iterations.

Reclamation does not agree with the statement on page 38 that "[t]he only secure means of ensuring the effectiveness of both UV and Chlorination is to first pretreat the water using conventional treatment." All options for the Biota WTP evaluated in the SEIS would be

sufficient to reduce the Project-related risk for AIS transfer. However, based on drinking water concerns, the preferred alternative in the Final SEIS includes the Conventional Treatment biota WTP option. As discussed in Chapter 2, the inclusion of filtration at the biota WTP was to address concerns about the formation of DBPs. However, adding filtration within the Missouri River basin should also address Manitoba's concerns regarding the risks and consequences associated with AIS. In addition to the treatment process included at the biota WTP, the safeguards constructed into the existing water pipeline, along with the natural terrain that generally lacks surface drainage, provides a very low risk of a failure in a pipeline resulting in the transfer and establishment of AIS.

Response 23-4 – The potential consequences of AIS, including impacts on commercial fisheries, were analyzed in the SEIS and are discussed in detail in the Aquatic Invasive Species section of Chapter 4. Appendix E also contains the full text of the *Transbasin Effects Analysis Technical Report* documenting the data and methods used in the analysis of the risk and consequences of AIS.

Reclamation would point out that the potential reductions in fish populations of Lake Winnipeg and Lake Manitoba that were estimated in the 1977 IJC report and cited by the commenter were specifically related to introductions of nonindigenous fish species. The risk of transferring fish through the Project is essentially zero. The aquatic invasive species of concern for the Project are microorganisms as discussed in the Aquatic Invasive Species sections of Chapters 3 and 4.

Response 23-5 – The fish screen alluded to in the quote from the IJC report may well have constituted 'new and untried engineering works' at that time; however, the biota WTP options evaluated in the SEIS are neither new nor untried. Rather, they rely on existing and well tested technologies used world-wide with proven records of safe and very reliable operation.

Reclamation believes a precautionary approach has been and continues to be taken with respect to the planning and design of the Project. From the onset of Project planning, Reclamation has worked collaboratively with numerous agencies at the national and state/provincial levels within the United States and Canada to identify concerns, analyze data and develop alternatives which meet the Project need while avoiding and/or minimizing the potential risks and consequences of the proposed actions. This precautionary approach is further demonstrated through the analysis of biota WTP options to treat the water before it leaves the Missouri River Basin thereby reducing the Project-related risk of AIS transfer. In addition to the treatment process included at the biota WTP, the safeguards constructed into the existing water pipeline, along with the natural terrain that generally lacks surface drainage, provides a very low risk of a failure in a pipeline resulting in the transfer and establishment of AIS.

Response 23-6 – Reclamation does not concur with the assertion of the commenter that the SEIS analysis of the environmental risks and consequences is inadequate. The *Transbasin Effects Analysis Technical Report* (Appendix E) analyzed the risks and consequences of AIS and the methods and results of the analysis were affirmed by an independent peer review. The SEIS analyses comply with the Council on Environmental Quality Implementing Regulations for Implementing NEPA, 40 CFR 1502.16. Please refer to Response 23-7 for further explanation.

Response 23-7 – Reclamation does not concur with Manitoba's assertion that Reclamation's assessment of the risks and consequences of accidental biota transfer is inadequate. The SEIS, including Appendix E, supplements the analyses that were conducted for the 2008 Final EIS on Water Treatment. Previous analyses, including USGS (2007) have not been abandoned as the comment asserts.

As explained in the SEIS, as supported by the *Transbasin Effects Analysis Technical Report* (Appendix E), and further described below, Reclamation's assessment represents best practice, a state of the art in risk assessment given the available data and uncertainty, and constitutes the requisite "hard look". Several lines of evidence are outlined below that address Manitoba's criticisms and support the fact that Reclamation's approach and analysis used a state of the art approach (as judged by an independent peer review of technical experts), that Reclamation's analysis followed EPA guidance, that the qualitative/semi-quantitative approach was driven by data availability and uncertainty, and that the analysis standard specified under the National Environmental Policy Act (NEPA) was met. The SEIS has been revised to better explain aspects of the responses provided below.

Expert Review Concluded that Reclamation Used State of the Art Approach

Contrary to Manitoba's assertion that Reclamation's analysis risks and consequences of accidental biota transfer does not represent a best practice, an expert panel concluded in an independent peer review that the *Transbasin Effects Analysis Technical Report* (Appendix E) was, in fact, a best practice and state of the art evaluation. At the request of Reclamation, an independent peer review of the *Transbasin Effects Analysis Technical Report* was conducted by Atkins, North America, a leading design, engineering, and project management consultancy (Atkins 2012). Atkins retained three experts in their respective fields of study, including:

- Dr. Paul R. Bowser, Cornell University – Fish Pathogens and Parasites
- Dr. Nicholas A. Friedenberg, Applied Biomathematics – Ecological Risk and Consequence Analysis
- Dr. Jörg E. Drewes, Colorado School of Mines – Surface Water Treatment and Disinfection

The *Transbasin Effects Analysis Technical Report* conducted in support of the SEIS represents a thorough analysis of the potential consequences of the introduction of aquatic invasive species into Canada, and most specifically, the Manitoba area. Overall, the reviewers concluded that the study was based on the best available science, and the results and conclusions were supported by that science, given the uncertainties inherent in the available data and topic knowledge. The reviewers provided comments, and the responses to these comments were reviewed and approved by the Cooperating Agencies.

One reviewer, Dr. Friedenberg, stated that the Report could have taken a more quantitative rather than a qualitative approach to risk analysis – he recommended the Report include the quantitative results of risk analyses previously conducted on the probability of introducing foreign biota to the Hudson Bay basin (e.g., Reclamation and Decision Support 2000). Dr. Friedenberg's comments were addressed by describing the lack of comprehensive survey data and unknown

concentrations of AIS that precluded the employment of a quantitative risk analysis. Specifically, it was demonstrated that definitive concentrations of AIS in drainage basins adjacent to the Hudson Bay basin – vital input parameters for a quantitative analysis – simply were not available.

As requested by Dr. Friedenberg, the quantitative results of risk analyses previously conducted on the probability of introducing foreign biota to the Hudson Bay Basin (e.g., Reclamation and Decision Support 2000) were included in the final *Transbasin Effects Analysis Technical Report*. Qualitative and quantitative risk assessment methodologies, available information, and data gaps were reviewed, and a qualitative assessment was selected as the best approach to evaluate the risk and consequences of AIS transfer. Uncertainty associated with the approach and the available data was explicitly discussed in the final *Transbasin Effects Analysis Technical Report*. It should also be noted here that the most extensive biota surveying effort conducted to date in the Hudson Bay basin supported the Devils Lake – Red River Basin Fish Parasite and Pathogen Project (Bensley et al 2011). Despite the costs and extensive field surveying efforts associated with this study, the International Joint Commission selected a qualitative approach as the preferred method for evaluating risk.

Qualitative Analysis Was Necessitated by Data Availability and Uncertainty

The qualitative approach was driven by data availability and associated uncertainty that made a comprehensive quantitative approach infeasible. As described above, the qualitative approach that was used was subject to a peer review. The issue of potentially conducting a fully quantitative analysis was considered, but it was concluded that such an approach was not feasible. As described in the Methods section of Invasive Aquatic Species of the SEIS, this determination was based on extensive review of potential risk methodologies and models, available information and data on aquatic invasive species (AIS) and potential ecological receptors of concern in the source and receiving basins, and the identification of data gaps. A Plan of Study (Reclamation 2011e) was also developed for the Transbasin Effects Analysis and was subsequently approved by the cooperating agencies, including the City of Minot, Garrison Diversion Water Conservancy District, North Dakota State Water Commission, U.S. Army Corps of Engineers, and notably the U.S. Environmental Protection Agency, the agency that developed risk assessment guidelines (EPA 1998; EPA 2000). Through these efforts, it was made it clear in the *Transbasin Effects Analysis Technical Report* and in the SEIS that in order to obtain meaningful results using a quantitative approach, detailed data would be required regarding AIS abundance and distribution data in the Missouri River basin and adjacent hydrologic basins, along with abundance and distribution for potential susceptible receptors in the Hudson Bay basin for which sufficient ecological and biological data were simply not available.

A detailed literature search found that there have been few systematic surveys for the majority of AIS in the Missouri River basin. Most of the available data on presence/absence and distribution in publicly accessible databases and published literature is largely anecdotal. EPA, in its 1998 risk guidance, recognizes that the quantification of risk may not always be possible, and that it is better to qualitatively estimate risk conclusions and associated uncertainties in many cases. In addition, biological stressors are exceptionally dynamic in ecosystems, which can compromise

efforts to quantify risks and impacts. This challenge can be resolved by eliciting qualitative best professional judgment and expert opinion (EPA 1998).

As discussed on page 10 of the Transbasin Effects Analysis Technical Report, the Missouri River basin, Hudson Bay basin, and adjacent and neighboring drainage basins are "extremely large 'open' systems and even the most extensive sampling programs would not deliver finite presence/absence and concentration information for AIS. In addition, the abundance of microorganisms in surface water may fluctuate seasonally and in response to environmental changes. Ultimately, these are not static or constant measurements. Definitive concentrations of AIS in drainage basins adjacent to the Hudson Bay basin are not available, which would be vital input parameters for a quantitative analysis."

An exhaustive survey of the Hudson Bay basin and surrounding basins would be cost prohibitive and require several years of data collection. Even the most aggressive studies, however, would not eliminate the uncertainty surrounding the presence and absence of AIS. It would not be possible to accurately characterize the microbial community contained in the surface waters and sediments of large hydrologic basins.

Qualitative Assessments are Best Practice

Manitoba's assertions appear to assume that qualitative analyses are always less rigorous and less valuable than a quantitative analysis, but this is not correct or supported by applications in this realm of science, especially as applied to management decisions. Apart from the fact that insufficient data are available to support a quantitative analysis, the qualitative analysis conducted drew on the best available information. Qualitative risk assessments are common, acceptable, widely used, and valid. According to Zengeya et al. (2013) while ideally, ecological risk assessments should be quantitative, in cases where there are insufficient data on community structure and functioning, qualitative approaches have been successfully applied (Anderson et al., 2004; Colnar and Landis, 2007; Schleier et al., 2008).

The most extensive biota surveying effort conducted to date in the Hudson Bay basin supported the Devils Lake – Red River Basin Fish Parasite and Pathogen Project (Bensley et al. 2011). Despite the costs and extensive field surveying efforts associated with this study, ultimately the International Joint Commission used a qualitative approach as the preferred method for evaluating risk. Additionally, the 2007 USGS study that supported the 2008 FEIS cited in the comment was also partially qualitative – that study too concluded that the risks of biota transfers associated with the Project characterized by multiple-staged control systems would present low to very low risks, as did the Transbasin Effects Analysis and the Draft SEIS.

Other illustrative examples indicate that qualitative approaches are best practice and have been used in similar circumstances. Panov et al. (2010) used a qualitative approach for evaluating the potential risk of invasive aquatic species' introductions via European waterways due to the high degree of uncertainty inherent in the complex ecological issues related to large-scale intercontinental and intra-continental introductions – similar to the Northwest Area Water Supply Project. Notably, the Southern Regional Aquaculture Center (SRAC 2009) indicates that most risk analyses for non-native aquatic species are qualitative in nature and provide

considerable insight into risk. See also Response 23-15, as it discusses the qualitative risk assessment conducted for Devils Lake (Bensley et al. 2011), which is the most extensive study on aquatic invasive species conducted to date in the Hudson Bay basin.

Reclamation Followed EPA Risk Assessment Guidance

As described further in Response 23-8, contrary to Manitoba's assertion, the Transbasin Effects Analysis did generally follow EPA risk assessment guidance (EPA 1998; EPA 2000), an approach which is not prescriptive as asserted by Manitoba, but which is designed to be flexible (EPA 1998) and adaptable to the circumstances and available data. Furthermore, the U.S. EPA included statements in their comment letter on the Draft SEIS, stating "…EPA is impressed with the strong level of protection against biota transfer provided by this project."

The NEPA Standards of Analysis Were Met

In making its comments about Reclamation's approach to the risks and consequences of accidental biota transfer, Manitoba unilaterally states its own independent standard about what constitutes a valid analysis and "hard look," when in fact the appropriate standard for impact analysis for an Environmental Impact Statement under NEPA is outlined in the National Environmental Policy Act and Council on Environmental Quality (CEQ) Regulations for Implementing NEPA. The NEPA process is designed to involve the public and to gather the best available information in a single place so that decision makers can be fully informed when they make their choices.

In performing its analysis of the potential risks and consequences of accidental biota transfer, Reclamation used the best available science, made an assessment of the potential impacts, considered whether all relevant environmental concerns have been identified, and will make a final determination based on the best available science and information – and hence has met the NEPA standard. In doing this, Reclamation also specifically addressed its responsibilities under 40 CFR 1502.22 that incomplete or unavailable information and uncertainty be openly addressed and considered (See Chapter 4-Aquatic Invasive Species-Uncertainty section). The SEIS and the *Transbasin Effects Analysis Technical Report* openly addressed unavailable information and uncertainty.

Response 23–8 – EPA is a Cooperating Agency for the Project and has provided input during several phases of the SEIS, including the Transbasin Effects Analysis Plan of Study (Reclamation 2011e). EPA guidance on risk assessment (e.g., EPA 1998) recognizes the type of risk assessment prepared is dictated by factors such as the available data, information gaps, and uncertainty, and may include qualitative elements.

The Transbasin Effects Analysis study utilized EPA risk assessment guidance (e.g., EPA 1998, 2000). This guidance is exactly that, a "guide" or suggested process, and is not intended to be prescriptive or the only path or approach for conducting risk assessment. The study design employed several elements common to the EPA guidance (and which are also common to the key elements identified by the commenter), including:

- **Problem Formulation** - Selection of candidate assessment endpoints (page 53 of the Technical Report); preparation of a conceptual risk model presenting AIS major life history categories, pathways, and sensitive receptor categories (page 36 and Figure 4 of the Technical Report).
- **Analysis –** Identification of potential hazards (AIS characterizations) and evaluation of potential transfer mechanisms.
- **Risk Characterization** - Risk of Project and non-Project transfer, as well as risk of AIS to Hudson Bay basin ecosystems, qualitative risk estimation (high or low) and thorough description of uncertainty.
- **Consequence Analysis –** Assessment of potential environmental and economic consequences.

The goal of risk characterization is to openly communicate the full range of scientific considerations surrounding a risk assessment, and in this sense the most important principals are TCCR – transparency, clarity, consistency, and reasonableness. Reclamation sought to achieve TCCR in its assessment of the risks and consequences of accidental biota transfer.

Response 23–9 – The commenter dismisses the role of trade in aquarium and ornamental species by quoting from the SEIS that "*since many aquarium species are raised at warmer temperatures, the majority of establishments in the wild occur in tropical and sub-tropical zones*" and then noting that Canada lacks tropical and subtropical zones. The fact that aquarium trade poses a greater risk of AIS introduction in tropical and subtropical zones does not mean that this pathway is not important in more northern zones, including Canada. As noted in Appendix E, *"aquarium water is generally disposed of improperly, which can result in the introduction of aquatic species, including viruses and other pathogens (LSWG 2009). At least 12 species of exotic plants and animals have been introduced into the Great Lakes region as a result of aquarium releases (Kerr et al. 2005). In addition, the aquarium trade is likely responsible for the introduction of several bivalve diseases in the northern hemisphere. Even a small amount of biomass can distribute potential disease agents including viruses, bacteria, and protozoa"*. For example, koi herpesvirus, which was recently detected within the Hudson Bay basin in Lake Manitoba, has rapidly spread to most regions of the world due to the global fish trade and international ornamental koi shows (Pokorova et al. 2005, Ilouze et al. 2008, FAO 2010).

The SEIS appropriately discusses ballast water as a very important initial pathway for introduction of invasive species to the Great Lakes basin, with subsequent dispersal to adjacent basins (including the Hudson Bay basin) through numerous other natural and anthropogenic pathways. Omission of ballast water as a pathway would have been negligent, and inconsistent with the NEPA "hard look" standard. See Response 23-10.

Response 23–10 – Reclamation does not concur with this comment, which fails to acknowledge that nearly all of the invasive species of greatest concern originated from distant watersheds, usually from another continent. This is why control of initial invasion pathways (e.g., ballast water discharge) is critically important. Once invasive species become established in a watershed, the pathways (both natural and anthropogenic) for continued dispersal to adjacent watersheds are numerous, and given the number of trials over time, likely to yield additional successful invasions. For example, zebra mussels, which were first introduced to the Great Lakes

through ballast water discharge, have recently become established in Lake Winnipeg as discussed in the SEIS.

Ship ballast water is a major pathway through which "new" aquatic invasive species have been and continue to be introduced to North America. Thus, future invasions of both the Missouri River basin and the Hudson Bay basin are likely to have originated in ship ballast. For example, zebra mussels and spiny water fleas were transferred from Eurasia to the Great Lakes in ship ballasts, and have subsequently spread to the Hudson Bay basin through other pathways. The comment incorrectly assumes that only pathways directly linking the Missouri River basin and the Hudson Bay basin are relevant to the analysis. This would only be true for invasive species whose distribution is limited to the Missouri River basin. No such species are known to exist. Indeed, the Missouri River in North Dakota has very few species that are known to be invasive, and none of these are native to the Missouri River.

Response 23-11– This comment's assertion that the risk assessment examined only the No Action alternative and ignores the Project alternatives is incorrect, and reflects a misunderstanding of NEPA's alternative comparison requirements. As discussed on pages 2-1 and 4-2 of the Draft SEIS, analysis of a no action alternative is required under NEPA (40 CFR 1502.14[d]), and the impacts of the action alternatives, including the Project, are determined by comparison to the no action alternative. The no action alternative forms a baseline or benchmark, enabling decisionmakers to compare the magnitude of environmental effects of the action alternatives (refer to Council on Environmental Quality (CEQ), Forty Most Asked Questions Concerning CEQ's NEPA Regulations, No. 3, No-Action Alternative; http://energy.gov/sites/prod/files/G-CEQ-40Questions.pdf). Therefore, Manitoba's assertion that Reclamation's analysis ignored the Project alternatives is incorrect. There is no requirement under NEPA to examine the effects of an alternative in isolation from the No Action Alternative, and such a comparison would provide no context or meaningful results.

The risk assessment presented in the Draft SEIS is compliant with NEPA requirements because it compares the effects of the action alternatives to the No Action Alternative as a baseline. The No Action Alternative is characterized by the combination of current and future interbasin transfer risk, caused by a variety of non-Project pathways. The impacts of the Project alternatives are equivalent to the relative change in risk as compared to taking no action. As discussed in the SEIS, the Missouri River alternatives would add a small additional incremental risk pathway to the current and future transfer risk. In this particular case, no action is characterized by the existing and future presence of a variety of higher-probability transfer mechanisms (non-Project pathways) that would occur in the future regardless of the action alternative being considered.

Response 23-12 – As discussed under Response 23-7, insufficient data are available to allow a numerical comparison of pathways; thus, assigning relative magnitudes of risks to the pathways would not be possible to do in a meaningful way. High and low relative risk assignments were applied to non-Project pathways (collectively) and to the Project based on the characteristics of various pathways and AIS, which are described in both the Transbasin Effects Analysis Technical Report (Appendix E) and the Chapter 3 and Chapter 4 AIS Sections of the SEIS. The Transbasin Effects Analysis was independently peer reviewed, and the reviewers concluded that the report was based on the best available science, and the results and conclusions were

supported by that science, given the uncertainties. A "narrative describing the bounds specific to each level of risk" is not appropriate in this qualitative assessment since the bounds of either high or low levels of risk are not discrete or specific.

As noted on Page 73 of the *Transbasin Effects Analysis Technical Report,* "Uncertainty limits the ability to assign unique transfer risk probabilities to any of these biota transfer pathways." CFR 40 §1502.24 specifies that "agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements." Performing a numerical comparison of pathways based on inadequate data would not meet this requirement.

Moreover, being able to numerically compare pathways is not required to understand their relative magnitude and the difference in their potential significance. The potential biota transfer pathways were thoroughly characterized in the *Transbasin Effects Analysis Technical Report* and summarized in the SEIS. Risk exhibited by the various pathways was qualitatively evaluated based on the degree of biota transfer potential. These non-Project pathways are biotic or abiotic and collectively contribute to a total transfer risk. The relative risk of AIS transfer by the Project is considered to be extremely low compared to non-Project pathways because non-Project pathways lack biota control technologies and emergency protocols like the Project; therefore, they pose a substantially greater risk of AIS transfer to the Hudson Bay basin.

Additional mitigation measures were not identified because the impacts have been reduced to a level that does not warrant additional mitigation, not due to a lack of information regarding significance. Chapter 2 describes design features and management actions that would be used as preventive controls to reduce the risk of interbasin transfer by the Missouri River alternatives. In addition, Reclamation would implement the environmental commitments described in Appendix F to further reduce the potential for risks related to the implementation of a Missouri River alternative.

The comment includes assertions and opinions about the sufficiency of the risk assessment, which are incorrect and misleading. Specifically, the comment states that:

> *"However, the declaration that the process is difficult and fraught with uncertainty in no way abrogates responsibility for undertaking a competent and complete qualitative risk assessment as outlined in USEPA documents (USEPA 1998; USEPA 2000). The decision by the Bureau is a direct rejection of the Judge's instruction to undertake a fresh "hard look" at aquatic invasive species risks for Manitoba and Canada (USEPA 1998, 2000)."*

The comment cites and implies that EPA documents as the basis or source for these assertions, but this is incorrect. Neither USEPA 1998 nor USEPA 2000 state or support these assertions made in the comment. EPA is a cooperating agency for the SEIS, and as such was involved in development of the plan of study for the Transbasin Effects Analysis. The analysis follows EPA guidelines.

Response 23-13 – Biota transfer pathways were characterized and evaluated using the best available information (refer to Responses 23-7 and 23-12) in accordance with NEPA's

Implementing Regulations. The examination of available data and information and the identification of data gaps and uncertainty contributed to the "hard look" at the risk of AIS transfer and potential consequences that could occur following an establishment in the Hudson Bay basin.

The assignment of relative risk levels referenced in the comment is, in fact, not a requirement in EPA's 1998 risk guidance. The EPA guidance provides for a flexible process dictated by the circumstances of the situation, not one that is based on a rigid methodology. EPA recognizes that risk assessment approaches can vary based on available data and may include qualitative assessments.

Response 23-14 – It is inaccurate to assert that Reclamation assumed that the risk of AIS transfer is identical for each pathway or that all pathways provide additive risk. The SEIS does not state or imply that pathway transfer risk is identical across pathways. The intent of Figure 4-42 of the SEIS is to simply illustrate the "relative" contribution of the Project's Missouri River Alternatives and potential non-Project transfer pathways. As stated in the referenced paragraph immediately after the figure call-out, "The Missouri River alternatives represent only one of the potential pathways that could introduce AIS to the Hudson Bay basin, and *each pathway's contribution to the overall risk is different for each AIS* (emphasis added)." Thus, it is clear that the figure is not intended to imply that transfer risk would be proportional, but that there are a variety of potential transfer pathways.

Response 23-15 – The Devils Lake – Red River basin fish parasite and pathogen project (Bensley et al. 2011) was conducted by a group of fish pathology experts. The investigators selected a qualitative approach to evaluate risk and consequences of aquatic invasive species, several of which are similar or identical to AIS being addressed for the Project (see Response 23-7). This particular project was not only geographically relevant to the current Project, but represents the most extensive aquatic invasive species sampling inventory and evaluation completed in the region to date, which used the best science available at the time. The completion of this study was timely as it was published in 2011 while the Transbasin Effects Analysis was being conducted, providing an invaluable source of information for the SEIS.

The classification of avian-mediated transport as an important non-Project pathway was not drawn exclusively from conclusions by Bensley et al. (2011). The Avian Transport Section of Appendix E (Pages 45-46) provides several references that also support this conclusion.

Response 23-16 – The transfer and subsequent establishment of AIS in the Hudson Bay basin from a Project transmission pipeline failure would indeed require a sequence of very unlikely events (Page ES-8 of the Executive Summary, Page 72 of the Risk Assessment Section, Page 117 of the Conclusions Section of Appendix E, and the Aquatic Invasive Species-Results-No Action Alternative section of the SEIS). The probability of these events occurring simultaneously and leading to an AIS establishment would therefore be highly unlikely. Pipeline failures were thoroughly evaluated by USGS (2007).

Response 23-17 – The comment claims Appendix E is full of contradictions but fails to identify any. The methods, data and results of this analysis in Appendix E were evaluated by an

independent peer review panel and overall, the reviewers concluded that the study was based on the best available science, and the results and conclusions were supported by that science, given the uncertainties inherent in the available data and topic knowledge (see Response 23-7). The Transbasin Effects Analysis used a conservative assumption when evaluating the potential for a Project-related AIS transfer. Water volume is not a critical factor when it comes to transferring microscopic pathogens and parasites. As discussed in Appendix E(page 63 of the Risk Assessment Section), a small amount of biomass contained in a small volume of water can distribute AIS, including viruses, bacteria, and protozoans. This, however, is not meant to suggest that the Project poses a high risk of biota transfer. Because volume is not important, the volume-to-volume comparisons described on page 15 of Manitoba's letter have no merit or relevance to the biota transfer risk evaluation. For example, a single fish infected by *Mixobolus cerebralis* can carry hundreds of thousands of myxospores. Thus, the movement of these fish (e.g., in a boat livewell) may easily transmit the parasite (Reno 2003; Hallett and Bartholomew 2008), and would represent a much higher risk pathway than the Project.

Response 23-18 – The Missouri River basin and Hudson Bay basin are geographically separated; however, this separation is not a discrete and easily demarcated boundary. The divide is poorly defined in this area and there is much uncertainty regarding the identity of hydrologic drainages. Figure 8 in the *Transbasin Effects Study Technical Report* (Page 71) shows the contributing and non-contributing drainages along the main transmission pipeline from the Snake Creek Pumping Plant to the Max Biota WTP, and terminating at the Minot WTP. This figure and a summary of the related information is also included in the AIS section of Chapter 4 (see Figure 4-41). Following biota treatment in Max, the pipeline extends more than 12.5 miles through non-contributing drainages across the non-discrete divide. The last 17 miles of the pipeline, terminating in Minot, travels through terrain that is at least partially hydraulically connected to the Hudson Bay basin.

Davies et al. (1992) indicate that floods can promote recruitment of flora and fauna between rivers and floodplains. The topography of the divide in this region could potentially facilitate interbasin biota transfer during major flood events. Considering the low topography and lack of geographic features that would otherwise provide a discrete boundary and drainage separation, the basins in this region are not necessarily uniquely distinct in terms of present biological assemblages. For example, Dick et al. (2001) reported only two out of 44 parasites documented to occur in the Missouri River that have not also been reported in the Red River drainage or other Manitoba waters. Furthermore, they noted that the parasite communities from fish species that are common to both drainages are similar. Therefore, Reclamation also disagrees that the Missouri River basin and Hudson Bay basins are biologically distinct in this area.

Reclamation recognizes that a reference to Ferguson et al. (2003) was misplaced and this has been rectified in the SEIS.

Response 23-19 – Reclamation acknowledges the actions that have been taken by governments in the United States and Canada to reduce the risks of transferring aquatic invasive species through human-induced pathways. To that end, the Missouri River alternatives include a rigorous control system that includes treatment within the Missouri River basin, transmission in a buried pipeline where a disinfection residual would be maintained, and final treatment at the

Minot WTP prior to distribution. All aspects of the control system would be continuously monitored. Non-Project pathways are inherently much more diffuse and difficult to control, and will continue to pose a much higher risk than the Project.

Response 23-20 – The disposal of water treatment plant wastes/sludge was addressed in the SEIS in Chapter 2. The specifics of handling Minot WTP waste are included in the discussion for each of the Biota WTP options. For the Biota WTP options that do not include full time filtration (Chlorination, Chlorination/UV Inactivation, and Enhanced UV Inactivation) the sludge/waste from the Minot WTP would be contained and disposed of in the Missouri River basin or an approved inbasin landfill. The other Biota WTP options include filtration in the Missouri River basin and therefore the sludge disposal from the Minot WTP would not be a concern for the Project-related transfer of biota.

Response 23-21 - The waste/sludge from the Biota WTP would remain in the Missouri River basin and therefore there would be no Project-risk of associated transfer. Sludge from the Minot WTP would be transported back to the Missouri River basin or disposed of in an approved inbasin landfill for those biota WTP options that do not include full time filtration.

Response 23-22 – See Response 23-20 and Response 23-21.

Response 23-23 – The handling of waste streams from the Minot WTP is addressed in the SEIS. In the Biota WTP Options section of Chapter 2, it states "For the Biota WTP options that do not include full time filtration, waste streams from the Minot WTP would be transported to an appropriate disposal facility in the Hudson Bay basin, or transported for disposal within the Missouri River basin." The specifics of these procedures would be determined during more advanced engineering design.

Response 23-24 –The same level of detail is provided regarding the South Prairie reservoir as all of the other components of each of the alternatives. The appraisal level drawings and details are shown in Appendix J (drawing ALD 16 and ALD 17).

Response 23-25 –The potential for non-catastrophic pipe failure through corrosion or other mechanisms was thoroughly analyzed in USGS (2007) and summarized in the Final EIS on Water Treatment (Reclamation 2008). That potential was considered in the risk characterizations presented in USGS (2007), Reclamation (2008), SEIS Chapter 4, and Appendix E.

The commenter's repeated assertions that pipeline leaks pose a significant risk to Canada are speculative, and not supported by any empirical data or scientific studies. However, corrosion control is very important from a practical perspective, as it relates directly to the ability of the pipeline to serve its intended purpose.

The following features have been incorporated into the design and maintenance of the main transmission pipeline:

- The pipeline has been electrically isolated from all outlets of dissimilar materials or coatings and tie-ins to other structures.

- A bonded dielectric coating was used to protect the pipe from increased corrosion activity caused by soil conditions and stray electric currents.
- Cathodic protection with impressed current deep anodes is installed for the entire pipeline.
- The entire pipeline has a cement mortar lining to protect it from internal corrosion.
- All rubber gasket joints and flexible or mechanical couplings are bonded with an insulated copper cable to insure electrical continuity of the pipeline.
- All appurtenances and field joint coating repairs will be completed with cold-applied tape compatible with the parent coating.
- Corrosion test stations are installed at approximately 1000-foot intervals along the length of the pipeline, as well as near foreign pipeline crossings and steel casings
- The pipeline will be surveyed annually by a qualified Corrosion Engineer to maintain proper levels of cathodic protection and to detect any conditions that may be detrimental to the pipeline.

The commenter's contention that "the long-term pipe condition, particularly with regards to corrosion, does not appear to have been fully taken into account" is incorrect, and in fact the opposite is true.

Response 23-26 – The main transmission pipeline was completed in 2008 using ductile iron pipe. The pipeline exceeds Reclamation requirements for corrosion prevention in buried metal pipes (Reclamation 2004).

Prior to construction, a corrosion investigation was conducted along the entire length of the main transmission pipeline. Under Reclamation's criteria (Reclamation 2004), soils along the pipeline route are in the "**least corrosive**" category (soil resistivity > 3000 ohm-cm). The conclusion of the National Research Council report cited by the commenter pertained specifically to service life of pipelines in **highly corrosive** soils, and thus is not "highly relevant to the NAWS Project" as the commenter contends. The expected service life of the pipeline is 50 years or more.

Response 23-27 – See Response 23-25.

Response 23-28 –The main transmission pipeline for the Project has been constructed with Ductile Iron pipe and includes cathodic protection as well as engineered controls to limit any loss of water through leaking pipes. The pipeline has a cement mortar lining to prevent internal corrosion. An entire report was completed to determine the appropriate level of monitoring and control systems needed to ensure the lowest risk of a Project-related transfer of biota; *Northwest Area Water Supply Project Biota Transfer Control Measures* was completed in 1998, and updated in 2001.

Response 23-29 – See Response 23-25. Pipeline breaks and their role in evaluating the 'life cycle' of the transmission pipeline have not been undervalued, but have instead been specifically incorporated into the design, construction, and planned maintenance of the pipeline. As a result, the risk of AIS transfer through a pipeline leak is very low.

Response 23-30 – Under the Missouri River alternatives, the Project would contribute to the cumulative risk of invasive species transfer (i.e., the incremental risk of the Project when added to the risks posed by other past, present, and reasonably foreseeable future non-Project pathways, including the Red River Valley Water Supply Project). The incremental risk of the Project was determined to be very low. The Red River Valley Water Supply Project, as proposed in the Final EIS for that project, would include a multiple barrier treatment process with disinfection and filtration of water prior to crossing the basin divide. Previous analyses demonstrated that the risk of transferring invasive species through that project would be very low (USGS 2005a). Current studies being undertaken by the State of North Dakota are preliminary, and have not yet identified the specific features of a control system to reduce the risk of an invasive species transfer.

The SEIS characterizes risks from numerous non-Project pathways, including interbasin water transfers, to allow comparison of the incremental risk of the Project to the overall or cumulative risk. The commenter's sole focus on interbasin transfers of treated water as contributing to cumulative risk is unwarranted and not technically justified.

The impacts of an AIS transfer would be the same regardless of the transfer pathway, and would not be cumulative. Thus, if an invasive species was transferred to a water body (and became established) through release of bilge water from a fishing boat, a subsequent transfer through a different pathway would not increase the impacts. This is explained in the Aquatic Invasive Species section of Chapter 4 in the SEIS and Appendix E.

Response 23-31 –The purpose of the adaptive management would be to manage the risks of a Project-related transfer, not to mitigate impacts after transfer. Risks are not static, but rather exist in a changing landscape, both temporally and spatially. Adaptive management is an appropriate method to address changing risks and modify system operations in the future if needed. The control system proposed for the Project far exceeds anything ever proposed or implemented for any existing interbasin transfer, including the numerous interbasin water transfers in Canada that lack any mechanism to prevent the transfer of aquatic invasive species. Reclamation has adopted a precautionary philosophy with respect to the Project, and adaptive management is a part of that precautionary philosophy.

Response 23-32 – As discussed in the SEIS, the Missouri River alternatives represent a very low-probability pathway for a number of reasons. The Project has been and would continue to be designed and constructed with sophisticated failure response systems, including alarms, automatic shutdown procedural mechanisms, and pipeline isolation valves to reduce the risk of transfer during a pipeline failure (Page 69 of Appendix E). Biota treatment options were designed based on key life history characteristics of AIS (Page 57 of the Appendix E) and thus would reduce the risk of AIS entering the pipeline. As described in the SEIS, Appendix E, and Response 23-16, a Project-facilitated AIS transfer and establishment in the Hudson Bay basin would require a nearly simultaneous set of very unlikely and independent events (biota treatment interruption coupled with concomitant pipeline failure within a contributing drainage area; release of AIS-containing water [from ruptured buried pipeline that is automatically isolated due to pressure loss] into subsurface soil; migration through subsurface soil [an environment that is characterized by microbial deactivation properties] in a contributing drainage area to a surface

waterbody in the Hudson Bay basin; contact with a susceptible host organism at the appropriate abundance and distribution; and successful establishment in the receiving waters). Given these factors, Reclamation has reasonably concluded that potential AIS transfer risk exhibited by the Project would be extremely low. The assessment did not 'miss a number of Project risks' as stated in the comment (refer to Response 23-16).

Response 23-33 – While biota treatment options that include filtration provide an additional barrier to the potential Project-related transfer of AIS, the lack of filtration does not preclude a characterization of minimal risk. Treatment in the Missouri River basin followed by transmission through a buried pipeline with engineering safeguards built in and treatment again at the Minot WTP, as proposed for the Project, clearly demonstrates a precautionary approach. Refer to Response 23-16 and 23-32.

Response 23-34 –Birds, fish, and mammals are dominant vectors for transfer of many microorganisms, which are the potentially invasive species of concern for the Project as discussed in the Aquatic Invasive Species section of Chapter 3 of the SEIS and Appendix E. That is why the indigenous microbial communities of the Missouri River basin and the Hudson Bay basin are not largely distinct as the comment states, but are instead similar.

Response 23-35 –Treatment methods proposed by the Province of Manitoba were evaluated in the SEIS; however the assertion that their proposals constitute a regulatory or otherwise accepted standard is incorrect.

Response 23-36 – In this case, Reclamation has undertaken an evaluation of the potential impacts from the Project to the Canadian environment consistent with the court's Order. Potential consequences of AIS transfer to the Hudson Bay basin, including Canada, are described in Appendix E pages 89 through 116, and summarized in the Aquatic Invasive Species section of Chapter 4 in the SEIS; pages 4-104 through 4-111. The discussion in the SEIS discloses the potential consequences to the environment, as well as potential economic consequences.

Response 23-37 – This comment is noted in the record.

Response 23-38 – See Response 23-36.

Response 23-39 – The AIS of concern evaluated in the SEIS include 39 representative species from seven major taxonomic groups of organisms exhibiting a range of sizes and susceptibilities to chemical and physical variables (e.g., biota treatment options). A broad range of life histories was evaluated to ensure that the biota treatment options being considered would protect against a variety of species, including unknown and emerging organisms. The AIS evaluated include all of the fish pathogens and parasites identified by Manitoba Water Stewardship in comments on the 2007 Draft EIS on Water Treatment for the Project.

Six waterborne viruses were included in the list of 39 AIS evaluated. The life history characteristics of koi herpes virus, including size, susceptibility to disinfection, and modes of transmission fall within the range for the viruses that were evaluated.

Mass deaths of common carp caused by Koi herpes virus were first reported in Israel and the United States in 1998 (Hedrick et al. 2000). Since then the disease has rapidly spread, and now occurs worldwide except for South America, Australia, and northern Africa (Pokorova et al. 2005). The rapid spread has been attributed to international fish trade and ornamental koi shows. The virus has been detected in Manitoba, but has not yet been detected in North Dakota.

Koi herpes virus attacks only common carp, including the ornamental koi variety. The common carp is a nonindigenous species that is classified as a regulated invasive species in Minnesota (Minnesota Department of Natural Resources 2014), and as a listed aquatic nuisance species by North Dakota (North Dakota Game and Fish Department 2014), and is considered an aquatic invasive species by Manitoba (Manitoba Water Stewardship 2011). The virus is being evaluated as a potential biological control agent for common carp in Australia (McColl et al. 2007).

Response 23-40 –*Myxobolus* was not "unaccountably missed" in the previous risk analysis as the commenter contends. In fact, *Myxobolus cerebralis*, the causative agent of whirling disease, was extensively analyzed in the previous Final EIS on Water Treatment (Reclamation 2008) and the previous risk analysis (USGS 2007) prepared for the Project. A cursory search of USGS (2007) revealed that this organism was discussed on pages 11, 50, 105, and 142 of the main report, and pages 2-22 through 2-31 of Appendix 2 to that report. In the Final EIS on Water Treatment (Reclamation 2008), *Myxobolus* was discussed on pages 2-8, 2-9, 2-11, 2-12, 2-17, 2-20, 2-21, 3-6, 3-8, 3-9, 3-10, 3-11, 4-10, 4-11, 4-12, 4-17, 4-20, and 4-21.

Response 23-41 – The selection of AIS for the analysis was a collaborative and coordinated international process between multiple agencies, including the USGS, Reclamation, EPA, U.S. Fish and Wildlife Service, North Dakota Game and Fish Department, Minnesota Department of Natural Resources, Environment Canada, Canada Department of Fisheries and Oceans, and Manitoba Conservation (Page 7 of the Introduction and Background Section of Appendix E). During consultation with the Cooperating Agencies, additional species of concern, including quagga and zebra mussels and New Zealand mudsnails, were added to the list of AIS. Thus, the list of AIS species is considered comprehensive, and changing circumstances since 2008 were considered in the analysis.

The conclusions of the economic analysis are not based on individual species. Rather, they are based on factors such as the number of jobs potentially affected and expenditures per fishing trip. These are not driven by individual species; rather, they are based on regional economic indicators. The economic research conducted when the *Transbasin Effects Analysis Technical Report* was being prepared suggested that carp were not an important species to recreational and commercial anglers of Lake Winnipeg, and Manitoba's comments indicate the same. The SEIS did not claim to include and characterize every potential ecological receptor or recreationally and/or commercially valuable fish species. The lack of inclusion of the carp, a significant aquatic invader of concern (note that carp are considered an invasive species in their own right), is therefore, not a critical omission or deficiency, and the addition of one more species would not alter the conclusions of the SEIS.

Response 23-42 – A thorough analysis of fish species known to be present in the Hudson Bay basin was conducted. Species of known recreational and/or commercial value to Canada were

included. The list of fish species that represent potential ecological receptors was developed with the best available information at the time. The SEIS does not claim that the list of potential ecological receptors (Table 3-18 of the SEIS and Table 2 of the *Transbasin Effects Analysis Technical Report*) is absolutely comprehensive of all fish species present in the Hudson Bay basin. As stated on page 51 of the *Transbasin Effects Analysis Technical Report*, Table 2 presents potential ecological receptors of concern in the Hudson Bay basin, which were identified from published literature and other data sources, but does not include all potential ecological receptors that could be indirectly affected by the introduction of an AIS . Furthermore, the inclusion of additional species in the analysis would not change the conclusions regarding the potential risk and consequences in the SEIS. For example, a decline of a commercial or recreational fishery related to an AIS transfer (no matter the source of the introduction) would be an impact on that particular fish species since AIS are generally host-specific, and would not lead to a collapse or loss of an entire economic sector. Therefore, it is not critical that all fish species known to occur in the Hudson Bay basin were included in the analysis. See also Response 23-41.

Response 23-43 – Chinook salmon were introduced to Ontario waters in 1875 and 1882. Their current "known" range (inset map below) includes portions of the Hudson Bay basin within this province (http://www.ontariofishspecies.com/chinook-salmon.html). The presence of this fish species in the receiving waters indicates its potential as an ecological receptor and may be susceptible to whirling disease. A thorough analysis of the fish species present in the Hudson Bay basin was conducted to identify potential ecological receptors of concern in the risk assessment.

Response 23-44 – The commenter's statements are incorrect. Pages 4-105 and 106 of the Draft SEIS state: "*…the potential does exist for whirling disease-related impacts on some wild and farmed trout and char populations in the receiving waters. "Population declines of some of the more vulnerable species (e.g., rainbow trout–primarily a farmed species) could result in*

subsequent increases of other more resilient species (e.g., brown trout) (Granath et al. 2007)….Ecological receptors of concern that may exhibit at least some vulnerability to whirling disease may include brook trout, brown trout, Chinook salmon, lake trout, lake whitefish, rainbow trout, and shortjaw cisco (Table 3-13)." Thus, the SEIS does not claim that rainbow trout are the only abundant salmonid in the basin; however, they are known to be a particularly susceptible host.

Appendix E also provides a thorough examination and discussion of susceptible species found in the Hudson Bay basin (also see Table 2 of the Technical Report and Table 3-18 of the SEIS), including brook trout, brown trout, chinook salmon, lake trout, lake whitefish, rainbow trout, and the shortjaw cisco. Table 2 provides the citations that support the contained information (Page 52-53). These citations were not reproduced at the bottom of Table 3-18 in the SEIS, but instead, Appendix E was cited.

Response 23-45 – In contrast to the commenter's assertion, pages 25-27 of the *Transbasin Effects Analysis Technical* Report do provide a thorough description of whirling disease, including life history characteristics of the *Myxobolus cerebralis* parasite, life cycle of the parasite (including the first-intermediate host oligochaete worm, *Tubifex tubifex*), discussion of susceptible salmonid hosts, potential pathways for introduction into aquatic systems, potential environmental consequences, sensitivity to biota treatment methods, and distribution of the parasite. The characterization of low risk for transfer of *Myxobolus cerebralis* is also supported by the fact that whirling disease has never been detected in North Dakota, and is unlikely to ever become established due to the lack of any naturally reproducing salmonid populations within the state. The Biota Treatment Associated with Water Supply Alternatives Section beginning on page 57 of this report provides treatment information specific to *M. cerebralis*. Furthermore, the Environmental Consequences Section provides a discussion regarding documented impacts of whirling disease in other aquatic systems, as well as potential environmental consequences in the Hudson Bay basin. Reclamation takes exception to the claim that this section was brief and supported by "six scant" references. All available literature regarding the susceptibility of known or suspected hosts of the parasite was acquired during the discovery phase of the analysis. There remains uncertainty regarding the susceptibility of host salmonids, which is reflected in the available published literature.

Response 23-46 – As discussed in the *Transbasin Effects Analysis Technical Report* (Appendix E), while the descriptive economic analysis characterizes the types of potential economic impacts that may be incurred throughout the Hudson Bay basin, the quantitative analysis of economic consequences focuses on Manitoba, specifically Lake Winnipeg. This was because Lake Winnipeg is the largest freshwater lake in Southern Canada, has high data availability regarding human use and economic significance, and had the highest level of public concern regarding AIS from the proposed Project, based on public comments received during scoping. As noted in Appendix E and in the comment, introduction of AIS would have potential economic consequences not just in Lake Winnipeg but in other Hudson Bay basin waterbodies and adjacent communities as well. The types of potential economic impacts felt at Lake Winnipeg would also be felt in other important recreational fishing areas such as the Red River, and therefore serve as a basis for the public, agencies, and decision makers to understand the potential impacts in other areas of the Hudson Bay basin. Text has been added in the SEIS to clarify this point.

Response 23-47 – Reclamation does not agree with the assertion that the potential impacts on the recreational fishery are underestimated. The value of the Lake Winnipeg recreational fishery to the Manitoba economy is based on total angler expenditures. The SEIS uses the best available information on angler fishing days and expenditure per fishing day to estimate total angler expenditures at Lake Winnipeg.

Appendix E provides the derivation of the estimate that there are approximately $8 million in estimated expenditures associated with Lake Winnipeg recreational fishing trips. This figure is based on the number of 2010 angler days (both resident and non-resident) at Lake Winnipeg multiplied by the average trip expenditure per Manitoba angler day, as estimated by Department of Fisheries and Oceans Canada in its 2010 survey of recreational angling in Canada. The $8 million estimate does not include capital purchases such as camping or boating equipment, which are not specific to one particular fishing destination.

The commenter states that the economic value of the Lake Winnipeg recreational fishery is $44.6 million, but does not provide alternative recreational angler survey data on angler visitation to support this statement.

Rather, the comment claims that Lake Winnipeg is the most frequented angler fishing destination in Manitoba. While we agree with Manitoba that Lake Winnipeg is an active recreational fishery that provides a wide diversity and size of fish for anglers, multiple data sources indicate that 1) Lake Winnipeg is not the most frequented angler destination in Manitoba (see comment response 23-48 for more detail), and 2) the angler fishing visitation estimates (and corresponding estimates of recreational angling economic impact) presented in the SEIS are accurate. As cited in Appendix E, survey data from the Department of Oceans and Fisheries Canada, indicates that approximately 8 percent of freshwater angler days in Manitoba in 2010 were at Lake Winnipeg. This figure is supported by data from the 2005 Survey of Recreational Angling in Manitoba (Manitoba Water Stewardship, 2005) that indicates that the Interlake Region, which includes Lake Winnipeg, Lake Manitoba, as well as other waterbodies, attracts 9.5 percent of angling days in the Province. This compares to visitation to the Southern Region, which attracts 28.6 percent, and the Whiteshell/Nopiming Region, which attracts 20.4 percent (Manitoba Water Stewardship, 2012, page 8). Thus, the angler visitation data in the SEIS are supported by multiple published data sources, while the specific source of the angler visitation assertion in the comment is not cited.

The commenter also presents data on Master Angler awards to suggest that the SEIS underestimates the value and desirability of recreational fishing at Lake Winnipeg. However, the data cited by Manitoba (Master Angler award database from Travel Manitoba) actually support the angler visitation data in the SEIS that show that the Lake Winnipeg recreational fishery may account for approximately 8 percent of the fishing days in the Province, but likely not more. For example, in the context of the whole Province, fish caught at Lake Winnipeg account for 2.2 percent of Master Angler awards for all species, and six percent of awards specific to walleye.

Finally, the comment refers to total angler expenditures as the value to the Manitoba economy. As indicated in the SEIS and further discussed in Appendix E (page 115), it is important to note that the economic impact of recreational fishing at Lake Winnipeg on the Manitoba economy is primarily based on non-resident angler expenditures, rather than the estimated total sum of all angler trip expenditures (resident and non-resident) of $8 million. While $8 million is an accurate estimate of total trip expenditures associated with Lake Winnipeg fishing, because it includes resident spending,

the $8 million value is likely an overestimate of the impact on the Manitoba economy of recreational fishing at Lake Winnipeg (as noted in Appendix E).[1]

Response 23-48 – As discussed in Appendix E, while the economic analysis describes the type of potential economic impacts that may be incurred throughout the Hudson Bay basin, the quantitative analysis of economic consequences focuses on Manitoba, specifically Lake Winnipeg. As noted by the commenter, and supported by data from the Department of Fisheries and Oceans, Economic Analysis and Statistics section (Humphries, pers. comm., 2014), there are several other important fisheries in Manitoba with higher recreational visitation than Lake Winnipeg. These include the Red River (approximately 230,000 angler days in 2010), Lac du Bonnet (approximately 130,000 angler days in 2010), and Whiteshell Park (approximately 330,000 angler days in 2010). Other popular recreational fishing destinations include Lake-of-the-Prairies, Winnipeg River, and Nopiming Park. Together with Lake Winnipeg, these destinations account for over 50 percent of all angling days in the Province. Text has been added to the SEIS to recognize the importance of these recreational fisheries and that the types of potential economic impacts felt at Lake Winnipeg could potentially also be felt in these other important recreational fishing areas. Furthermore, the total estimated angling trip expenditures associated with recreational fishing throughout the Province ($103 million) has also been included in the SEIS, of which some portion may be adversely affected by AIS introduction (see response 23-49 for further information on why only a portion of recreational value is at incremental risk from AIS introduction).

Response 23-49 – We concur with the economic data presented by the commenter on the value of commercial fish landings in Manitoba, and the relative proportion of commercial fish catch by weight and value from Lake Winnipeg (see statistics presented in the Economic Sectors in Manitoba Potentially at Risk from Aquatic Invasive Species of Concern subsection of the Aquatic Invasive Species section in Chapter 3 of the SEIS). However, Reclamation does not agree that the potential effects on the commercial fishing sector in Lake Winnipeg are understated. Job impacts are a common and informative numeric metric of potential economic impact, and effects in Lake Winnipeg would in fact be limited to some portion of the 1,000 to 1,100 licensed fishers and hired helpers.

We have modified the text to clarify that these are the potential direct effects at the Lake Winnipeg fishery, and have added text to note that total commercial fishing employment in the province is estimated at approximately 3,000 jobs, of which some portion could be incrementally impacted by introduced AIS. To supplement the information on the potential direct, net economic impacts to Manitoba commercial fisheries of AIS, we have also added dollar value information in the SEIS on the potential income impacts to the commercial fishery of AIS, which is some portion of the estimated $25.6 million of total commercial fishing income in the Lake Winnipeg fishery, and some portion of the estimated $40.1 million in total income to the Manitoba commercial fishery. These figures are based on average annual income per fisher cited in Appendix E, page 106, and as reported by the

[1] First, residents spend less per trip than non-residents. Second, while non-residents that are attracted to the Province to fish bring in 'new money' that grows the size of the Manitoba economy, resident expenditures in the Province would be expected to be stable even if the Lake Winnipeg fishery, or other Manitoba fisheries, were to change in quality (i.e. resident spending may shift to other types of purchases but would be expected to change little in total value). For this reason, studies of the value of recreation to regional economies do not typically include resident spending (see, for example, methodology as described by Stynes, 2005).

Manitoba Conservation and Water Stewardship Fisheries Branch (Profile of Manitoba's Commercial Fishery).

As described in Appendix E of the SEIS, the incremental economic impact on commercial and recreational fisheries is likely limited to a small portion of the total economic value of the fishery for the following reasons: 1) most, if not all, economically important HBB fish stocks are present and fished in the Missouri River Basin, where these fish stocks coexist with several AIS, suggesting that the vulnerability of these fish stocks to AIS present in the Missouri River Basin may be low, 2) there are numerous fish species of recreational and commercial importance in the HBB and since different species are adversely affected by different AIS, potential AIS introduction would likely affect only one or a few fish stocks at a time rather than all fish stocks, and 3) any fish population declines in a commercially or recreationally valuable species may be offset by population increases or increased angling effort in other, economically important fisheries that are more resistant to the AIS introduction.

Finally, the commenter mistakenly applies information provided in the SEIS regarding recreational fisheries impacts to commercial fishing. As stated in the Aquatic Invasive Species section of Chapter 4 in the SEIS, "or recreational fishing, any reduction in the health or abundance of fish species targeted by recreational anglers could adversely affect the level of enjoyment of the angling experience. For example, every 1 percent incremental reduction in catch rates in Lake Winnipeg could potentially reduce the value of the angler experience in the range of $30,000 to $60,000 annually" (derivation and published sources provided in Appendix E). This value of $30,000 to $60,000 annually indicates the change in the value of the recreational experience to the angler (i.e., level of intrinsic enjoyment) due to incremental changes in the recreational fishing resource, which in turn (as described in the SEIS), can adversely affect tourism visitation and expenditures and associated economic impacts in the local economy. Applying this potential change in recreational value at Lake Winnipeg to commercial fishing is inaccurate and misleading as the sources and magnitudes of economic impact are different (i.e., the intrinsic value of the recreational angling experience is not relevant to commercial fishing as the primary purpose of commercial fishing is profit and not intrinsic enjoyment of the activity).

Response 23-50 – The commenter is incorrect in asserting that only direct effects are described. Although the analysis focuses on direct socioeconomic effects that could result from changes in fish populations, numerous indirect socioeconomic effects are analyzed and described in the Aquatic Invasive Species section of Chapter 4 in the SEIS and Appendix E. For example, indirect effects on the commercial fishery identified and described in the SEIS and Appendix E include: effects on changes in availability/quality and price of local fish to consumers, possible fishermen exit from the commercial fishery due to reduced profitability, and reduced fish industry employment. (Note that these indirect effects encompass the types of possible socioeconomic effects of changes in fisheries management identified by the commenter, such as changes in fish quotas or license fees). Appendix E also describes the fish seafood product wholesaler/distributors in Manitoba, including average net profits and employment that may be affected by changes to the commercial fishing industry.

Regarding the recreational fishery, indirect effects on recreation and tourism industries, such as food and drink establishments, lodging, etc., are described based on potential changes in angler trip expenditures.

Response 23-51 – The commenter asserts that there are a number of factual errors in the assessment of consequences. The example provided, however, is a descriptive statement regarding the predominant location of commercial fishing in Lake Winnipeg with no relationship to the assessment of consequences. The commenter asserts that most commercial fishing is not concentrated in the South Basin of Lake Winnipeg but is spread throughout Lake Winnipeg. Although license data indicates that most fishers are largely located in the South Basin and the Narrows, the sentence regarding the location of commercial fishing has been struck from the SEIS, as Reclamation was unable to confirm with published data the location of commercial fish catch within Lake Winnipeg. Data on location of fish catch within Lake Winnipeg are not collected by Department of Fisheries and Oceans Canada (Humphreys, J, pers. comm, 2014).

Response 23-52 – The Aquatic Invasive Species-Trans-Border Economics Related to Invasive Species section of Chapter 3 in the SEIS addresses the economic and socio-cultural importance of aboriginal fisheries and the potential socioeconomic impacts on First Nations communities. As stated in the SEIS, "First Nations communities rely heavily on Lake Winnipeg fisheries for employment as commercial fishermen, for a subsistence food source, and for cultural value." The proportion of commercial fishers of First Nations Heritage is emphasized, as well as the importance to First Nations communities of income from commercial fishing, particularly given the relatively high unemployment rate and low levels of earned income in these communities. The SEIS also recognizes that First Nations communities rely on subsistence fishing as an important source of food and as a central part of their culture.

Text has been added to the SEIS to note that First Nations communities also rely on fisheries in other Hudson Bay basin waterbodies, and that First Nations treaty rights in Manitoba provide for Aboriginal rights to hunt, trap, and fish on ancestral lands (AADNC, 2010).

Response 23-53 – The Potential Impacts Associated with Aquatic Invasive Species of Concern section of Chapter 4 of the SEIS and Appendix E provide a descriptive economic analysis that characterizes the types of potential economic impacts that may be incurred throughout the Hudson Bay basin, and presents an accurate quantitative analysis of potential economic consequences at Lake Winnipeg based on best available data. As discussed in Appendix E, the types of potential economic impacts felt at Lake Winnipeg would also be felt in other important commercially and recreational fishing areas, and therefore served as a basis for the public, agencies, and decision makers to understand the potential impacts in other areas of the Hudson Bay basin. Text has been added in the SEIS to clarify this point, as well as including information on the total value of recreational and commercial fishing throughout the Province. Although Reclamation does not agree that the SEIS language on commercial fishing impacts is misleading or inconsistent, we have supplemented this information with data on dollar value of potential incremental income impacts to the commercial fishery. Finally, the SEIS addresses the economic, cultural, and subsistence importance of fisheries to Aboriginal peoples in the Hudson Bay basin in Chapter 4; however, additional text has been included in the SEIS regarding their treaty rights and entitlements on hunting, fishing, and trapping on ancestral lands.

Response 23-54 – As in other sections of the SEIS and Appendix E, the socioeconomic information presented in Appendix E was based on the most recent, published economic data from available sources at the time the analysis was completed and the Draft SEIS written. As noted by the commenter, the socioeconomic data on population, income, and employment

presented for First Nations communities is from the 2006 census. While population and dwelling data from the 2011 Census were available in 2012, the 2011 Census data on aboriginal peoples were not released until May 8, 2013, while the data on income and housing were not released until September 11, 2013. Although the draft SEIS was released in 2014, the *Transbasin Effects Analysis Technical Report* (Appendix E), which was the basis for the SEIS analysis, was completed in May 2013, prior to the release of the Census data used in the analysis. As such, although the 2006 data were several years old at the time of the analysis, they were the best available data at that time. As affirmed by Aboriginal Affairs and Northern Development Canada, "data from Statistics Canada's Census of Population has been the most reliable and comprehensive source of demographic and socioeconomic information on First Nations, Inuit, and Métis peoples and communities" (AANDC 2013).

Importantly, a review of the 2011 Census data indicates that the more recent data do not affect the analysis or the conclusions reached in the *Transbasin Effects Analysis Technical Report*. Although changes have occurred since 2006 in specific population, income, and employment levels in First Nations Communities, the key elements of the data remain the same: First Nations communities in the Lake Winnipeg area are characterized by comparatively low income and high unemployment and are therefore more vulnerable to potential changes in access and availability of resources such as the commercial and subsistence fishery.

The commenter asserts that the SEIS is inconsistent in determining when a source is outdated or not, as the SEIS uses data from reports published in such years as 2004, while also indicating that a report from 2005 is outdated. Reclamation disagrees; the SEIS consistently uses the best available information. Whether data is outdated depends not simply on the year of publication, but rather on the availability of newer data sources and information, as well as the continued relevance of the data.

Response 23-55 – Reclamation in collaboration with cooperating agencies analyzed a full range of water sources as required under NEPA, all of the water source options were reviewed and evaluated preliminarily during this SEIS process. The alternatives that were feasible at that level were brought forward for further analysis. Each of the feasible alternatives was then designed at the appraisal level engineering design and evaluated in the SEIS.

Response 23-56 – Reclamation in collaboration with the cooperating agencies developed several preliminary options for meeting the Project purpose and need, including the enhancement of existing groundwater systems. The investigation of these preliminary options showed that the quantity of water available in the Project area is insufficient to meet the current and future needs of the Project members. Further analysis of individual treatment plants was not completed due to insufficient water supply that could be treated using Reverse Osmosis and/or any other treatment technology. Other preliminary alternatives were carried forward into the conceptual design phase for additional consideration.

At the conceptual design level of the proposed alternatives, Reclamation completed an analysis of Reverse Osmosis as a means of treating Souris River water and groundwater in an effort to meet secondary drinking water standards. The analysis included engineering design and cost estimates. Reverse Osmosis was not carried forward into the appraisal level design phase for the

proposed alternatives due to large costs (between $15 M -$124 M, depending on the alternative), complex operations, and environmental concerns with concentrate disposal.

Response 23-57 – See Response 23-56.

Response 23-58 – The United States has not developed water treatment standards/rules or regulations for water treatment to avoid ecological impacts of invasive species related to interbasin water transfers. However, 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 alternatives evaluated in the SEIS. As stated in the SEIS, drinking water standards provide an appropriate framework for evaluating the efficacy of the proposed control systems for removal or inactivation of potentially invasive species. There are no accepted or regulatory standards in the United States (or elsewhere) for control of AIS introduction through interbasin water transfers, but technical analyses like those done for the SEIS can help guide decision makers and stakeholders.

Response 23-59 – The preferred alternative identified in the Draft SEIS included disinfection within the Missouri River basin, conveyance through a buried pipeline, and both filtration (removal) and disinfection at the Minot WTP prior to distribution. The addition of filtration at the Biota WTP would slightly reduce the Project-related risk as compared to the preferred alternative identified in the Draft SEIS. A slight reduction in an already very low risk does not constitute a "*sharp contrast*" between Biota WTP options as the commenter contends.

Due to concerns regarding DBP's, the Preferred Alternative has been modified in the Final SEIS to include the Conventional Treatment biota WTP option. This option includes coagulation, flocculation, sedimentation, and filtration, resulting in substantial particulate removal at the Biota WTP. Any concerns regarding the efficacy of chlorination and UV disinfection would be addressed using this treatment technology, as acknowledged by the commenter in comment 23-3.

Response 23-60 –The design criteria were used to design the components of the biota WTP options and were not intended to be interpreted as treatment goals.

Response 23-61 –The approach established and followed by Reclamation to evaluate treatment effectiveness was reviewed by the cooperating agency team and follows standard industry practices.

Response 23-62 – The treatment of water to prevent the transfer of biota is not a standard practice in the United States and no water treatment standards or guidelines have been established therefore Reclamation has worked with cooperating agencies and the country's experts on water treatment including the U.S. EPA to determine the appropriate levels of biota treatment to consider.

Response 23-63 – LeChevallier et al. (1981) studied the effects of turbidity on chlorination, not on UV disinfection. Therefore, the findings of LeChevallier (1981) are not relevant to the quoted statement from Appendix E regarding UV dose-response.

The commenter cites the EPA regulatory requirements for turbidity in UV disinfection systems, and then incorrectly states that Appendix E "completely and inexplicably ignores the findings". EPA (2006) states: *"For unfiltered waters, source water turbidity up to 10 nephelometric turbidity units (NTU) did not affect the UV dose-response of separately added (seeded) microorganisms (Passantino et al. 2004, Oppenheimer et al. 2002)."* Appendix E does not ignore the findings of EPA (2006) as the commenter alleges, but rather makes a nearly identical statement, citing the same references.

Response 23-64 –Appendix E includes a detailed analysis of scientific literature on the subject of UV effectiveness relative to turbidity and based on the best available data determined that the effectiveness of UV is unaffected by turbidities under 10 NTU. Further, the U.S. EPA also included in their statements to Reclamation that they are impressed with the strong level of protection against biota transfer provided by this Project.

Due to concerns regarding DBP's, the Preferred Alternative has been modified in the Final SEIS to include the Conventional Treatment biota WTP option. This option includes coagulation, flocculation, sedimentation, and filtration, resulting in substantial particulate removal at the Biota WTP. Any concerns regarding the efficacy of chlorination and UV disinfection would be addressed using this treatment technology, as acknowledged by the commenter in comment 23-3.

Response 23-65 – See Response 23-64.

Response 23-66 – Turbidity levels are highly dependent on location and therefore can only be predicted using raw water monitoring at the proposed intake location. The project sponsor conducted a pilot study at that location which gives a good indication at the levels that would be expected there. In addition, the Preferred Alternative has been modified in the Final SEIS to include the Conventional Treatment biota WTP option. This option includes coagulation, flocculation, sedimentation, and filtration, resulting in substantial particulate removal at the biota WTP. Any concerns regarding the efficacy of chlorination and UV disinfection would be addressed using this treatment technology, as acknowledged by the commenter in comment 23-3.

Response 23-67 –The available monitoring data at the raw water intake location demonstrates that the indicated log removals at the Biota WTP would be achieved. However, due to potential issues related to drinking water quality, the Preferred Alternative in the Final SEIS has been modified to include filtration at the Biota WTP. As a result, turbidity of the raw water would be reduced prior to chlorination and UV inactivation.

Response 23-68 – The U.S. EPA established rules and regulations for the treatment of drinking water, but has not established a set of standards or rules for the biota treatment of water. The U.S. EPA has reviewed the SEIS and associated reports and stated they are "impressed with the strong level of protection against biota transfer provided by the Project."

Response 23-69 – Based on the best available data for the source water from Lake Sakakawea, Chlorination and UV would be effective, and would provide sufficient risk reduction for the Project.

Response 23-70 – Reclamation designed each of the filtration systems analyzed in the SEIS at the level indicated by the commenter.

Response 23-71 – The commenter misinterprets the available scientific literature, and misstates the potential for reactivation following UV treatment.

The following excerpts from EPA (2006) describes the potential for DNA repair and reactivation of pathogens following UV treatment in public water systems.

Many microorganisms have enzyme systems that repair damage caused by UV light. Repair mechanisms are classified as either photorepair or dark repair (Knudson 1985). Microbial repair can increase the UV dose needed to achieve a given degree of inactivation of a pathogen, ***but the process does not prevent inactivation*** (emphasis added).

Even though microbial repair can occur, ***neither photorepair nor dark repair is anticipated to affect the performance of drinking water UV disinfection*** (emphasis added)*, as described below:*

• Photorepair of UV irradiated bacteria can be prevented by keeping the UV disinfected water in the dark for at least two hours before exposure to room light or sunlight. Treated water typically remains in the dark in the piping, reservoirs, and distribution system after UV disinfection. Most facilities also use chemical disinfection to provide further inactivation of bacteria and virus and protection of the distribution system. ***Both of these common practices make photorepair unlikely to be an issue for PWSs*** (emphasis added).

• Dark repair is also not a concern for PWSs because the required UV doses shown in Table 1.4 are derived from data that are assumed to account for dark repair (emphasis added).

In photorepair (or photoreactivation), enzymes energized by exposure to light between 310 and 490 nm (near and in the visible range) break the covalent bonds that form the pyrimidine dimers. Photorepair requires reactivating light and repairs only pyrimidine dimers (Jagger 1967). Knudson (1985) found that bacteria have the enzymes necessary for photorepair. Unlike bacteria, viruses lack the necessary enzymes for repair but can repair using the enzymes of a host cell (Rauth 1965). ***Linden et al. (2002a) did not observe photorepair of Giardia at UV doses typical for UV disinfection applications (16 and 40 mJ/cm^2)*** (emphasis added). *However, unpublished data from the same study show Giardia reactivation in light conditions at very low UV doses (0.5 mJ/cm^2, Linden 2002).* ***Shin et al. (2001) reported that Cryptosporidium does not regain infectivity after inactivation by UV light*** (emphasis added). *One study showed that Cryptosporidium can undergo some DNA photorepair (Oguma et al. 2001). Even though the DNA is repaired, however,* ***infectivity is not restored*** (emphasis added).

Dark repair is defined as any repair process that does not require the presence of light. The term is somewhat misleading because dark repair can also occur in the presence of light. Excision repair, a form of dark repair, is an enzyme-mediated process in which the damaged section of DNA is removed and regenerated using the existing complementary strand of DNA. As such, excision repair can occur only with double stranded DNA and RNA. The extent of dark repair varies with the microorganism. With bacteria and protozoa, dark repair enzymes start to act

immediately following exposure to UV light; therefore, ***reported dose-response data are assumed to account for dark repair*** (emphasis added).

Knudson (1985) found that bacteria can undergo dark repair, but some lack the enzymes needed for dark repair (Knudson 1985). Viruses also lack the necessary enzymes for repair but can repair using the enzymes of a host cell (Rauth 1965). Oguma et al. (2001) used an assay that measures the number of dimers formed in nucleic acid to show that dark repair occurs in Cryptosporidium, even though the mircroorganism did not regain infectivity. Linden et al. (2002a) did not observe dark repair of Giardia at UV doses typical for UV disinfection applications (16 and 40 mJ/cm^2). Shin et al. (2001) reported Cryptosporidium does not regain infectivity after inactivation by UV light.

Based on the findings reported in EPA (2006) and the references cited therein, it is clear that reactivation following UV disinfection at the Biota WTP would not be an issue, and the commenters statement that "*there is demonstrated and proven potential for aquatic invasive species to survive UV treatment*" is incorrect.

Response 23-72 – Reclamation does not concur with the commenter's assertion that the draft SEIS fails to consider the ability of the selected treatment processes to remove all of the AIS listed in the SEIS and Appendix E. As discussed in the Biota WTP Options section of Chapter 2, *Giardia*, viruses, and *Cryptosporidium* were used as surrogates for the selected AIS to quantify the level of inactivation that would be attained for each treatment process. Grouping inactivation for viruses is a common practice in the water treatment industry because not all viruses are known, nor has removal/inactivation of every virus through treatment been extensively studied. However, those that have been evaluated possess similar characteristics in terms of size and susceptibility to chemical and physical treatment technologies.

Refer, for example, to EPA Surface Water Treatment Rule (SWTR) (40 CFR, Parts 141 and 142), which establishes filtration and disinfection requirements to protect against the potential adverse health effects of exposure to *Giardia lamblia*, viruses, *Legionella*, and heterotrophic bacteria, *as well as many other pathogenic organisms that are removed by these treatment techniques* (emphasis added). When specific removals are not directly known from research, the SWTR lumps similar types of biota together (based on size, type, etc.) with the understanding that for a well-operated process, all biota of that type would have similar removal. For example, in water treatment, viruses are referred to as a group, and it is assumed that X-log of all viruses are removed/inactivated through the process. Virus removal credits are given to various water treatment processes based on some known viruses that are of concern in drinking water. Unlike *Giardia* and *Cryptosporidium* (which have known and documented human health consequences), each virus is not named specifically nor treated separately.

The specific biota (AIS) addressed in the SEIS are not the same as those of concern for drinking water treatment and have not been studied as extensively. Therefore, *Giardia*, viruses, and *Cryptosporidium* were used as representative biota that have similar size and other characteristics as the biota of concern. Life history characteristics of AIS were compiled from the available sources and evaluated during the identification of treatment methods during preparation of the Transbasin Effects Analysis (see page 57: "*Key life history characteristics of AIS including size*

and susceptibility to both water treatment and physical removal (Table 3) were considered during the evaluation of biota treatment options for the Project." Based on careful review of this information, no AIS were identified at the time the Draft SEIS was prepared with unusual characteristics that could reduce treatment efficacy below that observed for human pathogens and parasites regulated under the Safe Drinking Water Act. This analysis also addresses treatment efficacy for potential emerging organisms of concern in the future, because such a broad variety of life history categories exhibiting a range of life history characteristics were considered during biota treatment design.

Thus, the methods used were appropriate given the information that was available, and as discussed in Response 23-7, the analysis relied on the best available science, disclosed uncertainty, and thus met the NEPA standard.

Response 23-73 – Cyst formation may occur in response to desiccation of the sediments inhabited by *T. tubifex*. The proposed intake would be located in relatively deep water where the underlying sediments would never be exposed. Thus, *T. tubifex* cysts would not be expected to be present at the intake location in the water column or underlying sediments. As indicated in the comment, literature does not appear to be available regarding the ability of encysted Tubifex worms to withstand chemical challenges or UV irradiation, but filtration is an effective means for eliminating *T. tubifex*. Due to concerns regarding the potential formation of DBP's, the Preferred Alternative has been modified in the Final SEIS to include the Conventional Treatment biota WTP option. This option includes coagulation, flocculation, sedimentation, and filtration, thus, Manitoba's concerns about the need for filtration have been addressed.

Response 23-74 –As noted in Appendix E, the UV dose-response is generally not affected when the turbidity is less than 10 Nephelometric turbidity units (NTU) (Oppenheimer et al. 2002; Passantino et al. 2004). Source water monitoring at the proposed intake location indicates that turbidity is not expected to exceed 10 NTU. Therefore, the conclusions of Hedrick et al. (2008) are applicable to the water quality conditions expected to occur at the Biota WTP. Hedrick et al. (2008) represents the best available scientific information regarding UV inactivation of *Myxobolus cerebralis* myxospores.

Response 23-75 – See Response 23-74.

Response 23-76 – The U.S. EPA requirements for turbidity apply to drinking water systems, a set of standards has not been established by the U.S. for the treatment of water for biota. The log inactivation values shown in the table are based on the best available scientific data on the treatment effectiveness of the process included in the Biota WTP options.

Response 23-77 – see Response 23-76**.**

Response 23-78 – see Response 23-76.

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Minnesota Department of Natural Resources

500 Lafayette Road | St. Paul, MN | 55155-4025

September 10, 2014

Ms. Alicia Waters
Bureau of Reclamation
P.O. Box 1017
Bismark, ND 58502

RE: Draft Supplemental Environmental Impacts Statement for the Northwest Area Water Supply Project – Minnesota Department of Natural Resources (MNDNR) Comments

Dear Ms. Waters,

We appreciate the opportunity to review and comment on the Draft Supplemental Environmental Impact Statement for the Northwest Area Water Supply Project. We remain interested and concerned with inter-basin water transfer proposals in the Hudson Bay & Red River Basin, which we share. For this project our main concern is that an inter-basin transfer could impact MN waters through upstream movement of AIS in the event of biotic treatment failure and untreated release from the Missouri River into the Hudson Bay drainage system. We also recognize that the type of biota treatment proposed for this project will likely influence those proposed for other inter-basin transfer projects such as the Red River Valley Water Supply Project (RRVWSP) and Devil's Lake Outlets.

For these reasons we provide the following comments and recommendations:

- The Transbasin Effects Analysis Report (Appendix E) discussion on Devils lake outlets is currently limited to a description of the west end outlet. Appendix E should be updated to describe outlet flow quantities and existing or proposed AIS treatment methods for all current and planned devils lakes outlets (e.g., East Outlet, West Outlet, and Tolna Spillway). 24-1
- Devils Lake outlets and planned RRVWSP outlet information should be incorporated into the cumulative effect assessment. 24-2
- A key component of this plan is locating the biotic treatment plant within the Missouri River basin. We recognize that isolating the two treatment plants reduces the overall risk of catastrophic failure. In order to better determine actual risks of transfer, we recommend that the EIS provide a review of the potential for catastrophic failure of biotic treatment options. The assessment should assess the risks of failure of biotic treatment plant locations and the pipeline distributions system in both the Missouri River basin and the Hudson Bay basin. 24-3
- An adaptive management plan is a critical piece of this project and we recommend that it be developed as part of the EIS and include the following key components: 24-4
  - Monitoring the effectiveness of the treatment plants with inclusion of specific treatment goals and detections thresholds for specific organisms beside human pathogens.
  - Missouri River monitoring to identify presence of pathogens and biota introduced to the system once the project is operational.
  - Response plans when and if threats are identified.
  - Reporting requirements/commitments to all potentially affected interests in the Hudson Bay & Red River Basin

If you have questions about these comments please contact Nathan Kestner at (218) 308-2672.

Sincerely,

Randall Doneen
Unit Supervisor
Environmental Review and Policy Unit
Ecological and Water Resources

C: Mike Carroll
Steve Hirsch
Steve Colvin
Henry Drewes
Peter Buesseler
Nathan Kestner

ERDB# 20080472-0004

Response 24-1 – Appendix E is a final report, and therefore was not updated as requested by the commenter. Following is additional information regarding constructed outlets from Devils Lake to the Sheyenne River.

The Devils Lake basin is a naturally closed sub-basin of the Hudson Bay basin. The Devils Lake west end outlet was completed in 2005, with a capacity of 100 cfs, which was increased to 250 cfs in 2010. The Devils Lake east end outlet was completed in 2012, with a capacity of 350 cfs. The Tolna Coulee control structure was completed in 2012 to prevent an uncontrolled natural overflow from Devils Lake. North Dakota has proposed a gravity flow outlet channel from West Stump Lake to Tolna Coulee with a capacity ranging from 27 cfs at elevation 1453 to 668 cfs at elevation 1458 (the natural overflow elevation). Due to the construction of these outlets, the Devils Lake basin is now part of the contributing watershed of the Hudson Bay basin.

The Devils Lake west end outlet has a gravel filter to reduce the risk of transferring fish. However, none of the existing or proposed Devils Lake outlets includes water treatment that would provide a barrier to the transfer of waterborne microorganisms. As a result, there is a very high probability that any waterborne microorganisms that occur in Devils Lake will be transferred to the Sheyenne River and eventually downstream to Lake Winnipeg. To date, no microorganisms have been documented to occur in Devils Lake which would likely cause any adverse impacts if transferred to downstream portions of the Hudson Bay basin. Any microorganisms that occur in both Devils Lake and Lake Sakakawea will almost certainly be transferred through the Devils Lake outlets, and thus the cumulative risk posed by the Project would be negligible.

Response 24-2 – Devils Lake outlets and the proposed Red River Valley Water Supply Project are incorporated into the cumulative effects analysis in the SEIS. Specifically, the *risks* of transfer and establishment of AIS through the Project and through various competing non-Project pathways (including other intrabasin and interbasin diversions such as the Devils Lake outlets and the proposed Red River Valley Water Supply Project) are cumulative, and are described in the Aquatic Invasive Species-Pathways for the Introduction of Aquatic Invasive Species section of Chapter 3 and the Aquatic Invasive Species section of Chapter 4 in the SEIS. The *consequences* or *effects* of AIS transfer and establishment through competing pathways are not cumulative. Once an AIS becomes established in a waterbody, any subsequent transfers through a competing pathway will not increase the adverse effects.

Response 24-3 – The risk of failure in the Project's control system, including the biota WTP and the transmission pipeline, was thoroughly analyzed in USGS (2007) and in the Final EIS on Water Treatment (Reclamation 2008) for the Project which is supplemented by the current SEIS. A Project-related transfer would require simultaneous failures in the biota WTP and either the transmission pipeline or the Minot WTP. For adverse impacts to occur, water from Lake Sakakawea would have to contain microorganisms that are not present in the receiving watershed, and the receiving watershed would have to contain appropriate ecological receptors (e.g., susceptible host species for a parasite). No such microorganisms are known to exist in Lake Sakakawea.

Response 24-4 - Reclamation has committed to preparing an adaptive management plan in compliance with DOI guidelines and has stated this would be done as part of future design phases associated with the selected alternative. This is discussed in detail in Chapter 4 of the SEIS and the DOI guidelines are readily available.

Reclamation has committed to do adaptive management planning with respect to the concerns relative to aquatic invasive species and the treatment efficacy of the Biota WTP. Reclamation will coordinate with the project sponsors, EPA and others, as appropriate, in the development of the adaptive management framework for the operation and maintenance of the Biota WTP, if an out-of-basin alternative is selected in the Record of Decision. The consideration of planning and monitoring tasks to be included in an adaptive management plan are dependent on the biota WTP option included in the alternative selected for the Project. That selection will occur in the Record of Decision. The Conventional Treatment Biota WTP option proposed in the Final SEIS includes treatment processes for disinfection and inactivation, as well as the physical removal. The planning and monitoring tasks included in an adaptive management plan for this biota WTP option would be different than a plan for other Biota WTP options evaluated in the SEIS.

Authorizing legislation established a Municipal, Rural and Industrial Grant Program for the development of water supply projects such as the Northwest Area Water Supply Project. This grant program limits Reclamation's role to planning and construction of such projects with the exception of Boundary Waters Treaty compliance, which is a federal responsibility. The Project sponsors will have responsibility for SWDA compliance and other drinking water concerns. This is discussed in chapter 1.

Foreign Affairs, Trade and Development Canada
Affaires étrangères, Commerce et Développement Canada

September 10, 2014

Ms. Alicia Waters, Bureau of Reclamation
P.O. Box 1017
Bismarck, North Dakota 58502
USA
E-mail: awaters@usbr.gov

Dear Ms. Waters:

Thank you for the opportunity to provide comments on the draft Supplemental Environmental Impact Statement (SEIS) for the Northwest Area Water Supply Project (NAWS). The Government of Canada remains concerned with the transfer of water from the Gulf of Mexico watershed to the Hudson Bay watershed (which includes waters flowing into Canada) and the resultant threat of invasive species moving between the two watersheds.

The potential risk posed by invasive biota transferring into the Hudson Bay basin could be significant and irreversible. It is for this reason that Canada continues to urge consideration of other options, such as in-basin alternatives and water conservation, to address the state's water needs in this region. 25-1

Given the potential for harm to Canada through the diversion of water from the Missouri Basin, the Government of Canada is especially concerned about the associated risks of biota transfer. In particular, the lack of baseline data characterizing source water quality (such as turbidity, pathogens and algae), and the absence of a water filtration treatment step within the Missouri basin, represent unacceptable and unnecessary increased risks to Canada. In addition, the preferred treatment alternative in the SEIS is inadequate to deal effectively with microbial transfer and would not render final treated water entering the Hudson Bay watershed sterile and devoid of microorganisms (e.g. bacterial and algal viruses) and microbial DNA. 25-2

With regard to potential impacts in the Hudson Bay watershed, the draft SEIS acknowledges that there is a lack of data, and uncertainty associated with understanding and predicting impacts from the transfer of aquatic invasive species. In addition, the assertions that the project presents a "very low probability pathway" for introducing aquatic invasive species (including microorganisms) to the Hudson Bay watershed, and that the probability of transfer and establishment of aquatic invasive species (including microorganisms) in the Hudson Bay watershed is "minimal", are poorly supported for microorganisms. As you know, at a minimum, the current state of scientific understanding strongly demonstrates the need for a 25-3

.../2

precautionary approach, particularly in light of the proposed water treatment and performance criteria used.

It is also evident that over the projected life-time of the proposed project, it is likely that some inter-basin transfer of microorganisms will result from lapses in water treatment effectiveness, catastrophic treatment failures, releases of pathogens from leaks in the pipeline, pumping stations, and storage tanks, or from inadequate collection/disposal of biomass accumulating at the Minot Water Treatment Plant (WTP). Given the inadequacy of the proposed treatment, waste water residuals from the Minot WTP represent a key pathway for the potential introduction of invasive species, including to Canada. 25-4

Notably, Canada and the United States have invested significantly in countering and preventing the movement of invasive species. We have learned in the process that once an invasive species becomes established removing or minimizing its impact is extremely difficult and costly. An example is the current efforts by both of our countries to counter the threat posed by Asian carp to the Great Lakes. Furthermore, the Governments of Canada and the United States included a new annex to the Great Lakes Water Quality Agreement that commits our two countries to develop measures to eliminate new introductions of aquatic invasive species through prevention based approaches.

Finally, the NAWS project represents just one of a group of major water diversion projects proposed or actively operating in North Dakota. It is the view of the Government of Canada that the Bureau of Reclamation should make every effort to ensure the Boundary Waters Treaty, which governs cooperative water management between our two countries, is respected, and that the cumulative impacts associated with the Red River Valley Water Supply Project, and the ongoing operation of the Devils Lake outlets also be taken into consideration as the NAWS project is discussed. 25-5

Thank you for the opportunity to comment on the SEIS.

Yours sincerely,

Christopher Wilkie
A/Director General
North America Strategy Bureau

cc: Catherine Stewart, Director General, Americas, Environment Canada
Michael Pearson, Director General, Fisheries Resource Management, Fisheries and Oceans Canada

Response 25-1 – Reclamation worked diligently with the cooperating agency team to identify and evaluate surface water and groundwater sources within the Souris River basin as potential water sources which could be used to meet future water needs. Based on the best available information and the analyses conducted, two inbasin alternatives were designed and evaluated in the SEIS. The Alternatives chapter provides a full description of these inbasin alternatives and the process by which they were developed. Detailed information and supportive data are provided in Appendix A – Constructed Project Components, Appendix B – Community Water Systems, Appendix C – Alternative Formulation, and Appendix J – *Draft Appraisal Level Design Engineering Technical Report*.

Reclamation completed a site specific water conservation analysis for the Project area. This information was considered during analysis of water conservation potential and is discussed in detail in the *Water Needs Technical Assessment Report* (Reclamation 2012 a) which is a supporting document for the SEIS. A summary of this information is provided in the Water Conservation section of Chapter 2 and in Appendix C – *Alternative Formulation*.

The current water use in the Project area is much lower than the national average due to already implemented conservation measures. The opportunities for the Project area to further conserve are then also limited because those measures area already in place. The Water Conservation section of Chapter 2 explains that water conservation was considered but eliminated as a stand-alone alternative because the estimated savings of approximately 750,000 gallons per day due to both passive and active conservation measures would not be enough to provide the Project area with the 26 MGD needed. Additionally, due to the uncertainties associated with estimating water needs 50 years into the future, the Project need estimate was not reduced to account for potential water conservation savings. However, the Project sponsors could continue to implement conservation measures and encourage their users to do so as a means of managing the water resources and reducing costs.

Response 25-2 – The Biota WTP options evaluated in the SEIS cover the full range of reasonable water treatment technologies. Based on the data and analyses conducted, the evidence indicates all of these options would reduce the risk of Project-related biota transfer below the already low risk presented by the Project. In response to EPA's comments regarding the potential formation of DBPs, Reclamation has changed the biota WTP option for the preferred alternative in the Final SEIS. As stated in Chapter 2 of the Final SEIS, the preferred Biota WTP option is the Conventional Treatment which includes a filtration process in addition to the chemical disinfection and UV irradiation. The commenter suggests that the Project water should be "sterile and devoid of micoorganisms" which is more than what is required for any type of drinking water treatment in the U.S. and extremely difficult to achieve outside a laboratory environment.

Response 25-3 –The performance characteristics of water treatment technologies and water transmission pipelines are well known. Furthermore, the lack of evidence for the occurrence of microorganisms in Lake Sakakawea that do not exist in the Hudson Bay Basin and would have adverse impacts if transferred, and the much higher risk of microorganism transfer through non-Project pathways supports the conclusion that the Project poses minimal risk. The control

system proposed for the Project demonstrates that Reclamation is taking a precautionary approach. From the onset of Project planning, Reclamation has worked collaboratively with numerous agencies at the national and state/provincial levels within the United States and Canada to identify concerns, analyze data and develop alternatives which meet the Project need while avoiding and/or minimizing the potential risks and consequences of the proposed actions. In response to EPA's comments regarding the potential formation of DBPs, Reclamation has changed the biota WTP option for the preferred alternative in the Final SEIS. As stated in Chapter 2 of the Final SEIS, the preferred Biota WTP option is the Conventional Treatment Biota WTP option which includes a filtration process. The addition of a filtration process would address the concerns stated in this comment letter.

Response 25-4 – The Conventional Treatment biota WTP option is included in the preferred alternative of the Final SEIS. This change was made in response to concerns about the potential formation of disinfection byproducts from treatment processes included in some of the biota WTP options, for compliance with the Safe Drinking Water Act. While the previously proposed treatment level was sufficient to address concerns regarding AIS transfer, the Conventional Treatment biota WTP option includes a filtration process that would reduce the Project-related risk of aquatic invasive species transfer even more than the preferred alternative identified in the Draft SEIS. Water treatment plants are designed to operate for many years without catastrophic failures or lapses in treatment effectiveness. As discussed in the Previously Constructed Components section of Chapter 2, safeguards have been constructed in the main transmission pipeline and associated features. Safeguards include isolation valves installed in strategic locations along the pipeline to minimize the volume of water released into the Hudson Bay Basin in the event of a pipeline breach. Further, where the pipeline crosses a coulee or drainage, the joints are welded or constructed with restrained joint fittings and encased in concrete. The pipeline was constructed to meet State Health Department guidelines for domestic water supply systems buried at a depth of 7 to 7.5 feet. Following construction of the main transmission pipeline, rigorous testing of each pipeline segment was completed and each segment exceeded the requirement defined for the *Northwest Area Water Supply Project Biota Transfer Control Measures* (Houston Engineering et al. 1998).

Response 25-5 – Reclamation is aware of the United States' obligation under the Boundary Waters Treaty, specifically Article IV, as well as the agency's responsibility under NEPA to evaluate cumulative impacts. In considering cumulative impacts under NEPA, agencies evaluate the proposed action in relation to other past, present and reasonably foreseeable future actions to determine whether the incremental effects of the proposed action in combination with other actions produce a significant effect that would not otherwise have occurred. Reclamation evaluated cumulative impacts in the SEIS as described in Aquatic Invasive Species sections of Chapters 3 and 4, as well as the comprehensive analysis included in Appendix E (*Transbasin Effects Analysis Technical Report*). The analysis included consideration of the Red River Valley Water Supply Project and the Devils Lake outlets and each of these is specifically mentioned in the SEIS chapter text and Appendix E.

North Dakota State Water Commission

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26

September 10, 2014

Ms. Alicia Waters
Bureau of Reclamation
P.O. Box 1017
Bismarck, ND 58502

RE: Comments on the Draft Supplemental Environmental Impact Statement for the Northwest Area Water Supply Project

The Northwest Area Water Supply ("NAWS") Project is vitally important for tens of thousands of people living in growing North Dakota communities. As you are well aware, the Environmental Impact Statement ("EIS") was challenged in federal court by the Province of Manitoba and the State of Missouri. The Court ordered that Reclamation further evaluate the potential consequences of a successful invasion of foreign aquatic species in the Hudson Bay Basin, and consider the Project's potential impact on Missouri River depletions.
The North Dakota State Water Commission (the "State" or "North Dakota") believes the Draft Supplemental Environmental Impact Statement ("SEIS") fully satisfies the Court's order. The Draft SEIS evaluated and updated as appropriate essentially all previous NEPA work, including the Project purpose and need and new alternatives. The Draft SEIS provides the public with extensive information regarding all potential Project impacts. This comment letter addresses the issues identified by the Court as needing further review and provides the State's concerns as the Agency proceeds to a Final SEIS and Record of Decision.

A. **The Project is Urgently Needed**

North Dakota agrees that the long term population projections used in the Draft SEIS are reasonable and based on a sound approach, but the need for the Project exists today. The Project will not address a hypothetical problem for the year 2060, but rather a real problem that the State faces now. North Dakota is experiencing an unprecedented population boom related to oil and gas development. Additional population studies performed since the analysis in the Draft SEIS are consistent with the projections in the Draft SEIS of an approximately 35 percent increase in population in the Project area. (ND Statewide Housing Needs Assessment prepared for ND Housing Finance Agency 2012). The 2010 census noted a population gain of approximately 23,000 people. The State believes the 2010 census understates the population increase because, among other reasons, it did not capture the significant population living in camps or temporary housing who did not claim residency in North Dakota. This issue was noted on page 3-110 of the Draft SEIS. 26-1
The Draft SEIS projects another increase of approximately 19,000 people between 2010 and 2030. A population gain of that size represents approximately 3 percent of the entire state's population. It would represent an approximately 50 percent increase in the size of the City of Minot. Indeed, 20,000 people is the size of the 8th largest city in North Dakota. In comparison,

the Missouri River basin was home to more than 12 million people in 1990 (and surely more now).

The updated Needs Assessment completed for the Draft SEIS confirms that the communities that would receive Project water currently have poor water quality and face insufficient quantities of water. These issues have been well-documented for many years. While all of the communities face problems as a result of exceedances of secondary drinking water standards, the community of Kenmare also faces exceedances of primary drinking water standards in place to protect human health. As noted on page 2-5, testing for Bottineau also showed the presence of uranium, which is a health concern. Although secondary standards refer to "aesthetic" issues, some substances that are subject to EPA's "aesthetic" standards also create health issues for sensitive populations. For example, secondary standards are in place for sodium, but high sodium levels in drinking water present a potentially serious health risk for sensitive populations. As acknowledged in the Draft SEIS, several communities that would receive water from the Project have sodium exceedances. Moreover, water that exceeds secondary standards can be undrinkable because it tastes or smells so bad. Exceedances of other secondary standards can cause other issues, such as deterioration in appliances, resulting in financial impacts to the end users of the water as explained on Page 4-181. 26-2

Currently, the Project communities rely largely or exclusively on water from the City of Minot. Although Minot's own water supply has some quality issues, it has the only water treatment plant in the Project area able to manage those issues successfully as long as the treatment plant is properly maintained. As noted in the Draft SEIS, Minot has contracts to provide water to these communities through 2018, but retains the right to discontinue service if necessary to maintain its water sources (the Minot and Sundre aquifers). Minot's water is not reliable for the long term for either the current level of use or the usage anticipated throughout the period evaluated in the Draft SEIS.

The Project communities are depending on NAWS to provide reliable and safe drinking water. As is noted repeatedly in the Draft SEIS, these small communities do not have the resources or infrastructure to treat water to EPA standards, nor do they have other options for sources of water. Advanced treatment methods such as reverse osmosis and nanofiltration are very expensive and not only fail to address low water quantity issues but actually exacerbate them. As a result, the Project communities have no viable plans in the absence of the Project. The kind of hydrogeologic investigation that is referenced on page 2-4 for the All Seasons Water District is expensive and has no guarantee of successfully identifying any alternate water source. Even if it does turn up an alternate water source, there is no guarantee the water will be of any higher quality than the existing water source. If an alternate water source was identified that did have higher quality water, that water may have limited availability due to impacts to wetland easements held by the Fish and Wildlife Service or prior appropriations by other entities. Likewise, the additional investigations mentioned on page 2-6 that are required to determine whether the Mohall aquifer could sustain additional withdrawals to support the City of Mohall would likely be quite expensive and time consuming.

While the Project is of major significance to the population of Northwest North Dakota, the quantity of water needed to supply those people with high quality drinking water from the

Missouri River is miniscule compared to the quantity of water in the Missouri River system. The conclusions in the Draft SEIS regarding the scope of Project withdrawals and impacts on the Missouri River system clearly show negligible impacts from a water withdrawal the size of the Project, even when sedimentation (which would occur regardless of the Project), other foreseeable withdrawals, and maximum Project withdrawals are considered. The positive impact on the lives of the citizens of Northwest North Dakota from the Project, on the other hand, will be immense.

B. **The Preferred Alternative Best Meets the Project's Purpose and Need**

The State believes Reclamation has explored the full range of potential alternatives in the Draft SEIS, including evaluating new alternatives. There are no potential sources of water for the Project communities that have not been evaluated or considered. North Dakota agrees with Reclamation's selection of the Missouri River with Groundwater alternative as the Preferred Alternative. The Missouri River with Groundwater Alternative best meets the Project's purpose and needs. Although North Dakota believes that the alternatives that rely on Souris River water were properly considered in the Draft SEIS, after reviewing the information presented, the State does not believe those alternatives are feasible. 26-3

The Souris River is an unreliable water source. Its flows vary dramatically, and it has such low flows at times that withdrawals of water are not possible. Among other things, withdrawals from the Souris River for the Project could result in negative impacts to the J. Clark Salyer Wildlife Refuge due to the extended periods of low or no flow in the river. The Draft SEIS plainly acknowledges these issues.

In addition, water appropriations procedures and legal standards present a significant issue for the viability of the three alternatives that would use water from the Souris River. The Draft SEIS states that additional water permits may be required for the inbasin alternatives utilizing Souris River surface waters. Water appropriations on the Souris River are complicated by the water rights of the Fish and Wildlife Service ("FWS") for the upper and lower Souris River refuges and the Eaton Irrigation Project ("Eaton"). Both FWS and Eaton have water rights that would be senior to the majority of water rights held by the City of Minot. The State of North Dakota follows the western water law model for water rights. That means the prior appropriations doctrine is used. Even if water permits held by the City of Minot are assumed to be transferred to the Project, a majority of the permits held by the City (or new water rights established for the Project) would be junior to Eaton Irrigation and the FWS water rights, which would have implications on the quantity of water from the Souris River available in low flow years. 26-4

Inbasin alternatives also would not meet secondary standards (see p. 4-181). The ability to meet both primary and secondary standards, as the Missouri River alternatives would, is crucial to meet the purpose and need of the NAWS project. North Dakota believes that "high quality" water as contemplated by the statement of purpose for the Project on page 1-6 is water that meets all EPA standards for drinking water, whether primary or secondary. As noted above, secondary standards are not simply "aesthetic" concerns.

On the other hand, the Missouri River is a plentiful source of high quality water. Project withdrawals from the Missouri River would be minimal in comparison to the total volume of the Missouri River system. North Dakota was congressionally authorized to receive water from the Missouri River for projects like NAWS in exchange for having permitted certain of its lands to be flooded for flood protection purposes. The downstream users of the Missouri River have benefitted from this flood protection for many years. The Missouri River alternatives, and particularly the Missouri River with Groundwater alternative, are feasible and would provide a reliable source of high quality water for the Project.

C. The Draft SEIS Identifies and Fully Analyzes Potential Environmental Consequences of the Project

The Draft SEIS identifies and evaluates all potential environmental consequences of the Project. North Dakota offers the following comments specifically regarding Aquatic Invasive Species ("AIS"), Missouri River depletions, and the analysis done on climate change and flooding.

Aquatic Invasive Species

We agree that the qualitative approach in the Transbasin Effects Analysis is the only reasonable way to evaluate AIS in the Draft SEIS. Sufficient data are not available to support a scientifically sound quantitative analysis. Obtaining the data to conduct a quantitative analysis would be exceedingly time consuming and expensive, if it is even possible. As noted in the Draft SEIS, the failure to detect a particular species during sampling events does not mean the species is absent from sampling area. Detecting a species in one sample may show the presence of a species, but that presence may not be sufficient to lead to negative impacts or establishment of the species. A three-year long study of parasite and pathogen loads in Devils Lake demonstrates that a quantitative approach is not reasonable here. That study was done to assess the threat of transferring fish parasites and pathogens from Devil's Lake in North Dakota to the Red River of the North. The study concluded, among other things, that conducting a statistically valid quantitative assessment of the relative risk of undesirable species transfer would be extremely difficult due to the large areas and volumes that the watershed comprised, and therefore a qualitative approach was the practical choice. The study also concluded that the parasite and pathogen communities in the two basins were largely ubiquitous throughout the study area and other natural means of transport between the two basins are quite common. For comparison purposes, Devils Lake drains a 3,130 square mile sub-basin of the Red River watershed, whereas the Missouri River and Hudson Bay and adjacent watersheds drain a significant portion of North America.

The Draft SEIS and supporting documents have clearly identified the potential routes for AIS to enter the Hudson Bay Basin. It has also identified and analyzed the range of potential outcomes if an AIS were to become established in the Hudson Bay Basin through any pathway, including the potential economic impact of the successful establishment of an invasive species. However, North Dakota believes that the Project, in any form contemplated in the Draft SEIS, is highly unlikely to result in the establishment of an AIS in the Hudson Bay Basin. The Draft SEIS acknowledges that in order for an AIS to become established in the Hudson Bay Basin as a

result of the Project, a lengthy series of events, each of which is highly unlikely, would have to occur. There are numerous other pathways identified in the Draft SEIS and supporting documents that are far more likely than the Project to result in the establishment of an AIS in the Hudson Bay Basin.

Missouri River Depletions

The Missouri River depletions analysis in the Draft SEIS was performed thoroughly by the Army Corps of Engineers, an agency with unparalleled experience in this discipline. Although existing conditions were modeled, the modeling done for the No Action alternative appropriately recognizes the likelihood of continued changes to baseline conditions whether the Project goes forward or not. In this instance, it recognizes that sedimentation and other known or foreseeable withdrawals of Missouri River water will occur, and considers those in projecting forward the consequences of the future without the Project. North Dakota also agrees that evaluating a wet year, a dry year, and an average year for each of the scenarios modeled is an appropriate way to evaluate the full range of potential consequences of Project withdrawals from the Missouri River.

Climate Change and Increased Flooding

The Draft SEIS analyzes climate change, beginning on page 4-6, using a quantitative analysis for the Missouri River basin and a qualitative analysis for the Souris River basin based on the World Climate Research Programme's Coupled Model Intercomparison Project phase 3 (CMIP3). The CMIP5 was subsequently released which would have included quantitative data for the portion of the Souris River basin in the United States. Having quantitative data for the portion of the basin in the United States is of little to no help in conducting a quantitative analysis for the Souris River basin since it excludes the majority of the basin, which is in Canada. North Dakota does not believe this additional information is sufficient to change the need for a qualitative approach for the Souris River basin. 26-5

On page 4-9, the Draft SEIS discusses increased flooding. Flooding does not mean that more water is available for drinking. We agree with the assessment on page 4-11 that intense rain events with high runoff (flooding) do not necessarily alleviate water shortages because aquifers do not have time to absorb the water to recharge. Flooding can also cause issues with water quality through impacts to water infrastructure and anomalous variations in water quality (turbidity, organic content, suspended sediment, etc.).

Thank you for the opportunity to comment on the Draft NAWS SEIS.

Sincerely,

Todd Sando, PE
Chief Engineer/Secretary

TSS:TJF:pdh/0237-04

Response 26-1 – Reclamation agrees with this statement and as noted in the SEIS, “Temporary residents that might live in recreational vehicle (RV) parks or campgrounds, hotels/motels, and other rentals, together with those that travel between counties and communities, are not counted although they may increase demand for use of the services and resources.” Reclamation cannot accurately reflect these populations with the available data and therefore did not adjust the Project need for these temporary residents.

Response 26-2 – Reclamation agrees, according to the EPA’s website ”EPA has established National Secondary Drinking Water Regulations (NSDWRs) that set non-mandatory water quality standards for 15 contaminants. EPA does not enforce these "secondary maximum contaminant levels" or "SMCLs." They are established only as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color and odor. These contaminants are not considered to present a risk to human health at the SMCL.

Response 26-3 – These statements have been included as part of the record. Please note the Preferred Alternative in the Final SEIS is the Missouri River and Groundwater Alternative; however, Reclamation has changed the Biota WTP option included in the Preferred Alternative in response to comments received from the Environmental Protection Agency. Please refer the Preferred Alternative section of Chapter 2 for more information.

Response 26-4 – Reclamation agrees that the water rights associated with the Souris River are complicated in nature and the Project may have difficulty obtaining a new permit for the water needed in the alternatives proposing to use this water source.

Response 26-5 – Your comment is noted. Downscaled CMIP5-based hydrologic projections are now available for the U.S. portion of the Souris River basin. About 20 percent of the Souris River basin above Minot lies in the U.S. The remaining 80 percent lies in Canada, which is not covered by the currently available hydrologic projections. It is unknown whether the U.S. portion is representative of the basin as a whole.

For the Souris River above Minot, the median hydrologic projection shows an increase of about 10 percent in mean annual runoff, which is similar to the CMIP5-based projection for the Missouri River above Garrison Dam.

Because no operations model exists for the Souris River, it is not possible to simulate changes in runoff on a daily or monthly timescale as was done for the Missouri River. However, the projected change in annual runoff can provide some perspective on potential climate change effects on Souris River flows.

Based on 109 years of historic flow records, the median annual flow of the Souris River at Minot is 82 cfs. Under the median hydrologic projection, this would increase by about 9 cfs, which would have a minimal effect on water supply for the Project under the proposed alternatives. Additionally, the impacts of Souris River withdrawals would be similar with or without climate change.

Text has been modified to include a discussion of the potential increase in mean annual runoff. However, flows in the Souris River would still frequently be less than Project water demands (i.e., 100 percent of the flow would be withdrawn at times under inbasin alternatives). The slight increase in flows under the median hydrologic projection would not substantially decrease the significant adverse impacts of Project withdrawals on Souris River resources as disclosed in the Draft SEIS.

RESOLUTION OF SUPPORT OF ALL SEASONS WATER USERS DISTRICT FOR THE NORTHWEST AREA WATER SUPPLY PROJECT (NAWS)

WHEREAS, All Seasons Water Users District, Bottineau County, North Dakota, is a regional water supply system with customers in Bottineau, Benson, McHenry, Pierce, Renville, Rolette and Towner Counties in North Central North Dakota.

Now, therefore, it is hereby resolved by the Board of Directors of All Seasons Water Users District that the President shall execute for and on behalf of All Seasons Water Users District the RESOLUTION OF SUPPORT OF ALL SEASONS WATER USERS DISTRICT FOR THE NORTHWEST AREA WATER SUPPLY PROJECT (NAWS), this 8th day of September, 2014. 27-1

Now, therefore, it is hereby resolved by the Board of Directors of All Seasons Water Users District support of the completion of the NAWS Project for the potable water needs of our current rural and city customers and future rural and city customers of All Seasons Water Users District.

Now, therefore, it is hereby resolved by the Board of Directors of All Seasons Water Users District that the NAWS Project be expedited to finial completion so that the needed water supply is available to our current and future customers.

All Seasons Water Users District

By _____, Manager
Richard Anderson, President

Attest:

_____
Kenneth Rogers, Secretary

ASWUD
All Seasons Water Users District
Regional Water System
1066 Hwy 5 NE, Bottineau, ND 58318

Response 27-1 – Your statement(s) have been included as part of the record. Please refer to General Response No. 1

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SEP 10 2014

Ref: R8-EPR-N

Alicia L. Waters
Dakotas Area Office
Bureau of Reclamation
304 East Broadway Avenue
Bismarck ND 58501

Re: NAWS Draft Supplemental EIS, CEQ #20140181

Dear Ms. Waters:

Thank you for the opportunity to review the Bureau of Reclamation's (Reclamation's) Draft Supplemental Environmental Impact Statement (EIS) for the Northwest Area Water Supply Project (NAWS). The U.S. Environmental Protection Agency Region 8 is providing comments consistent with our authority under Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act.

The NAWS project is a municipal, rural, and industrial water supply project intended to provide a reliable, high quality water supply to serve a ten-county area in northwestern North Dakota through 2060. In 2008, Reclamation issued its Final EIS on water treatment. The Final EIS was challenged in U.S. District Court by the Province of Manitoba, Canada and the State of Missouri. In March 2010, the court remanded the case to Reclamation. This Draft Supplemental EIS responds to the court's order requiring Reclamation to take a "hard look" at the cumulative impacts of water withdrawals on the water levels of Lake Sakakawea and the Missouri River and on the consequences of biota transfer into the Hudson Bay basin.

The Draft Supplemental EIS evaluates five alternatives, including a No Action Alternative. Reclamation identified the Missouri River and Groundwater alternative as its preferred alternative. This alternative entails use of Lake Sakakawea as the primary water source and some blending with water from the Minot and Sundre Aquifers. It also includes a Biota Water Treatment Plant (WTP) at Max, North Dakota. The intent of the Biota WTP is to reduce the project-related risk of aquatic invasive species transfer across the divide between the Missouri River and Hudson Bay basins. The Draft Supplemental EIS contains a thorough evaluation of the risk of aquatic invasive biota transfer into the Hudson Bay basin and EPA is impressed with the strong level of protection against biota transfer provided by this project.

The Draft Supplemental EIS identifies the preferred Biota WTP option as "Chlorination/UV Inactivation." Reclamation's NEPA process for this project has been ongoing for many years. During that time, EPA has developed an improved understanding of the conditions under which

drinking water disinfection with chlorine or chloramine can result in the formation of disinfection byproducts (DBPs). DBPs pose a risk to human health when present in drinking water at concentrations above their Maximum Contaminant Levels (MCLs). DBPs are formed in the treatment process when chlorine or chloramine has contact time with natural organic matter. The regulated DBPs, total trihalomethanes (TTHMs) and haloacetic acids five (HAA5) are very small molecules and once formed are not easily removed through subsequent water treatment processes. The potential for forming DBPs can be reduced below levels of concern through treatment practices that remove organic matter prior to disinfection. The Detailed Comments section of this letter provides detailed discussion regarding the following factors that increase DBP formation associated with the proposed Chlorination/UV Inactivation treatment process:

- The NAWS project will switch the drinking water source from groundwater to surface water. Surface water typically has higher levels of organic matter, and therefore has a higher potential to form DBPs.
- The Chlorination/UV Inactivation process described in the EIS treats the water with chlorine *before* filtering out the organic matter thereby creating a higher potential to form DBPs.
- There is also a long contact time in the distribution system as the treated water travels from the biota treatment plant in Max, N.D. to Minot, N.D. and to communities beyond.

The backup plan proposed in the Draft Supplemental EIS to address any DBP issues suggests switching the chemical disinfectant from chlorine to chloramine. Unfortunately, emerging information is showing chloramine can also produce DBPs and other water quality issues with associated human health risks. The best remaining post-construction option would be to add a treatment process that would lower the levels of precursors to DBPs before chlorine is added. That type of modification would be more costly to add after biota treatment plant construction and could delay the ability of the system to provide its intended water quality and resource protections.

This letter identifies opportunities to enhance NAWS' resilience in the face of environmental changes that could affect source water quality. It also identifies opportunities for increased flexibility to address future regulatory changes. The recommendations are intended to support NAWS' goals of providing a reliable, high quality water supply to communities and rural water systems in northwestern North Dakota and meeting the NPDWRs, while reducing risk of aquatic biota transfer. Our primary recommendation for reducing DBP formation potential is to change the preferred Biota WTP option to the "Conventional Treatment" alternative analyzed in the Draft Supplemental EIS. The Conventional Treatment alternative would also increase the system's flexibility to address possible source water quality and regulatory changes that may occur over the 60 year life of the treatment plant. Alternately, we recommend developing and including in the Final EIS an adaptive management approach to address the potential for DBP issues. Our detailed comments identify options for pre-construction adaptive management, perhaps best described as design-level engineering. To be most useful to decision-makers, such as Reclamation itself and the City of Minot, we recommend including the specific adaptive management plan in the Final EIS. That would also allow an opportunity for agencies and the public to understand the plan and provide useful input. Finally, it would assure the plan is available prior to WTP construction.

The enclosed Detailed Comments provide additional information on the following topics: Alternatives (including the Biota WTP options and the in-basin alternatives), Adaptive Management and Monitoring, DBP Formation Potential, Groundwater, Water Conservation, Climate Change (including its potential effect on NAWS and cyanotoxins) and Water Quality.

Conclusion and Rating

Based on our review, and in accordance with the enclosed rating criteria, the EPA has rated the Draft Supplemental EIS as "Environmental Concerns – Insufficient Information" ("EC-2"). The EC rating signifies that the EPA's review has identified environmental impacts that should be avoided in order to fully protect the environment. Specifically, the preferred biota treatment plant design may result in drinking water quality issues that could affect human health. This letter points to options available in the Draft Supplemental EIS that would avoid or reduce these effects below levels of concern. The "2" rating signifies that the Draft Supplemental EIS does not contain sufficient information for the EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment. We recommend additional information be added in the Final EIS for alternatives, adaptive management and NPDWR attainment as outlined in our comments above and described further in our enclosed detailed comments. The EPA recommends this information be incorporated into the Final EIS. A description of the EPA's rating system can be found at:

http://www.epa.gov/compliance/nepa/comments/ratings.html.

The EPA appreciates the opportunity to participate in the review of this project. We would like to discuss our comments and thoughts regarding Biota WTP options and DBPs with Reclamation, the City of Minot, the North Dakota Water Commission and the North Dakota Department of Public Health once you have had a chance to review them. If we may provide further explanation of our comments, please contact me at 303-312-6693, or Maggie Pierce, Lead NEPA Reviewer, at 303-312-6550.

Sincerely,

Russell C. Leclerc
Acting Program Director
NEPA Compliance and Review Program
Office of Ecosystems Protection and Remediation

Enclosure: Detailed comments

cc: Dan Jonasson, City of Minot Public Works
Michelle Klose and Tim Freije, North Dakota Water Commission
Greg Wavra, North Dakota Department of Health

U.S. EPA Region 8's Detailed Comments:
Northwest Area Water Supply Project

I. Alternatives

A. Biota WTP Options. As discussed in our comments below on "Disinfection byproduct formation potential," EPA has important concerns with the ability of the preferred Biota Water Treatment Plant (WTP) option, "Chlorination/UV Inactivation Treatment to meet project goals for drinking water quality." Compared to Chlorination/UV Inactivation, the "Conventional Treatment" option described in the Supplemental Draft EIS offers effective biota treatment and also represents a substantial reduction in disinfections byproducts (DBP) formation risk. It includes physical removal processes prior to chlorination reducing the potential for formation of DBPs. The "Enhanced Chlorination/UV Inactivation" option sometimes uses a physical removal technique prior to chlorination but is limited in its protectiveness of drinking water quality and human health as we discuss below.

Recommendations:

- Reconsider the Biota WTP option selected in light of the information provided in this section and our comments in the "DBP formation potential" section. 28-1
- If the Final EIS maintains the "Chlorination/UV Inactivation" option for the Biota WTP, incorporate a more complete discussion of the preferred alternative's potential effect on DBPs (see discussion on DBPs) and an adaptive management plan to address the potential for DBP formation issues.

1. Enhanced Chlorination/UV Inactivation Treatment Option. The justification for the microorganism reduction anticipated at the Biota WTP is incomplete because the Draft Supplemental EIS does not discuss whether a coagulant will be used as part of the treatment process (p. 2-49). If no coagulant is used, rapid sand filtration achieves significantly less microorganism removal (at most 0.5 logs) irrespective if it is "pressure," "direct" or "conventional" filtration. The rapid rate sand used in pressure, direct or conventional filtration is designed to always be used in conjunction with a coagulant.[1] The logs of removal identified in Table 2-21 appear to assume use of a coagulant. It would not be correct to apply the safety factor and assume the logs of removal associated with pressure filtration (which assumes use of a coagulant) unless a coagulant is being used.

Recommendations:

- Clarify if a coagulant will be used at all times. If a coagulant is used, then use the log removal data for direct filtration in Table 2-21. 28-2
- If coagulation is added, use a coagulant at all times irrespective of the turbidity levels in the raw water.
- If a coagulant will not be added, then revise the title of this option to "Rapid sand filtration without coagulant/chlorination/UV."

[1]Rapid rate sand media is described in *Recommended Standards for Water Works* as having a uniformity coefficient of not greater than 1.65 and an effective size of 0.45 to 0.55 mm.

2. Riverbank filtration. The EPA has previously recommended consideration of riverbank filtration, to supplement or as an alternative to filtration at the Biota WTP, as an effective means to reduce algae and other precursors to DBP formation. The EPA notes the Draft Supplemental EIS does not discuss riverbank filtration. Sometimes the geology will allow riverbank filtration to be installed directly and, where geology is not conducive, artificial infiltration basins can be created.

Recommendations:

- Include a discussion on riverbank filtration as a means to reduce precursors to DBPs.
- Incorporate riverbank filtration as an intake option to be considered through a pre-construction adaptive management approach or design-level engineering.

28-3

B. Inbasin Alternatives. The Draft Supplemental EIS analyzes two action alternatives that entail recharging groundwater with Souris River water. The surface water hydrologic analysis indicates that it is unlikely that recharge goals would be met in anything other than above average precipitation years. The flow analyses for these alternatives project 73 to 83 zero flow days in a dry year (Tables 4-4 and 4-5, Figure 4-25). The frequent elimination of flow, i.e. zero flow days, may limit these recharge goals from being recognized. The amount of recharge water that can be provided by the Souris River may support a smaller recharge rate than what has been analyzed.

The Draft Supplemental EIS conveys that the modeled flow reductions for the Souris River alternatives do not account for border flow agreements that would maintain flow at the border with Canada. It is important that the minimum requirements from the border flow agreements are considered as a component when calculating a recharge rate that would be supported by the Souris River.

Recommendations:

- Identify an artificial aquifer recharge rate that would be supported by the Souris River and its border flow constraints and relate it to the project demand.
- Consider in the Final EIS whether this alternative can achieve project goals while minimizing its impact as a stand-alone alternative or a component of another alternative (i.e., coupled with another alternative water source or conservation).

28-4

II. Adaptive Management & Monitoring

The EPA supports Reclamation's intent to develop an adaptive management plan (p. 4-6, Appendix F). The Draft Supplemental EIS indicates that Reclamation would develop an adaptive management plan at some point in the future and would engage the Impact Mitigation Team to implement adaptive management practices. Adaptive management is most effective if it is developed prior to project commencement, providing a framework for decisions to be made quickly and enabling collection of, and agreement on, the information and/or data necessary to inform those decisions.

Reclamation specifies its intent to develop adaptive management planning for future environmental changes that lead to an increased potential for DBP formation and to extend this adaptive management plan process to all future National Primary Drinking Water Regulations (NPDWRs) (p. 2-56, Appendix F). If the Final EIS maintains the "Chlorination/UV Inactivation" Biota WTP option, it will be important to incorporate Biota WTP options that enable physical removal of DBP precursors prior to chlorination among adaptive management options. It is important for the Final EIS to acknowledge that a post-construction adaptive management approach potentially delays NPDWR compliance and may require significant capital investment should a problem arise. These challenges may be best met through a *pre-construction* adaptive management approach, or project design-level engineering, as NAWS moves beyond its current appraisal-level design stage. Monitoring to support the adaptive management approach has not been specified in Appendix F. It is unclear whether monitoring activities discussed in the body of the Draft Supplemental EIS will include monitoring to support the adaptive management approach. Monitoring is an important component of adaptive management and also important to establish baseline conditions.

Recommendations:

28-5

- Develop an Adaptive Management Plan for inclusion in the Final Supplemental EIS to give the public and other interested parties an opportunity to provide input.
- Use a pre-construction/project design approach for adaptive management as the project moves beyond appraisal-level engineering analysis.
- Consider treatment options for biota removal at the Biota WTP that will allow removal processes prior to chlorination.
- Include adaptive management triggers and action options associated with those triggers that support both the goals of reducing biota transfer potential and providing a safe, reliable source of drinking water.
    - Triggers should include: data that demonstrate difficulty in meeting NPDWRs or risks to public health and new NPDWRs that could result in the need to make treatment changes.
    - NPDWRs (discussed further below) of concern include: total trihalomethanes (TTHMs), haloacetic acids five (HAA5s)
    - Presence of chemicals of concern for which there are no current NPDWRs such as *N*-Nitrosodimethylamine (NDMA), and cyanotoxins.
    - Available actions/system modification options include: riverbank filtration and filtration prior to chlorination.
- Identify in Appendix F the monitoring necessary to support adaptive management decisions.
    - Necessary monitoring may include NPDWRs, algal abundance through chlorophyll *a*, cyanobacteria (through cells or cyanotoxins), biota and groundwater levels.

III. DBP Formation Potential

The Draft Supplemental EIS does not fully evaluate the preferred Biota Treatment Plant alternative's potential to result in DBP formation (p. 2-56) and does not address how to reduce that potential effect through adaptive management. The EPA has identified factors that may

make it challenging to meet the NPDWR for DBPs. Those factors include the lack of precursor removal technologies prior to chlorination, the residence time between Max and Minot and the overall distribution system length (approximately 184 total miles) (p. 2-56). The Draft Supplemental EIS references a study (Montgomery et al. 2007) that characterized DBP formation potential as low. Because this study is based upon a laboratory experiment that does not capture environmental variability or reflect conditions of the distribution system, utilizing additional data collected by Minot and its consecutive systems may help characterize potential DBP increases in the system.

Recommendation: We recommend that the Final EIS discuss the preferred alternative's potential to produce DBPs, addressing the following topics:

A. **Prechlorination and DBPs.** Prechlorination at the Max Biota WTP will result in the formation of regulated and unregulated DBPs because DBP precursors are not being removed. In the 1997 DBP rule[2], the EPA considered eliminating prechlorination in regulation (except for maintenance) in its risk/risk balance between DBPs and endemic disease. The EPA decided not to eliminate prechlorination, for several reasons, one of which was the high national capital cost of expanding contact basins after filtration would shift the risk/risk balance to increases in endemic diseases. As a result of studies, the EPA did establish that for three groups of DBPs: TOX (Total Organic Halides), TTHMs and HAA5s, "moving the point of chlorination downstream (closer to filtration) in the coagulation, flocculation, and sedimentation process, decreased DBP formation and the chlorine demand by providing additional time for NOM removal before chlorine could react with NOM to form DBPs."[2] Once initial DBPs are created after chlorination at the Biota WTP, those levels are likely to increase with residence time as the water flows through the 184 total miles of distribution system (see section on DBPs and residence time). Chlorination leads to the formation of the majority of regulated DBPs (TTHMs, HAA5s) and greater than 600 unregulated DBPs have been found for which health effects have not yet been evaluated. The EPA's concern regarding the health effects of this suite of DBPs led to a rule to support their minimization (40 CFR 141.135). 28-6

B. If TTHMs and HAA5s exceed the NPDWRs, the only option for the preferred Biota WTP option would be to reduce the chlorine contact time and increase chloramine contact time which decreases the established biota transfer goals. Recent information indicates that chloramine disinfection leads to the formation of a different suite of DBPs for which less is known about their health effects. One of the known chloramine DBPs is NDMA, a potent human carcinogen. Systems that use chloramines also frequently experience problems with nitrifying bacteria. Nitrifying bacteria deplete the chloramine residual and produce nitrate in the distribution system. The EPA recognizes that nitrate formed in the distribution system is not currently regulated. However, nitrifying bacteria problems are difficult to address, the solutions often presenting additional problems for NPDWR attainment.[3] For this project, the EPA recommends treatment alternatives that focus on the removal of precursors to DBP formation.

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[2] 62 *Federal Register* 59461, Nov 27, 1997. (40 CFR Parts 141 and 142, National Primary Drinking Water Regulations: Disinfectants and Disinfection Byproducts; Notice of Data Availability; Proposed Rule)

[3]One of the solutions to nitrification problems in the distributions system is to perform a chlorine burn. A chlorine burn switches to higher levels of chlorine for a few weeks to months which sheers the biofilm off the pipe walls. This burn releases

C. **Efficacy of TTHMs and HAA5s removal by treatment.** The very small size of TTHMs and HAA5s make their removal ineffective by most treatment technologies. TTHMs are single-carbon molecules and HAA5s are double-carbon molecules. Granular activated carbon (GAC) is most effective at removing medium molecular weight molecules (including DBP precursors) and not very effective at removing small or very large molecular weight molecules.

28-6 cont.

D. **Residence time increases DBP levels.** The initial levels of TTHMs and HAA5s formed at Max will have an opportunity to increase as the precursors continue to react with the chloramine residual as the water travels through the pipeline to the Minot WTP. Minot's WTP does not have technologies in place to effectively reduce TTHMs and HAA5s and, so, levels will continue to increase through the distribution system, which serves several consecutive systems.

Data are available from each of the consecutive systems to evaluate DBP increases as the treated water moves further from Minot. All of these consecutive systems performed an initial distribution system evaluation (IDSE) under Subpart U for the *Stage 2 Disinfectants and Disinfections Byproducts Rule* (Stage 2) and have collected three quarters of data subsequent to the IDSE per Stage 2 Subpart V. Both sets of empirical data are available for further consideration of DBP levels in the Final EIS. These data differ from those in the chloramine challenge study (Montgomery et al. 2007) in that they are based upon DBPs formed within the distribution system (versus a laboratory) and they include multiple data points at different times of the year (versus one grab sample) with water treated at Minot (versus laboratory conditions).

Although these empirical data are from a different raw water source than that used under the preferred alternative, that current raw water source (i.e., groundwater) is likely to be lower in NOM than source water used under the preferred alternative (i.e., surface water blended with groundwater). Additionally, these data capture seasonal variability and the effect of the distribution system's residence time and biofilms (i.e., the conditions water will be exposed to and another source of NOM). These data could be assessed in consideration of the system modifications (prechlorination at Max and additional residence time from Max to Minot).

E. **DBP precursors at the source are likely to vary due to climate change.** NOM, measured as total organic carbon (TOC), varies with nutrient concentrations. Climate change exacerbates drought and flood cycles which in turn affect nutrient concentrations (p. 4-9). During drought, nutrients accumulate on the land without adequate precipitation to wash them away in small increments. During flooding, these nutrients are transported into waterways via overland flow along with increased flow from septic systems and wastewater treatment plants. These nutrients trigger algal, plant, and microorganism growth which increases the levels of NOM (i.e., DBP precursors). Without physical

28-7

very high levels of TTHMs and HAA5s and other accumulated contaminants off the pipe walls and is not flushed but rather allowed to stay in the pipe network to be ingested.

removal treatment at the Biota WTP, the higher levels of precursors will lead to higher levels of DBPs. An example of this phenomenon occurred on the Milk River in Montana.

IV. Groundwater

The preferred alternative's effect on groundwater appears uncertain because a sustainable rate of groundwater withdrawal is unknown and, consequently, comparison to the project's withdrawal rate is not possible (p. 2-6, p. 3-26, p. 4-60). The Draft Supplemental EIS indicates that a sustainable rate is something lower than 2 mgd (p. 2-6). It also states that the reduction in the long-term average and the peak pumping rates from 2 and 3.2 mgd to 1 and 2.6 mgd, respectively, "could stabilize and/or reverse the downward trend in water levels over the long term if the new rate of withdrawal is less than the natural recharge rates of the aquifers (p. 4-60)." The Draft Supplemental EIS does not make a comparison between the project and the natural recharge rate, and does not consider groundwater level trends or anticipated changes in recharge rates (such as those attributable to climate change) (p. 4-60). The document does note that if a larger percentage of annual precipitation is in the form of intense rain events with high runoff, as predicted by the *Literature Synthesis on Climate Change Implications for Water and Environmental Resources* (Reclamation 2011a), less of that water could infiltrate and recharge aquifers (p. 4-11). Consideration of more recent withdrawal rates, groundwater level trends and anticipated impacts due to climate change are important considerations to understand the effect of the project.

The Final EIS may also consider the cumulative effects and project adaptations if the groundwater trend is observed to continue to decline even given the reduction in groundwater withdrawal. Considerations include the effect of climate change and whether more Missouri River water will be used as part of an adaptive management strategy in response to groundwater declines.

Recommendations:

- Compare the withdrawal rates to more recent withdrawal rates (e.g., a ten-year average instead of the 45-year average used) to better characterize and frame the current withdrawal rates.
- Consider cumulative effects or adaptive management options in light of the uncertainty related to sustainable groundwater withdrawals.

28-8

V. Water Conservation

The conclusion that there would be limited opportunity for additional water conservation because of current low water use (much lower than the national average) does not consider future savings attributable to either active or passive conservation. Passive conservation savings include those due to xeriscaping, increased household appliance efficiency and replacement of those appliances. Site-specific analysis of potential conservation savings for the project area could be relevant to the cumulative effects analysis for withdrawals to the Missouri River. The Draft Supplemental EIS considers existing water demand reduction attributable to conservation but does not describe opportunities for future reduction or whether those opportunities could reduce project demand (p. 2-10).

Recommendation: Identify potential additional active and passive conservation strategies specific to the NAWS service area and incorporate those savings into a reduced demand projection or as a component of an alternative. 28-9

VI. Climate change

A. Effect on NAWS. The Draft Supplemental EIS describes potential climate change effects for the region and the Missouri River Operations. It does not connect those effects as they relate to groundwater (p. 4-11), increased algal blooms (p. 4-9), or DBPs to the project's ability to meet its purpose or the ability of alternatives to adapt to those changes.

Recommendation: Relate the effect of climate change specifically to the NAWS project, identifying areas where alternatives may need to adapt in order to meet goals. 28-10

B. Cyanobacterial toxins. As discussed above in section III(C), climate change has the potential to increase the magnitude of nutrient loading spikes to reservoirs such as Lake Sakakawea. As the Draft Supplemental EIS acknowledges, although an overall increase in precipitation is predicted, "climate change studies also predict increases in the frequency of intense and heavy rainfall interspersed with longer relatively dry periods (p. 4-14)." Dry periods allow nutrients to accumulate on the land and then higher intensity precipitation events wash them in the rivers, contributing to increased algal blooms and DBPs (see section on DBPs). These cycles can have a dramatic impact to the water quality resulting in blooms of algae and cyanobacteria that have the potential to reduce the effectiveness of the water treatment process's ability to deliver safe drinking water. The description of cyanobacterial toxins does not consider climate change effects in detail (p. 4-9). Not all the treatment options in the Draft Supplemental EIS have the ability to respond to a cyanobacterial algal bloom.

A recent example of how dramatic changes in weather patterns associated with climate change can affect water quality was demonstrated in Toledo, Ohio. Wet, rainy conditions increased overland fertilizer and waste transport, and increased flow from waste water treatment plants, septic systems and stormwater. These flows added high levels of nutrients to Lake Erie, contributing to a cyanobacterial algal bloom. Although the City of Toledo, Ohio, detected microcystins at 1.5 ppb, just 0.5 ppb above the World Health Organization Standard of 1 ppb, the City responded by issuing a "do not drink" order on July 1, 2014. This order was issued despite the lack of cyanotoxin regulation. Notably, the National Oceanic and Atmospheric Administration rated the bloom as only a 5 or 6 (out of 10). Nonetheless, this small bloom, that happened to be producing toxins, was positioned directly over Toledo's intake due to the wind patterns during the unusually wet and cold weather in this area.

There are concerns associated with those treatment options that do not have the capability to remove cyanobacteria and to prevent cyanotoxins from entering the drinking water system. For example, if testing indicated the presence of cyanobacterial toxins, the recommendations for treatment to protect public health would be to turn off any prechlorination, increase coagulant levels, increase powdered activated carbon and decrease the filtration rate. The

goal of these recommendations would be to remove whole cells and avoid the release of toxins that occurs when the cells are damaged. This goal could not be accomplished with some of the treatment options for NAWS.

- This link has a list of labs that perform cyanotoxins and cyanobacteria analyses: http://www2.epa.gov/nutrient-policy-data/state-resources
- This link discusses cyanobacteria and treatment with a focus on keeping the cells intact: http://www2.epa.gov/water-research/harmful-algal-blooms-cyanobacteria

28-11

Recommendation: Expand the discussion of cyanobacterial toxins to include the status of regulation, examples, and the ability of the different treatment options to treat cyanobacterial toxins.

VII. Water Quality

Table 3-16 identifies waterbodies that will be affected by the project. We suggest that including upstream water quality data points for the affected river and tributary reaches as well as the mechanisms by which they may be affected would provide a clearer description of impacts.

1. **Missouri River.** Chapter 3 states that Missouri River water quality is good and references EPA STORET data, but does not provide summary data to characterize water quality (p. 3-40). Additionally, the EIS's use of Maximum Contaminant Levels (MCLs) (i.e, NPDWRs) for comparison to average surface/source water quality could be better framed (p. 3-40). MCLs are maximum (versus average) limits that apply to treated water per the SDWA although some CWA water quality standards are based on MCLs. A summary of actual data and assessment of applicable water quality standards with North Dakota methods would better characterize water quality.
2. **Souris River.** Table 3-6 compares surface water quality of the Souris River to SDWA-based and aquatic life-based water quality standards, breaking all of them into two categories: primary and secondary. Please note that phrases "primary" and "secondary" standards describe SDWA-based standards in the context of their application as *maximum* contaminant levels (MCLs), as discussed above (p. 3-16). It is also important to describe which metric (mean, maximum, or minimum) of the observed data is compared to the CWA standards.

   Chapter 3 indicates that the Souris River is impaired for aquatic resources from sedimentation or siltation for segments of the river near Minot per CWA Section 303(d) (p. 3-47). Chapter 4 contains information regarding flow alterations, geomorphic effects and effects to aquatic organisms for the action alternatives affecting the Souris River. It does not relate those effects to the impairment.

Recommendations:

- Summarize available Missouri River water quality data in a way similar to the data summary provided for the Minot and Sundre Aquifers.
- Clarify that MCLs are assessed as maximums and apply directly to treated water although some CWA water quality standards are MCL-based.

28-12

- Clarify use of the terms "primary" and "secondary."
- Update Table 3-16 to identify the upstream points.
- Relate effects to flow alterations, geomorphology and aquatic organisms to the CWA Section 303(d) impairment on the Souris River.

Response 28-1 – The analysis included in the Draft SEIS showed the Chlorination and UV Inaction Biota WTP option would provide adequate protection against a Project-related transfer of biota which was recognized by EPA this comment letter. Reclamation has considered all of the information provided by EPA on the potential disinfection byproduct (DBP) formation associated with the Chlorination and UV Inactivation Biota WTP Option of the preferred alternative. Based on the information provided in the comment letter and subsequent discussions with EPA technical staff regarding the potential for this biota WTP option to result in DBP, and potential violations of drinking water regulations, Reclamation has identified the biota WTP option within the preferred alternative to be the Conventional Treatment Biota WTP Option. This option will also provide additional flexibility within the operation of the Biota WTP in order to ensure compliance with the Safe Drinking Water Act. The Final SEIS identifies the Missouri River and Groundwater Alternative as the preferred alternative; and this alternative includes the Conventional Treatment Biota WTP option and the modifications to the Snake Creek Pumping Plant as the intake option.

Response 28-2 –The Draft SEIS indicated that a coagulant would be used as part of the biota treatment process. Table 3-9 (Enhanced Chlorination and UV Inactivation Facility Design Criteria) of Appendix J (*Draft Appraisal-Level Design Engineering Report*) shows that a coagulant would be used as a filtration aid as part of the chemical feed process. The use of a coagulant is also shown in Appendix E of Appendix J, Drawing TB03A (polyaluminum chloride storage and feed). Chapter 2 of the SEIS has been modified to more completely describe the coagulant use.

As noted by the commenter, the pressure filtration system is designed to be used with a coagulant, and a coagulant (polyaluminum chloride) would be used when the system is operating. For this biota WTP option, the filtration system is not intended to be used at all times. As discussed in Chapter 2, pressure filtration would be initiated only when turbidity levels exceeded 7 nephelometric turbidity units (NTUs). The 7-NTU threshold was selected to provide a safety factor, as stated: "*Turbidities up to 10 NTUs have been shown not to affect the UV dose-response of separately added microorganisms (Reclamation 2007; EPA 2006). This option would include monitoring of the raw water turbidity and would operate the pressure filtration system when source water turbidly exceeded 7 NTUs as a safety factor*." When raw water turbidities are below the 7-NTU threshold, the option is designed to allow the raw water to bypass the pressure filtration system and go directly through the UV system and remaining processes included in the option. Reclamation does not agree that a coagulant needs to be used at all times, as recommended in the comment because the system is designed to use UV treatment when turbidity levels are below 7 NTU. As noted in the pressure filtration column of Table 2-21, which shows log removal that would result from direct filtration, 1-log removal is assumed when the filters are in operation. When they are not in operation, the total inactivation remains above the 3-log and 4-log inactivation levels noted in the table. This is consistent with the removal credits established by EPA's Surface Water Treatment Rule.

Response 28-3 – The Lake Sakakawea intake option designs were developed at the appraisal level as explained in the SEIS and Appendix J. The detailed information that would be required to develop a riverbank filtration option is not available and would be time intensive and

expensive to obtain. Additionally, the reservoir shoreline is not a riverbank. The riverbank is more than 5 miles from the proposed intake location and more than 100 feet under water. Fluvial deposits hydraulically connected to the reservoir are unlikely to be present in the glacial till characteristic of the area near the proposed inlet.

Riverbank filtration is a specific type of intake that may provide additional benefits; however, Reclamation believes the intake options analyzed in the SEIS cover the reasonable range to include in the treatment and conveyance alternatives for the Project. Reclamation has committed to pre-construction adaptive management and this additional information could be considered during future engineering design phases if a Missouri River alternative is selected.

Additionally, Reclamation has identified the Conventional Treatment Biota WTP option within the preferred alternative of the Final SEIS. This Biota WTP option allows for flexibility to address the potential formation of DBPs and would provide benefits similar to a RBF intake in terms of removing DBP precursors.

Response 28-4 – Reclamation does not concur with this comment and believes that existing information within the SEIS addresses the recommendations presented for Inbasin Alternatives. As described in detail in the Water Resources sections of Chapters 3 and 4, a river hydrology model does not exist on the Souris River and would be time intensive and expensive to develop. Development of the alternatives evaluated in the SEIS was achieved through a collaborative effort with the cooperating agencies as discussed in Appendix C. The development of alternatives followed a systematic approach where the Project water need was identified, water sources that could be used to meet the need were identified, and appraisal level engineering design of the alternative components were completed to demonstrate how different water sources could be used to meet the need. The SEIS includes the Conjunctive Use Alternative which utilizes the Souris River as well as Groundwater, and the Missouri River (see the Conjunctive Use Alternative section of Chapter 2).

In order to identify a recharge rate that was sustainable by the river and then relate it to Project need, a much more detailed analysis of the river hydrology would be required. Based on the best available information, Reclamation believes the outcome of a detailed analysis would be similar to the results presented in the SEIS which indicate the river cannot sustain the projected Project need. The comment recommends a duplicative analysis that would not further inform a decision.

With respect to the consideration of minimum flow requirements at the international border, a substantial effort was made to gather data and information on the transboundary water management of the Souris River by the International Souris River Board as discussed in Chapter 3. The Methods section of Chapter 4 reiterates the operational assumptions for each action alternative and discloses how the Souris River flow data were used to determine operational impacts. The SEIS discloses that the "impact analysis focuses on the Souris River immediately downstream of the intakes in Minot where impacts would be most pronounced, and accrual of tributary flows and groundwater contributions would serve to lessen the effects with distance downstream from the intakes." The SEIS also acknowledges "…the rates at which flows change along the Souris River between Minot and Verendrye have not been determined because there are not flow data available between the two gages." Verendrye is 86 downstream of the Minot

gage. The *Changes in Quantity and Timing of Souris River Flows* is specifically addressed in each alternative proposing to use the river as a water source. This discussion for each alternative clearly describes how the 20 cfs minimum flow requirement at the international border may be affected by the alternative based on the data available for the analysis.

Response 28-5 – Reclamation has committed to preparing an adaptive management plan in compliance with DOI guidelines and has stated this would be done as part of future design phases associated with the selected alternative. This is discussed in detail in Chapter 4 of the SEIS and the DOI guidelines are readily available.

Reclamation has committed to do adaptive management planning with respect to the concerns relative to aquatic invasive species and the treatment efficacy of the Biota WTP. Reclamation will coordinate with the project sponsors, EPA and others, as appropriate, in the development of the adaptive management framework for the operation & maintenance of the Biota WTP following a decision in the NEPA process. The consideration of planning and monitoring tasks to be included in an adaptive management plan are dependent on the biota WTP option included in the alternative selected for the Project. That selection will occur in the Record of Decision. The Conventional Treatment Biota WTP option proposed in the Final SEIS includes treatment processes for disinfection and inactivation, as well as the physical removal of biota. The effectiveness of these treatment technologies are well documented and therefore the planning and monitoring tasks included in an adaptive management plan for this biota WTP option would be different than a plan for other Biota WTP options evaluated in the SEIS.

Authorizing legislation established a Municipal, Rural and Industrial Grant Program for the development of water supply projects such as the Northwest Area Water Supply Project and this grant program limits Reclamation's role to planning and construction of such projects not future operations and maintenance. This is discussed in chapter 1.

Response 28-6 – EPA has communicated with Reclamation that their recommendation to more completely describe effects of the Draft EIS's preferred alternative was tied to the identification of the Chlorination/UV Inactivation Biota WTP option as preferred in the Draft EIS (see comment 28-1). By identifying a different Biota WTP option for the preferred alternative in the Final SEIS that has the capability to remove DBP precursors, EPA's comment has been addressed. Use of the Conventional Treatment Biota WTP option greatly increases the capability to remove DBP precursors and, consequently, reduces the actual DBPs formed in the distribution system.

Reclamation recognizes there is a potential risk, and if that potential risk is realized by the Project, the Project would adapt to ensure compliance with all EPA drinking water regulations. The Project is fully committed to compliance with NPDWRs which are regulated by the North Dakota Health Department in North Dakota and EPA.

Response 28-7 – Reclamation acknowledges the potential for climate change to affect surface water quality, including water temperature, nutrient concentrations, and algal growth in Chapters 3 and 4. However, the comment is conclusory, and fails to recognize the uncertainty regarding climate change effects on water quality, particularly at the watershed level. As noted in the SEIS

chapter 4 climate change section, the timing, magnitude, and consequences of these impacts are not well understood.

Potential changes in water quality, whether related to climate change or other factors, could affect all public water systems, including the Project. And, like all other public water systems in the United States, the Project is regulated by the Safe Drinking Water Act and will be required to meet all National Primary Drinking Water Regulations. The Conventional Treatment Biota WTP option which is identified as part of the preferred alternative in the Final SEIS would provide flexibility to address the potential unforeseen changes in source water quality. This option provides the ability to add treatment processes and/or adjust operations to address future regulations.

Response 28-8 – Table 2.1 in the Draft SEIS shows the average groundwater use in 2010 for each of the Project members which totals 7.9 mgd, with 5.3 mgd (67 percent) from the Minot and Sundre aquifers. These withdrawal rates are not sustainable, as evidenced by the declining groundwater levels in the Minot and Sundre aquifers (Figures 3-11 and 3-12 in the Draft SEIS). The estimated 2060 groundwater use under the No Action Alternative would increase to 10.4 mgd, with 7.0 mgd from the Minot and Sundre aquifers. Under the Missouri River alternatives, average groundwater withdrawals would be 1.0 mgd, with up to 2.6 mgd withdrawn during periods of peak demand. Thus, groundwater withdrawals under the Missouri River alternatives would be significantly reduced as compared to either current rates or future rates under the No Action Alternative.

Anticipated groundwater withdrawals under the Missouri River alternatives would result in an improvement from the current declining groundwater trend (either a slower rate of decline, stabilization or increase in the water table level). If groundwater levels continued to decline (e.g., due to climate change) under the operation of either of the Missouri River alternatives, the Project sponsors could choose to reduce the amount of groundwater used and increase the amount of surface water used from Lake Sakakawea to meet the Project demand. The hydrologic simulations of Project withdrawals from the Missouri River are documented in SEIS Appendix D. That analysis assumed that all Project water demands would be met with Missouri River water, with no use of groundwater from the Minot and Sundre aquifers. Those simulations showed a decrease in the mean elevation of Lake Sakakawea of less than 0.1 inches under the Missouri River alternatives as compared to No Action. Thus, the effects of Project withdrawals on the Missouri River would be practically unmeasurable, either individually or cumulatively.

Response 28-9 – Reclamation completed a site specific analysis for the Project area. This information was considered during analysis of water conservation potential and is discussed in detail in the *Water Needs Technical Assessment Report* (Reclamation 2012 a) which is a supporting document for the SEIS. A summary of this information is provided in the Water Conservation section of Chapter 2 and in Appendix C – *Alternative Formulation*.

The Project need was estimated based on current water use and projected population increases as describe in the *Water Needs Technical Assessment Report* (Reclamation 2012 a), the current water use in the project area is much lower than the national average due to already implemented

conservation measures. The opportunities for the Project area to further conserve are then also limited because those measures area already in place. The Water Conservation section of Chapter 2 explains that water conservation was considered but eliminated as a stand-alone alternative because the estimated savings of approximately 750,000 gallons per day due to both passive and active conservation measures would not be enough to provide the Project area with the 26 MGD needed. Additionally, due to the uncertainties associated with estimating water needs 50 years into the future, the Project need estimate was not reduced to account for potential water conservation savings. However, the Project sponsors could continue to implement conservation measures and encourage their users to do so as a means of managing the water resources and reducing costs.

Response 28-10 – Chapter 4 of the SEIS describes the potential effects of climate change on water availability from the Missouri River and from the Souris River. The potential effects of climate change on groundwater levels in the Minot and Sundre aquifers are unknown. The SEIS also describes the potential for increased algal blooms and DPB formation due to climate change, although there is considerable uncertainty regarding these potential impacts. As a public water system, the treatment processes would be modified if necessary to meet all National Primary Drinking Water Regulations and the ability to do that is increased with the identification of the Conventional Treatment Biota WTP option as part of the preferred alternative in the Final SEIS.

Response 28-11 – Thank you for the additional information relative to cyanobacterial toxins. The SEIS has been revised to include a description of these toxins as well as discussion of each biota WTP option's ability to treat for them.

Response 28-12 – Reclamation has provided additional information and data regarding the water quality for the Missouri River in a table within the Water Resources section of Chapter 3. Additionally, the language in the SEIS has been updated to clarify the use of "primary" and "secondary" in relation to water quality, as well as discussion and/or clarification on the how changes in Souris River flows within the proposed alternatives relate to Clean Water Act impairments identified for the Souris River.

State of
North Dakota
Office of the Governor

Jack Dalrymple
Governor

September 12, 2014

Northwest Area Water Supply Project Draft SEIS
Bureau of Reclamation, P.O. Box 1017
Bismarck, North Dakota, 58502-1017

To Whom It May Concern:

I am sending this letter to provide comments on the Draft Supplemental Environmental Impact Statement (Draft Supplemental EIS) that has been issued by the Bureau of Reclamation regarding the Northwest Area Water Supply (NAWS) project. I would like to reiterate my support for the NAWS project.

The State of North Dakota has been a cooperating agency in developing the Draft Supplemental EIS with the Bureau of Reclamation over the past few years, along with the City of Minot, the U.S. Environmental Protection Agency, the U.S. Corps of Engineers, the U.S. Fish and Wildlife Service, and the Garrison Diversion Conservancy District. The findings presented in the Draft Supplemental EIS show that the NAWS project can be designed in a way to maximize effectiveness of the project while having little, if any effect on the environment. The publication of the Draft Supplemental EIS marks a major milestone for this this project. There are many stakeholders who have an interest in the project, and we will continue to work with those stakeholders as we complete the review process pursuant to the National Environmental Policy Act.

When completed, the NAWS project is designed to provide up to 26 million gallons of water per day to tens of thousands of citizens in a ten county area in northwest North Dakota. This project is very important to the state, as the portion of the state that will be served by this project has seen a substantial increase in population in recent years. The growth experienced by the NAWS communities in northwest North Dakota is important both for those communities and for the State as a whole. Although the 2010 census, which is cited in the Draft Supplemental EIS, captured some of that population increase, it understated the growth these communities are experiencing. This population increase has put significant pressure on the already-strained water resources in the area. The communities that would receive water from the NAWS project have limited supplies of water that exceeds the United States Environmental Protection Agency's primary or secondary drinking water standards. The need for reliable, high quality drinking water in that area will only continue to grow as existing water supplies there decline. 29-1

Thank you for your consideration of this very important issue, I hope we can continue working together on this water project that will help meet the growing water needs in northwest North Dakota.

Sincerely,

Jack Dalrymple

Jack Dalrymple
Governor
State of North Dakota

37:68:77

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Response 29-1 – Your statement(s) have been included as part of the record. Please refer to General Response No. 1

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United States Senate

WASHINGTON, DC 20510

Statement of Senator Heidi Heitkamp
Northwest Area Water Supply Project
Draft Supplemental Environmental Impact Statement
July 23, 2014

30

I appreciate the opportunity to provide comments on the draft supplemental Environmental Impact Statement for the Northwest Area Water Supply Project (NAWS).

Before I begin, I want to extend my thanks and appreciation to all of those here tonight. Many of you have worked for years on this project. Your will and determination have been critical in getting us to where we are today.

The need for the NAWS project is real. Since construction first began in 2002, the need and urgency for it has only increased. Economic growth in Minot and the surrounding region will increasingly depend on having a reliable supply of quality water now and well into the future. NAWS will serve as the cornerstone of that growth and will ensure tens of thousands of people in the region have access to a stable supply of quality water.

30-1

The years of study and then continued delays from the court challenges have been frustrating. I, like many in this region and those here tonight, believe the time for continued study of this project is over. Significant work has already been done on this project over the last several years and this study is hopefully the last and final step in this very long process.

The preferred alternative adequately addresses the concerns raised by our neighbors to the North and goes to great lengths to mitigate the risk of any potential transfer of biota. Quite frankly, the risk of a biota transfer from natural pathways is far greater than under the preferred alternative. And it also puts to rest the misguided claims by those downstream the project will result in significant cumulative depletions from the Missouri River system that will impact their use of the river. In fact, the depletions would be less than 0.2% when compared to the no action alternative.

I think it is important again to remind folks what North Dakota lost more than 60 years ago with the construction of the Garrison and Oahe Dams. In exchange for losing hundreds of thousands of acres of prime bottom land, the federal government made a commitment to us that we would be able to utilize the abundant source of water from Lake Sakakawea to meet our needs. Today, we are still fighting to make sure this long-standing federal commitment to our state is met, and NAWS is part of that promise that has yet to be fully realized.

In the end, this project is about moving water from an abundant source to a place of great need. It has been studied, studied and studied again. The time is now to move forward on this critical project and bring it to a final conclusion.

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Response 30-1 – Your statement(s) have been included as part of the record. Please refer to General Response No. 1

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July 21, 2014

31

Ms. Alicia L. Waters
Program Analyst
Bureau of Reclamation
Dakotas Area Office
304 East Broadway Avenue
Bismarck, ND 58501-4082

Dear Ms. Waters,

I am writing to express my interest in the Draft Supplemental Environmental Impact Statement (SEIS) for the Northwest Area Water Supply (NAWS) Project issued by the Bureau of Reclamation (BOR) at the U.S. Department of the Interior on June 20, 2014. I appreciate your time, attention, and effort toward this important issue.

As you well understand, North Dakota enjoys many great benefits due to the unprecedented economic growth we have experienced for more than a decade. However, this growth has brought challenges for many of our communities, especially those on or near the oil patch, including Minot. Most notably, our communities have faced ever increasing demands on our utilities' infrastructure, straining our capacity to ensure access to vital resources, such as electricity, water, and roads. 31-1

The North Dakota State Water Commission sought to address this situation early on by sponsoring the NAWS Project, which would deliver a reliable, high quality water supply to communities and rural water systems in the northwestern region of our state for municipal, rural, and industrial uses. Unfortunately, this much-needed project has faced delays and legal challenges since 2002, which have required the BOR to undertake environmental studies of the project. These delays have only made the need for the NAWS Project more clear.

Although completing the final legs of this project has been a long road, I was encouraged by the recent Draft SEIS, which is a big step forward. It is my hope that this process moves forward in a timely manner, allowing for completion of the NAWS Project in the most cost-effective manner possible, and ensuring the continued health and prosperity of our communities in northwestern North Dakota. Again, thank you for your time. Please keep me informed of the review process, and feel free to contact me with any updates or inquiries you may have.

Sincerely,

John Hoeven

John Hoeven
U.S. Senator

10:44

Response 31-1 – Your statement(s) have been included as part of the record. Please refer to General Response No. 1

APPENDIX L
Biological Assessment

Note: The Bureau of Reclamation prepared this Biological Assessment and has transmitted it to the U.S. Fish and Wildlife Service. A formal response from the U.S. Fish and Wildlife Service had not been received by the publication of this Final SEIS.

Northwest Area Water Supply Project
Supplemental Environmental Impact Statement

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RECLAMATION

Managing Water in the West

Biological Assessment for the Northwest Area Water Supply Project, North Dakota

Dakotas Area Office – Bismarck, ND
Great Plains Region

U.S. Department of the Interior
Bureau of Reclamation
Great Plains Region
Dakota Area Office March 2015

Table of Contents

List of Acronyms and Abbreviations

BA	Biological Assessment
BMP	Best Management Practices
Corps	U.S. Army Corps of Engineers
DOI	Department of the Interior
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
IPaC	Information Planning and Conservation System
MAF	million acre feet
mgd	million gallons per day
MR&I	Municipal, Rural & Industrial
NEPA	National Environmental Policy Act
NDES	Fish and Wildlife Service North Dakota Ecological Services Field Office
Project	Northwest Area Water Supply Project
Reclamation	Bureau of Reclamation
Service	U.S. Fish & Wildlife Service
SCPP	Snake Creek Pumping Plant
SEIS	Supplemental Environmental Impact Statement
SWC	State Water Commission
UV	ultraviolet
WTP	water treatment plant

Introduction

The Department of the Interior, Bureau of Reclamation (Reclamation) completed a Draft Supplemental Environmental Impact Statement (SEIS) for the Northwest Area Water Supply Project (Project) that was released June 20, 2014 to the public as well as to the Fish and Wildlife Service North Dakota Ecological Services Field Office (NDES), Bismarck, ND. No comments were provided by the NDES on the Draft SEIS. Analyses discussed in the SEIS are the basis of this document and are incorporated by reference, as appropriate. In the SEIS, Reclamation identified a preferred alternative - the Missouri River and Groundwater Alternative. In compliance with regulations found at *50 CFR Part 402 Interagency Cooperation – Endangered Species Act of 1973, as Amended; Final Rule* and in compliance with the Endangered Species Act (ESA), Reclamation determined that a biological assessment (BA) was appropriate for this proposed Project.

The specifics of the analysis of effects and the methodologies used for this BA are identified by habitats (water, land, vegetation, wetlands, and riparian areas) and wildlife, including federally protected species and are discussed in the SEIS. The conclusions of this BA are based on the investigative efforts of the SEIS and summarized here in the BA. Therefore, the SEIS is incorporated by reference into this BA.

In this BA, Reclamation has determined that the Missouri River and Groundwater Alternative may affect but is not likely to adversely affect the interior least tern, piping plover, critical habitat for the northern Great Plains breeding population of the piping plover, Red knot, pallid sturgeon, or whooping crane. Furthermore, Reclamation has determined this proposed Project would not affect the endangered gray wolf, threatened Dakota skipper or candidate or proposed species including the Sprague's pipit, and northern long-eared bat, respectively. The conclusions of this BA regarding the effect of the preferred alternative on threatened and endangered species are summarized in the SEIS and the BA is included as an Appendix to the SEIS.

Background and History

Federal Action and Section 7 Consultation History

The SEIS supplements the Environmental Impact Statement (EIS) on Water Treatment (Reclamation 2008) that Reclamation completed for the proposed Project, in addition to re-examining and updating all prior National Environmental Policy Act (NEPA) and ESA analyses that have been completed in connection with the proposed Project.

The Project was authorized by the Garrison Diversion Reformulation Act of 1986 and the Dakota Water Resources Act of 2000 as part of the Municipal, Rural, and Industrial (MR&I) Grant Program. It is intended to address long-standing water supply and water quality problems experienced by residents of northwestern North Dakota and to provide adequate, high-quality water to serve the projected population growth in the Project Area through 2060.

The planning, design, and construction of the Project are a cooperative effort between Reclamation and the State of North Dakota. Reclamation is providing technical and financial assistance for the planning and construction of this proposed Project. The North Dakota State Water Commission (SWC) is the Project sponsor and has worked extensively with the communities and rural water systems involved to develop a plan that would meet their water needs.

An Environmental Assessment (EA) (Houston Engineering Inc. et al. 2001) and Finding of No Significant Impact (FONSI) were completed for the Project in 2001 (Reclamation 2001). Potential impacts to federally threatened and endangered species were evaluated in the Final EA and documented in the FONSI (Reclamation 2001). The U.S. Fish and Wildlife Service (Service) concurred with Reclamation's no effect findings for threatened or endangered species expected from construction, operation or maintenance of the Project (Memorandum from Allyn Sapa, Field Supervisor, Service, Bismarck, ND to Dennis Breitzman, Area Manager, Reclamation dated July 23, 1997). Any potential effects, including those identified during final design and construction would be avoided through design features and mitigation measures.

Construction of certain Project components began in April 2002. In October 2002, the Province of Manitoba, Canada, filed a legal challenge in the U.S. District Court for the District of Columbia claiming that the EA on the Project was inadequate under NEPA (*Government of the Province of Manitoba vs. Ken Salazar, Secretary, U.S. Department of the Interior et al.*). A court order issued in February 2005, remanded the case to Reclamation for completion of additional environmental analysis. A second court order issued in April of that year allowed construction to proceed on Project features that would not predetermine a future decision on water treatment to reduce the potential risk of transferring invasive species.

Construction continued between 2002 and 2012 on the 45 miles of main transmission pipeline from Lake Sakakawea to the City of Minot, along with several segments of the bulk distribution pipelines and associated facilities. During this construction all design features and mitigation measures to offset any potential impacts to federally listed species were implemented in collaboration with the designated Impact Mitigation Assessment team identified in the original Project EA/FONSI. These actions are summarized in Appendix A of the SEIS.

In response to the Court's order for further analysis, Reclamation initiated an EIS focused on different water treatment methods to reduce the risk of transferring potentially invasive species from Lake Sakakawea, the then-proposed water source for the Project into the Hudson Bay basin. The analysis focused on environmental impacts that could occur due to pipeline leaks and failure of the water treatment systems; however, Reclamation also updated all information on federally listed species and concluded that a "no effect" determination was appropriate, as concluded in the previous EA and FONSI. Addition environmental commitments were made to avoid any potential impacts to federally listed species. The Final EIS on Water Treatment was published in December 2008 (Reclamation 2008; documents are available electronically at http://www.usbr.gov/gp/dkao/). Reclamation signed a Record of Decision (ROD) in January 2009, selecting an alternative using chlorination and ultraviolet radiation to disinfect and inactivate organisms that may be in the water before it would be delivered into the Hudson Bay basin. Final treatment to drinking water standards would occur at the existing Minot water treatment plant (TP) (Reclamation 2009).

In February 2009, the Department of Justice notified the court that Reclamation had completed the Final EIS and ROD. Shortly thereafter, the Province of Manitoba filed a supplemental complaint contending that the Final EIS was insufficient. Additionally, the State of Missouri filed a complaint against the Department of the Interior and the U.S. Army Corps of Engineers (Corps) in the same U.S. District Court. The State of Missouri alleged that Reclamation's Final EIS was insufficient and that the Corps failed to complete a separate NEPA analysis for the Project. The court consolidated the Missouri suit with the Manitoba suit. In March 2010, the court issued an order remanding the case to Reclamation for further environmental review with respect to two specific issues: (1) cumulative impacts of water withdrawals on Lake Sakakawea and the Missouri River; and (2) consequences of transferring potentially invasive species into the Hudson Bay basin. The 2005 injunction was modified by the court in 2013, halting further construction pending the completion of further NEPA review.

During the process of preparing the SEIS, Reclamation requested a list of species and critical habitat for the purposes of updating the species list for this Project and updating section 7 consultation under the ESA. This new list of species was obtained from the Service's IPaC (Information, Planning, and Conservation System) for this Project in 2012. This list was confirmed by the Service in 2013 and 2014 (personnel communication with Terry Ellsworth and Heidi Riddle respectively – both with the North Dakota Ecological Services Field Office Bismarck, ND). The Service also participated in Cooperating Agency meetings and was also allowed to review preliminary drafts of the SEIS for trust resource issues including federally listed, candidate and proposed species, and critical habitat. No comments were provided by the Service on the sections of the preliminary draft SEIS that addressed federally listed or candidate species or critical habitat under the ESA.

This biological assessment is based on the identified preferred alternative; the Missouri River and Groundwater Alternative. Reclamation is preparing a Final SEIS and will issue a Record of Decision to conclude the NEPA process. If significant changes are made in future design phases of the selected alternative or new information becomes available regarding listed species or critical habitat after the ROD is approved that would change the potential impacts to federally listed species or critical habitat beyond those described in this BA, Reclamation would re-initiate section 7 consultation with the Service to supplement the BA, as appropriate.

Description of the Proposed Project and Project Area

The purpose of the proposed Project is to provide a reliable, high-quality water supply to communities and rural water systems in northwestern North Dakota for MR&I uses. The Project is sized to serve projected population growth to the year 2060. The water provided by the Project would need to meet the primary drinking water standards established by the Safe Drinking Water Act. The proposed action is to construct a project to provide drinking water to local communities and rural water systems in northwestern North Dakota, including the City of Minot. The Project would supply bulk water to specific delivery points, and each community or

rural water system would be responsible for connecting to the distribution line and delivering the water through their own water system to the end users.

The Project Area as defined in the SEIS is the 10-county region where bulk water service potentially could be distributed. A bulk water distribution system supplies water to communities and rural water systems, not individual water users; the term "bulk" does not refer to the size of the system. The Project Area (Figure 1) spans portions of the Missouri River basin and the Hudson Bay basin. Figure 2 shows the Project Area in greater detail. Reclamation, as part of their NEPA analysis on this Project evaluated a full range of alternatives and identified five alternatives for further analysis including the No Action Alternative and four action alternatives. The action alternatives fell into two categories - those using only in basin water sources (Souris River and groundwater) and those proposing to use water from the Missouri River. The preferred alternative, the subject of this BA, is the Missouri River and Groundwater Alternative which would blend Missouri River water from Lake Sakakawea with groundwater from the Minot and Sundre aquifers.

For the purposes of NEPA and this BA, Reclamation determined the affected environment is the geographic area containing resources that could be affected by new construction required to implement the Project alternatives. (Impacts of existing Project components already have occurred and are described in the SEIS, Appendix A, along with the environmental commitments that have been implemented. Previous section 7 consultation led to a no effect conclusion.) The affected environment is not the same for all resources. For resources that would be affected primarily by construction activities (e.g., vegetation and agricultural resources), the affected environment typically would be limited to the construction corridor (assumed to be ½ mile on either side of proposed pipeline segments and facilities such as pump stations, storage reservoirs, and intake sites). The affected environment for other resources would be broader. For example, impacts on Missouri River listed species would include the Missouri River, bank to bank from Ft. Peck Reservoir to the terminus of the Missouri River at the Mississippi River. This was done as the Missouri River operates as an integrated system and any withdrawal of water may potentially affect Missouri River flows and operations.

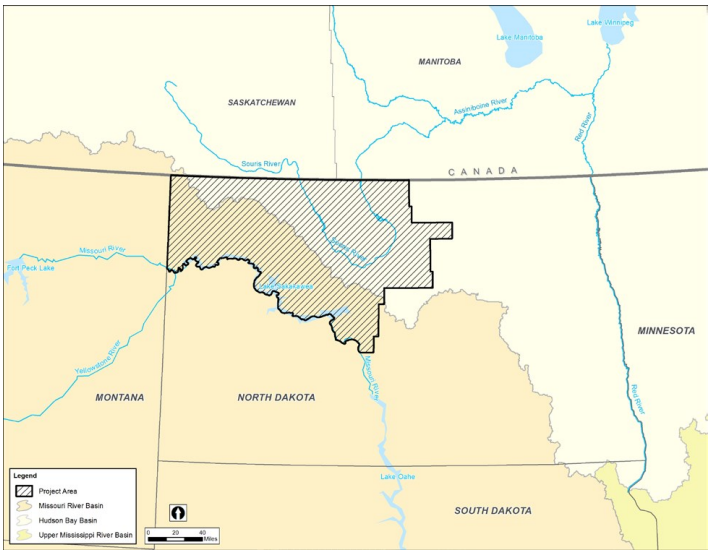

Figure 1 Regional Overview

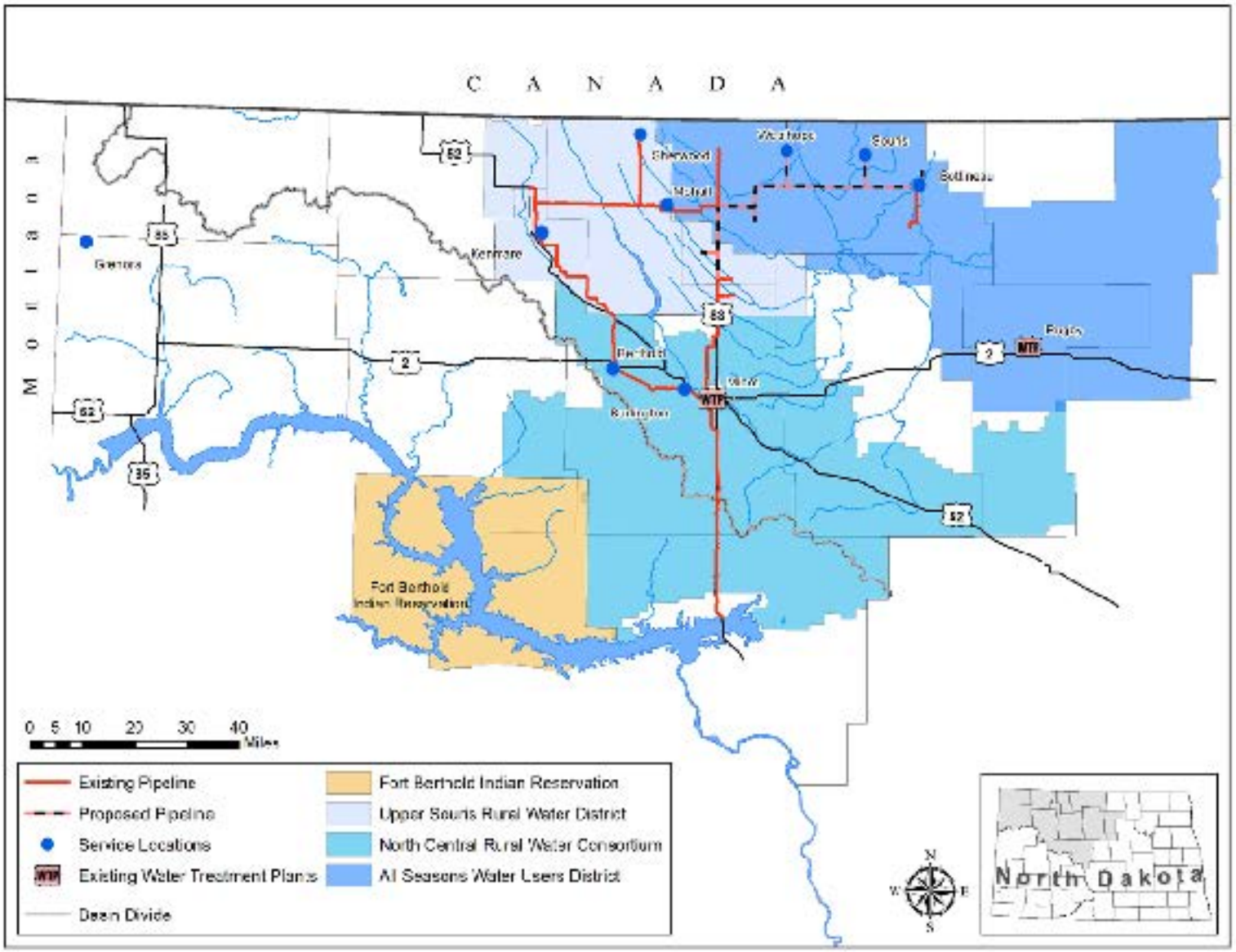

Figure 2 - Project Area

Proposed Federal Action–Missouri River and Groundwater Alternative

This alternative is the preferred alternative and uses Missouri River water, which would be conveyed to the Minot WTP and blended with groundwater from the Minot and Sundre aquifers. Following treatment at the Minot WTP to meet primary and secondary Safe Drinking Water Act requirements, water would be distributed to Project members through the bulk distribution system. The alternative components are listed in Table 1 below. Some of the components are existing and others are proposed. For details of the existing components, refer to Appendix A of the SEIS. The proposed components are described in Chapter 2 of the SEIS and additional engineering details are provided in Appendix J of the SEIS.

A significant portion of the bulk distribution system has been completed, as described in the "Previously Constructed Components" section of Chapter 2 of the SEIS. The proposed portions of the bulk distribution system would include the remaining pipeline segments, storage reservoirs, and pump stations (Figure 3). This alternative would include the modifications to the Snake Creek Pumping Plant (SCPP) (Figure 4) as the intake option and Conventional Treatment as the Biota WTP option. Modifications to the SCPP would include complete removal of one of the three existing pumping units, revising the floor plan, and installing pumps and piping appurtenances specific for Project purposes. (SEIS, Appendix C of Appendix J). The discharge pipe would exit the SCPP within the existing buried discharge pipe. Additional segments of the main transmission pipeline would be constructed to meet up with the pipe exiting the SCPP as illustrated in Figure 4.

Table 1 Missouri River and Groundwater Alternative Components

Component	Status
Biota WTP and Pump Station	Proposed
South Prairie Storage Reservoir	Proposed
Transmission Pipeline (buried)	Existing
Bulk Distribution Pipelines (buried)	Existing & proposed
Minot WTP Upgrades	Existing & Proposed
High Service Pump Station and Reservoir at Minot WTP	Existing
Storage Reservoirs (near Burlington, Berthold, and Kenmare)	Existing
Storage Reservoirs (near Lansford and Bottineau)	Proposed
Pump Stations (near Berthold and south of Kenmare)	Existing
Pump Stations (near Lansford, Mohall, Tolley, Renville County Corner Stations, and Bottineau [2 units])	Proposed
Rugby Water Treatment Facility Upgrades	Existing
Groundwater Collection Facilities	Existing

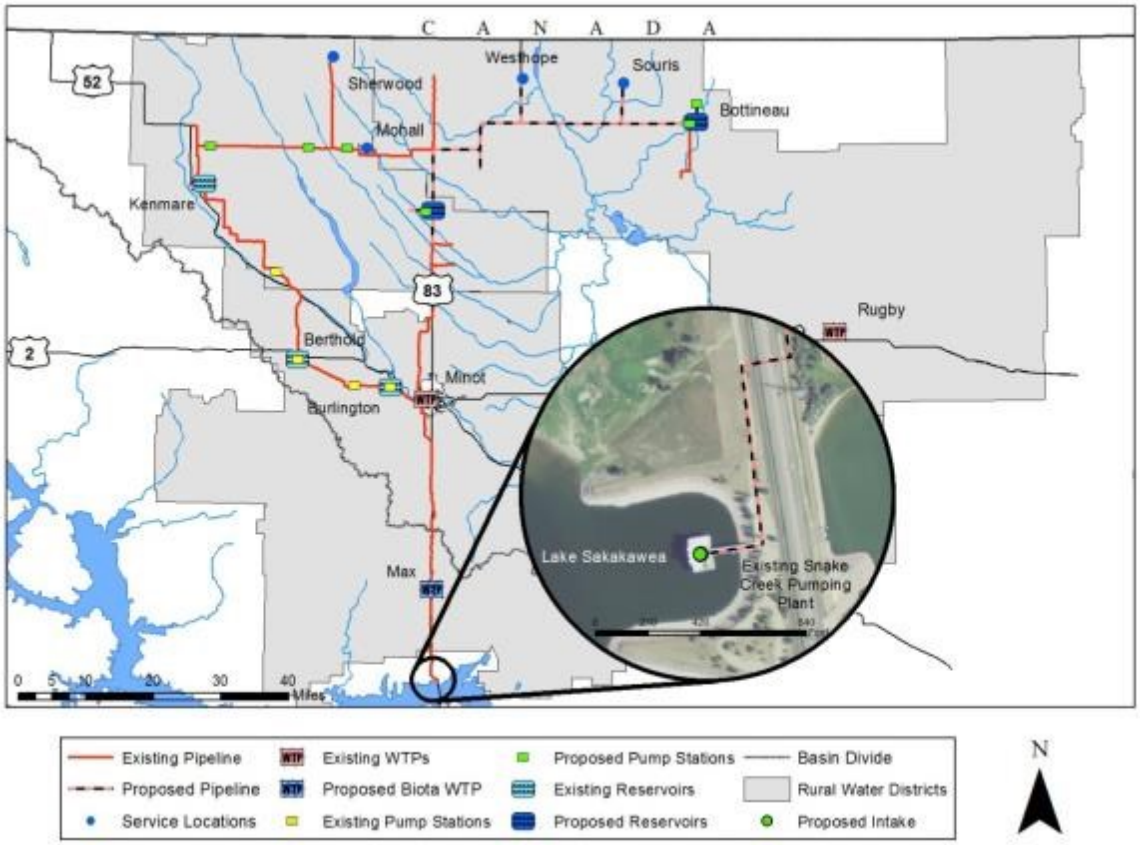

Figure 3 Proposed and Existing Pipelines

Figure 4 Modifications at the SCPP Intake Option

The water treatment processes currently used at the Minot WTP would not change substantially. The capacity of the water treatment plant would be increased from 18 to 27 million gallons per day (mgd), and a static mixer would be added to provide adequate blending of the source waters prior to treatment.

The Conventional Treatment Biota WTP Option includes the following processes; Coagulation/Flocculation, Dissolved Air Flotation, Gravity Filtration, ultraviolet (UV) irradiation followed by chlorine disinfection and conversion to chloramines. This option would be designed to provide greater than 3-log inactivation/removal of Giardia and greater than 4-log inactivation/removal of viruses (SEIS, Table 2-23). This option would also include UV disinfection designed to achieve greater than 3-log inactivation of Cryptosporidium and other similar types of organisms. Design details are included in Appendix J of the SEIS.

An analysis to determine the manner in which this alternative would be operated was conducted to evaluate impacts on affected resources and estimate costs of operations. Actual operations of the alternative will depend on conditions at that time and will be further refined during more detailed engineering design. In order to define how the Missouri River and Groundwater Alternative would be operated the following assumptions were made:

Water would be withdrawn from the Minot and Sundre aquifers at a minimum rate of 1.0 mgd up to 2.6 mgd during peak water use (June, July and August). Water would be withdrawn from the Missouri River at rates equal to the Project demand less direct delivery from the Minot and Sundre aquifers.

The amount of water that would be taken from each of the water sources was based on the operation assumptions identified above. Figure 5 illustrates how the Missouri River and Groundwater Alternative would be operated during an example normal-flow year, showing the amount of Missouri River water that would be used, compared to groundwater from the Minot and Sundre aquifers.

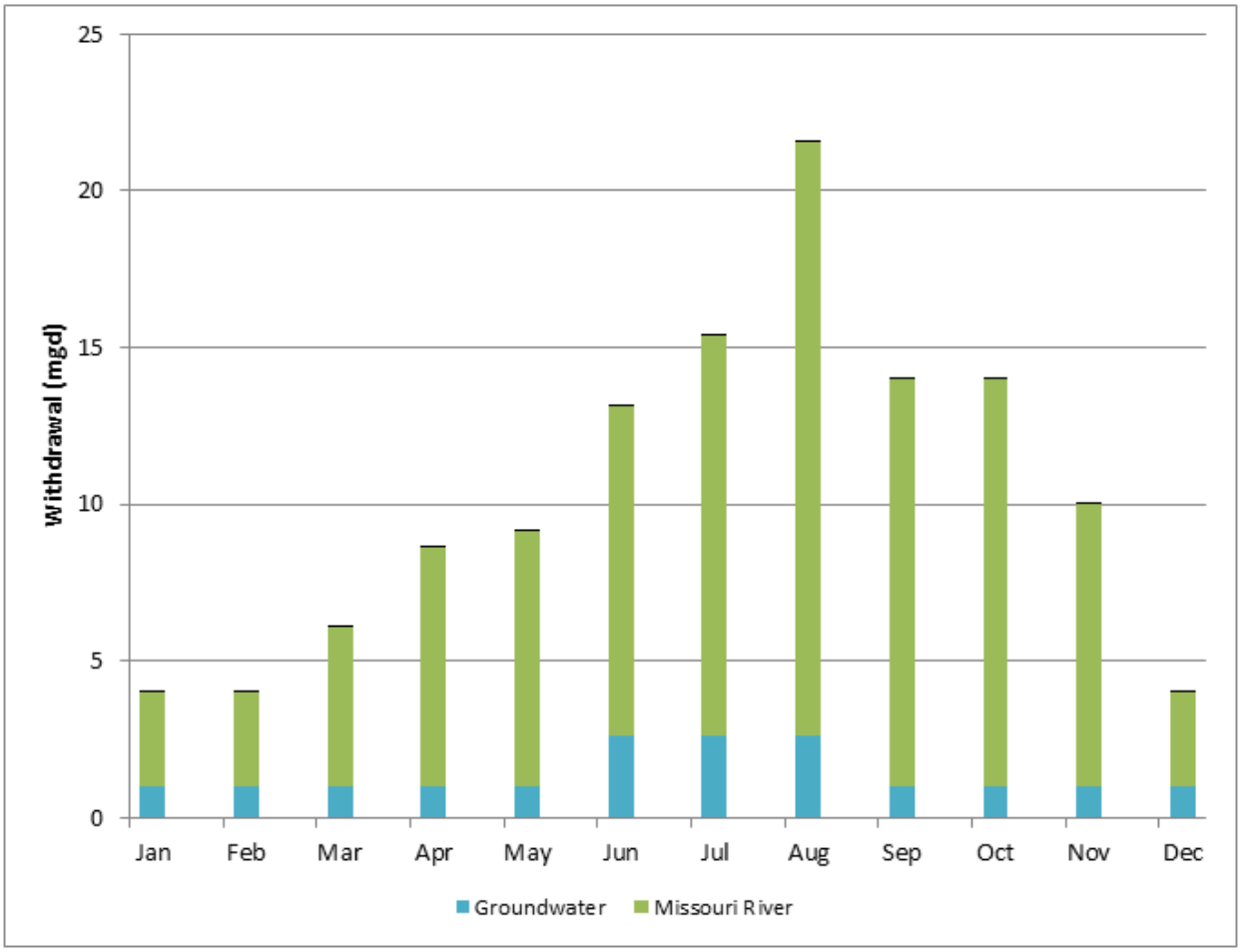

Figure 5 Missouri River and Groundwater Alternative Operations

Best Management Practices and Environmental Commitments

As part of the Project description, Reclamation considered best management practices identified in the SEIS. These practices are methods intended to avoid or reduce effects while an action is being implemented and are commonly implemented as part of projects of this nature. Reclamation has also committed to environmental commitments as part of the NEPA process as documented in the SEIS. These commitments are methods or plans to reduce, offset, or eliminate adverse Project effects. Environmental commitments could include one or more of the following:

- Avoiding effects.
- Minimizing effects by limiting the degree or magnitude of an action.
- Rectifying effects by restoration, rehabilitation, or repair of the affected environment.
- Reducing or eliminating effects over time.
- Compensating for the effect by replacing or providing substitute resources or environments to offset the loss.

Best management practices and environmental commitments are both considered as part of the Project description for purposes of this BA and would be implemented before or during

construction. The specifics of these practices and commitments are documented in Appendix F of the SEIS. Those specific to federally listed species are listed below:

Best Management Practices

- Construction activities would comply with all appropriate federal, state, and local laws and regulations. This list may include but is not limited to stormwater discharge permits, National Pollution Discharge Elimination System permits, Clean Water Act, and the Migratory Bird Treaty Act.
- In consultation with the Service, the following screen and velocity recommendations would be incorporated into the design of intake structure(s) of the Project:
    1. Intakes shall be screened and maintained with 1/4-inch or smaller mesh size opening.
    2. Johnson intake screens shall have wire spacing 1/8 inch or smaller.
    3. Intake velocities shall not exceed 1/2 foot per second with 20 feet of overhead water.
    4. Intake velocities shall not exceed 1/4 foot per second where 20 feet of overhead water cannot be achieved.
    5. The intake shall be placed at a maximum practicable depth in relation to extreme, low water elevations experienced between 2003 and 2008.
    6. Intakes shall be marked so they are observable during day and night hours, as appropriate.
- To the extent practicable, construction would avoid:
    1. Wetlands
    2. Federal, state, and local wildlife areas and refuges
    3. Native prairie

  However, if these areas are disturbed during pipeline construction, topsoil would be replaced and revegetation plans would be specifically designed for these areas to ensure reestablishment of a similar type and quality of native vegetation recommended by local National Resources Conservation Service office and approved by the landowner. Impacts to federal or state wildlife areas may require additional agency review.
- Identified potential habitat for federal or state threatened, endangered, critical habitat, and sensitive species would be avoided if feasible.
- Construction would be prohibited within 1/2 mile of designated piping plover or interior least tern breeding areas during the breeding season (April 15 through August 31) when these species are present.
- If threatened or endangered species are identified and encountered during construction, all ground-disturbing activities in the immediate area would be stopped to consult with the Service and determine appropriate steps to avoid affecting the species.
- Project power lines would be:
    a. Buried (Service 2010) to minimize electrocution hazards to raptors and minimize impacts to all birds, bats, and particularly benefit whooping cranes. Use Suggested Practices for Avian Protection on Power Lines - The State of the Art in 2006, Avian Power Line Interaction Committee, Edison Electric Institute, Raptor Research Foundation, Washington, D.C., or similar standards would be used. Available online at http://www.eei.org/ourissues/TheEnvironment/Land/Documents/AvianProtectionPlanGuidelines.pdf (see pages 31 through 42 of these guidelines)

or

b. Any new, aboveground power lines and an additional equal length of existing power lines in the same vicinity must be marked with visibility enhancement devices to benefit migrating whooping cranes as well as all migratory birds and bats. Construction within 660 feet of visible nesting bald eagles or other raptors would be avoided from February through August.

- If forested habitat is identified prior to construction activities the Impact Mitigation Assessment team would determine if bat surveys are required. If any tree (with a diameter of greater than 3 inches) removal activities cannot be avoided between April and September, then northern long-eared bat surveys would be conducted to confirm absence of the species. If any suitable roost sites, possible hibernacula, or the species are observed during the onsite meeting, then any steps taken to avoid and minimize disturbance of this habitat would be documented.

Environmental Commitments

- Pipelines, water treatment plants, and pump station facilities would be realigned, where feasible, to avoid sensitive wildlife habitat. If sensitive wildlife habitat cannot be avoided then mitigation would be determined in coordination and agreement with the Impact Mitigation Team including pertinent regulatory agencies.
- Preconstruction surveys with the Impact Mitigation Team would identify sensitive habitats and wildlife use before construction to allow implementing best management practices and mitigation measures.

Identification of Action Area

As noted in the previous description of the project area, the action area for the Missouri River and Groundwater Alternative for purposes of this BA includes areas that would be directly or indirectly affected by construction and operation of this proposed Project. Figures 2 and 3 illustrate the areas in the Missouri River and Souris River Basins that would be affected by the proposed action, including components listed in Table 1 and modifications to the Snake Creek Pumping Plant for the intake and Conventional Treatment as the Biota WTP option. Counties included in the Project area are Bottineau, Burke, Divide, McHenry, McLean, Mountrail. Pierce, Renville, Ward, and Williams (Figure 2). In addition, the Missouri River Basin is included in the action area as discussed above in the Description of the Proposed Project and Project Area section.

The action area identified in this BA is based on Reclamation's assessment of the potential direct and indirect effects of the proposed action (50 CFR 402.02). For the purposes of the NEPA, analysis of the proposed Project considered a wider geographic scope, because the range of alternatives covered a large geographic area. The geographic scope encompassed portions of two major drainage basins – the Hudson Bay Basin, of which the source groundwater in the Minot and Sundre aquifers are a part, and the Missouri River Basin, which would serve as a source of water. Both of these basins and their associated natural resource areas that may provide habitat for federally listed species are thoroughly described in Chapter 3 of the SEIS and are incorporated by reference.

Status of Species and Critical Habitat

Species List from the U.S. Fish and Wildlife Service

Reclamation requested a list of species for the purposes of section 7 consultation under the ESA from the Service's IPaC for this Project in 2012. This list was confirmed in 2013 and 2014 by Service staff at the North Dakota Field Office in Bismarck, North Dakota. Two species were added since the 2013 list - the red knot and the northern long-eared bat. Updated species status of all species considered in this consultation is listed in Table 2.

Table 2 Federally listed species that may occur in the Project Area

Species	Critical Habitat	Federal Status[1]
Red Knot		T
Sprague's Pipit		C
Interior Least Tern		E
Piping Plover	X	T
Whooping Crane		E
Pallid Sturgeon		E
Gray Wolf		E[2]
Northern Long-eared Bat		PE
Dakota Skipper	XP	T

[1] T = threatened, E = endangered, C = candidate, D = delisted, P=proposed.
[2] The gray wolf was delisted in MN and in the portion of North Dakota north and east of the Missouri River upstream to Lake Sakakawea and east of the centerline of Highway 83 from Lake Sakakawea to the Canadian border and remains endangered in western ND. This population in ND had been proposed for delisting (Federal Register 78(114): 35664-3579, June 13, 2013) but a recent court decision (December 2014 Civil Action No. 13-186(BAH) Humane Society v. Sally Jewell (DOI) v. State of Wisconsin etc.) vacates designating a western Great Lakes DPS and delisting that DPS has been vacated and the species is now considered endangered throughout ND.

Interior Least Tern (Endangered)

Population Rangewide The interior least tern nests on the Mississippi, Missouri, Arkansas, Red, Rio Grande, Kansas, Platte, Loup, Niobrara, Canadian, Cheyenne, Ohio, and Yellowstone rivers. Rangewide estimates from 1999 indicated that about 7,400 birds were in existence (Service 2000). More recent estimates by the Service (2005) report a considerable increase, and the population is now estimated at about 12,000 birds. This does not represent a complete census, however, because certain segments of some rivers are surveyed in one year but not in another. The Service (2005) reports that this total estimate is likely a minimum. The Interior Least Tern Recovery plan (Service 1990) established a goal of 7,000 terns rangewide, maintained for 10 consecutive years. The current estimate of over 12,000 terns greatly exceeds this goal; however, the recovery plan goals for least terns in all drainage basins have not been reached, and most areas have not been monitored for 10 years.

The first complete rangewide survey for interior least terns was conducted in 2005 (Lott 2006). A total of 17,587 interior least terns were counted in association with 491 different colonies. Just over 62 percent of these birds were on the lower Mississippi River (10,960 birds on over 770 river miles). Four additional river systems accounted for 33.9 percent of the remaining least terns, with 12.1 percent on the Arkansas River system, 10.4 percent on the Red River system, 7.1 percent on the Missouri River system, and 4.3 percent on the Platte River system. Smaller numbers were counted on other rivers, including the Ohio River system (1.5 percent), the Trinity River system in Texas (1.5 percent), the Rio Grande/Pecos River system in New Mexico and Texas (0.8 percent), and the Kansas River system (0.5 percent) (Lott 2006).

Missouri River Mainstem Reservoir System Least terns are found nesting throughout the Missouri River System. The majority of these birds nest on free-flowing stretches of the Missouri River below Fort Peck, Garrison, Fort Randall, and Gavins Point dams. The shorelines of the mainstem reservoirs also provide important nesting habitat, particularly during dry years when reservoir levels are declining. Least tern adult numbers on the Missouri River have varied from a low of 273 birds in 2011 to a high of 1,010 birds in 2007 (Figure 6). The average number over 26 years of record has been 731 adults (Corps 2013b). The Corps (2013b) found that least tern adults on the Missouri River have decreased in each of the past 4 years until an increase in 2012 following the 2011 flood. As noted above, the 273 least tern adults in 2011 represents a record low for the species in 26 years of censuses on the Missouri River. The decline could be attributed to record inflows into the Missouri River System in 2011 that inundated much of the birds' habitat within the system. The increased bird numbers are attributed to large areas of new habitat created by the record flows of 2011 and receding water levels experienced in 2012.

Regulation of the Missouri River System follows an annual cycle that is described in detail in the Master Water Control Manual (Corps 2006) and summarized in the "Water Resources" section in Chapter 3 of the SEIS. The Master Water Control Manual requires the Corps to operate the Missouri River System to minimize take of least terns and piping plovers during the nesting season (approximately May 1 to August 15). Since 1986, flow releases from all Missouri River mainstem dams except Oahe and Big Bend have been modified to accommodate least tern and piping plover nesting. Daily hydropower peaking patterns are developed prior to nest initiation in early to mid-May. Generally, dam releases are set during the nesting season to ensure steady flows in areas containing the bird's habitat. During drought, water conservation measures are initiated, and releases are made on a peaking cycle of 2 days down and 1 day up, usually during the last two-thirds of May to keep birds from nesting at low elevations.

North Dakota In North Dakota, least terns nest on sparsely vegetated sandbars on the Missouri and Yellowstone rivers and on shorelines of Missouri River reservoirs, including Lake Sakakawea and Lake Oahe. The majority of least terns in North Dakota nest on the Garrison Reach of the Missouri River. Least terns feed mostly on small fish. Breeding season lasts from May through August, with peak nesting from mid-June to mid-July.

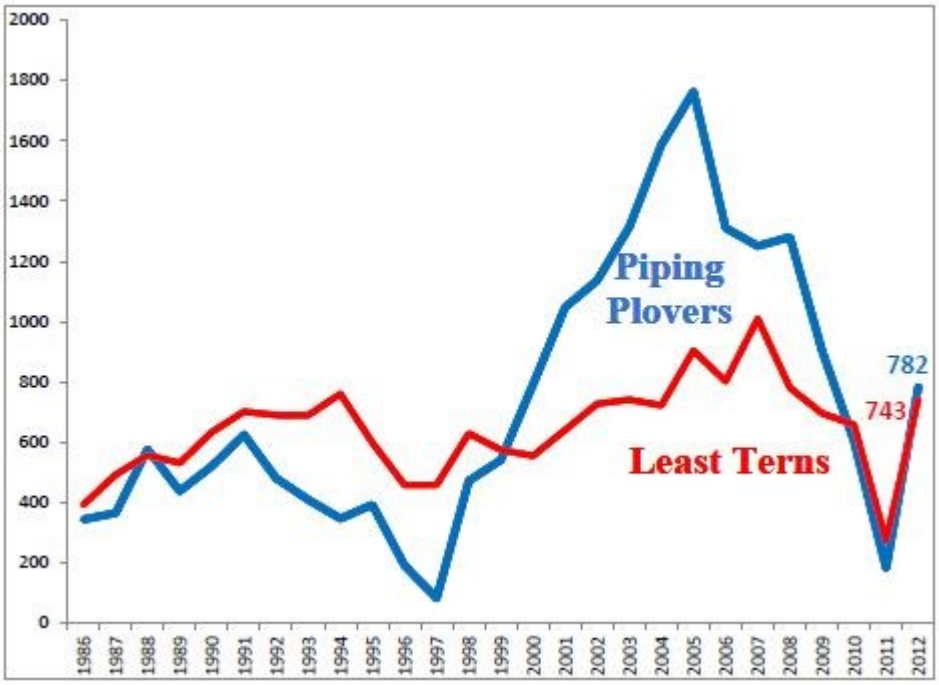

Figure 6 Missouri River Least Tern and Piping Plover Adult Census (1985 – 2012)
Source: (Corps 2013b)

Piping Plover (Threatened)

Population Rangewide The Service listed piping plovers as endangered in the United States Great Lakes area and Canada (Ontario), while the remaining Atlantic and northern Great Plains birds, including those in Canada (Manitoba), were listed as threatened in 1985 (50 FR 50726). Migrating piping plovers and those in wintering areas were classified as threatened (Service 2003). The Service considers the listed entities to be composed of three separate breeding populations: northern Great Plains, Great Lakes, and Atlantic Coast piping plovers.

Critical habitat was designated separately for the northern Great Plains and Great Lakes populations, as well as for wintering populations. The biological opinions for the Platte River Recovery Implementation Program (Service 2006) and the operation of the Missouri River (Service 2000) indicate that the Service has determined that the northern Great Plains population of the piping plover is an appropriate population to consider for purposes of section 7 consultation. This is supported by the distinct population segment analysis in the Service's *5-year Review and Summary Evaluation* for this species (Service 2009).

The SEIS addresses the northern Great Plains population. A rangewide census and habitat characterization of the piping plover was conducted across all known suitable breeding and winter habitat in 1991, 1996, 2001, 2006, and 2011. This International Piping Plover Census provides the most reliable information on rangewide population trends. The census is conducted every 5 years and provides comprehensive data on the distribution and abundance of all piping plover populations, including the northern Great Plains population. However, the 2011 final census results are not yet available and the census was very much affected by record high water levels throughout the northern Great Plains. Preliminary results from the 2011 census for the Great Plains and Prairie regions show the lowest record of all census years, with numbers just

over 2,000 birds (Elliott-Smith and Haig 2012). The highest number of plovers was found during the 2006 census, with over 4,600 birds (Elliott-Smith et al. 2009). According to the Service's *5-year Review and Summary Evaluation* for this species (Service 2009) the Northern Great Plains piping plover estimated population size has increased in this decade, but it remains below the recovery goals set out in the 1988 recovery plan. Furthermore, the factors that led to the species' listing (i.e., habitat loss and degradation due to water management on the river systems, predation, and human disturbance), as well as other activities (e.g., oil and gas production) continue to threaten piping plovers on the northern Great Plains.

Missouri River Mainstem Reservoir System Piping plover adult numbers on the Missouri River have varied from a low of 82 adults in 1997 to a high of 1,764 adults in 2005 (Figure 6). The Corps (2013b) found the average number over 27 years to be 731 adults and that adult numbers on the Missouri River have decreased in each of the past 3 years but increased after the 2011 flood. Record inflows into the Missouri River System inundated much of the birds' habitat in 2011 on the rivers as well as the reservoirs, and the 2011 adult census of 182 piping plovers represents the second lowest adult census for the species on the Missouri River in 26 years. The increased bird numbers are attributed to large areas of new habitat created by the record flows of 2011 and receding water levels experienced in 2012. Critical habitat has been designated throughout the Missouri River including riverine and reservoir (Fort Peck Lake, Lake Sakakawea and Lake Audubon, Lake Oahe, and Lewis and Clark Lake) reaches (67 FR 57638). All reservoirs except Lake Audubon are mainstem impoundments, constructed by dams, and regulated by the Corps. Lake Audubon is a sub-impoundment of Lake Sakakawea and is regulated by the Reclamation through operation of the Snake Creek Pumping Plant. Piping plover habitat within reservoir reaches is composed of shorelines, peninsulas, and islands, below the top of the maximum operating pool. These reservoir habitats include sparsely vegetated shoreline beaches, peninsulas, islands composed of sand, grave, or shale, and their interface with the water. Piping plover habitat within riverine reaches consists of inter-channel islands and sandbars including their temporary pools and interface with the river. These habitats are sparsely vegetated and consist of sand and gravel substrates.

Regulation of the Missouri River System follows an annual cycle that is described in detail in the Master Water Control Manual (Corps 2006) and summarized in the "Water Resources" section in Chapter 3 of the SEIS. The Master Water Control Manual requires the Corps to operate the Missouri River System to minimize take of least terns and piping plovers during the nesting season (approximately May 1 to August 15). Since 1986, flow releases from all Missouri River mainstem dams except Oahe and Big Bend have been modified to accommodate least tern and piping plover nesting. Daily hydropower peaking patterns are developed prior to nest initiation in early to mid-May. Generally, dam releases are set during the nesting season to ensure steady flows in areas containing the bird's habitat. During drought, water conservation measures are initiated, and releases are made on a peaking cycle of 2 days down and 1 day up, usually during the last two-thirds of May to keep birds from nesting at low elevations.

North Dakota Piping plovers use barren sand and gravel shorelines of the Missouri River, including its reservoirs, and shorelines of prairie alkali lakes. Critical habitat has been designated for the piping plover in North Dakota (67 FR 57638) in riverine and reservoir reaches. Areas designated include the Lake Sakakawea, Audubon Lake, Lake Oahe, and riverine reaches in North Dakota below Fort Peck and Garrison dams. Within the Project Area, prairie and alkali

lakes and wetlands have also been designated as piping plover critical habitat in Burke, McLean, Montrail, Pierce, Renville, Sheridan, Ward, and Williams counties (67 FR 57638).

Whooping Crane (Endangered)

Population Rangewide Whooping crane recovery efforts have made great strides over the years, with new populations being established in Florida and Wisconsin. The birds that migrate through North Dakota are part of the Aransas-Wood Buffalo population. The total Aransas-Wood Buffalo population is currently estimated at 279 birds, plus approximately 37 chicks fledged from a record 75 nests that migrated in fall 2011 (Whooping Crane Conservation Association 2012). This projected a yield of a wintering population exceeding 300 birds.

The Whooping Crane Recovery Plan (Canadian Wildlife Service and Service 2007) includes scientific information about the species and provides objectives and actions needed to down-list the species. Recovery actions designed to achieve these objectives include protection and enhancement of the breeding, migration, and wintering habitat for the Aransas-Wood Buffalo population. The goals are to allow the wild flock to grow and reach ecological and genetic stability; reintroduction and establishment of geographically separate self-sustaining wild flocks to ensure resilience to catastrophic events; and maintenance of a captive breeding flock that is genetically managed to retain a minimum of 90 percent of the whooping cranes' genetic material for 100 years.

North Dakota The whooping crane passes through North Dakota each spring and fall while migrating between its breeding territory in northern Canada and wintering grounds on the Gulf of Mexico. Frequently, whooping cranes migrate with sandhill cranes. Whooping cranes inhabit shallow wetlands but may also be found in upland areas, especially during migration. The whooping crane prefers freshwater marshes, wet prairies, shallow lakes, and wastewater lagoons for feeding and loafing during migration.

Overnight roosting sites usually have shallow water in which whooping cranes stand. Whooping cranes roost on unvegetated sandbars, wetlands, and stock dams. Fall migration occurs in North Dakota from late September to mid-October, while spring migration occurs from late April to mid-June. These birds can show up in all parts of North Dakota, although most sightings occur in the western two-thirds of the state. Whooping cranes are usually found in small groups of seven or fewer individuals and are easily disturbed when roosting or feeding.

In 2010, the Service produced Whooping Crane Migration Corridor Maps (Service 2010) that outline the percentage of confirmed crane sightings based on current and historical sighting reports. The Project Area is located within the migration corridor, as shown in Figure 7. Confirmed whooping crane sightings, ranging from 75 to 95 percent, have occurred in each county in the Project Area. Many sightings occurred along the entire Missouri River corridor and in the northwest corner of the Project Area.

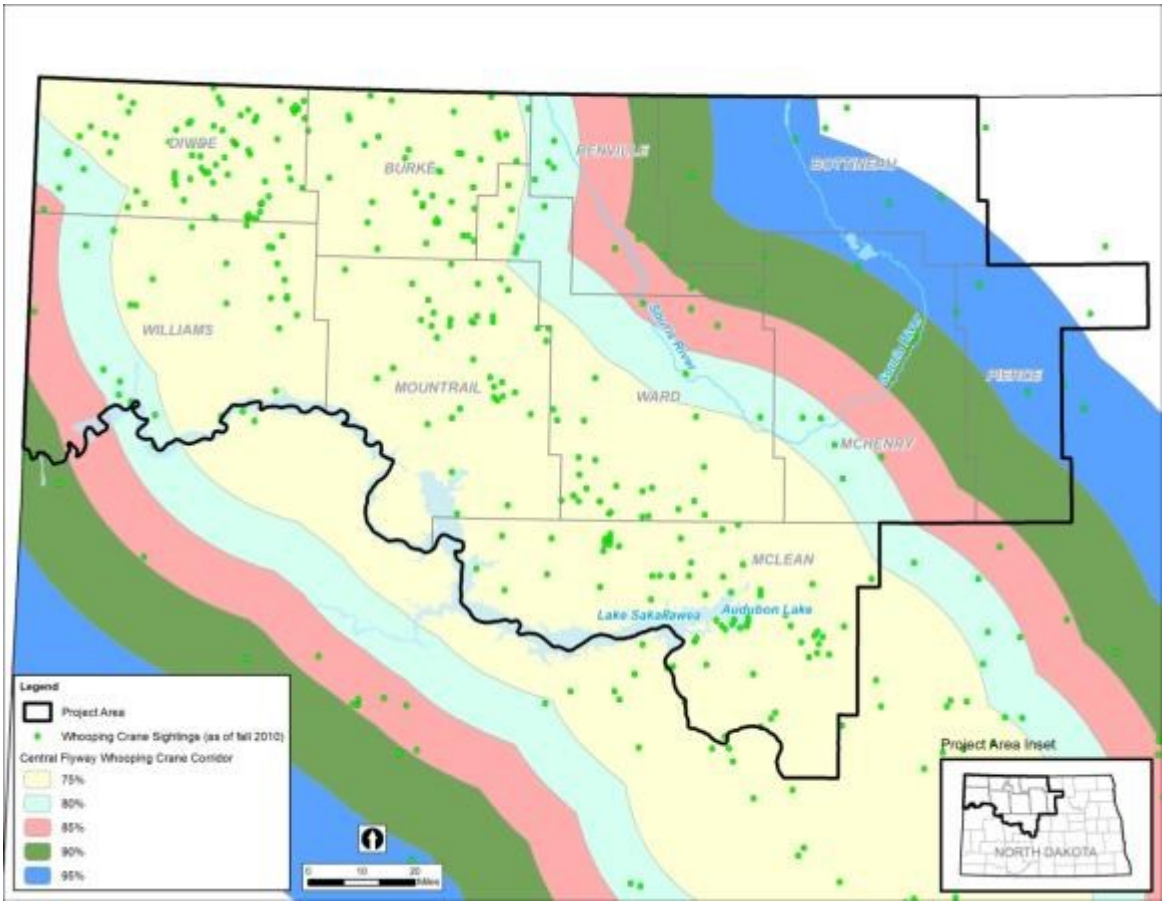

Figure 7 Central Flyway Whooping Crane Corridor and Sightings (Service 2010)

Sprague's Pipit

Population Rangewide The breeding range for the Sprague's pipit occurs throughout North Dakota, except for the Eastern most counties. In Canada, Sprague's pipits breed in southeastern Alberta, the southern half of Saskatchewan, and in southwest Manitoba (Robbins and Dale 1999). The breeding range in the United States has contracted to the north and west in North Dakota and Minnesota, and north in Montana.

North Dakota The breeding range for the Sprague's pipit in North Dakota comprises the western two-thirds of the state. Sprague's pipits arrive on the breeding grounds from the third week of April to mid-May (Maher 1973; Stewart 1975 cited in Jones 2010); some individuals linger on the wintering grounds into early May. Pair formation begins shortly after arrival on the breeding grounds, and eggs are laid between the second week of May through early August (Sutter 1996; Davis 2003; Jones et al. 2010 cited in Jones 2010). Sprague's pipits build ground nests in grasslands primarily filled with native grasses of intermediate height and density, with little bare ground and few shrubs; many times the nest is at the base of a dense tussock of grass (Sutter 1997; Dieni and Jones 2003 cited in Jones 2010). Native prairie exists in areas of dense wetland basins that preclude agricultural practices with the exception of grazing livestock. Sprague's pipits do not occur on North Dakota grasslands that had not been burned for more than 8 years; breeding abundances are highest from 2 to 7 years after a fire (Madden 1996 cited

in Jones 2010). In North Dakota, a greater abundance of Sprague's pipits was reported from moderately to heavily grazed pastures (Kantrud 1981 cited in Jones 2010).

Populations in North Dakota have declined dramatically due to the conversion and deterioration of remaining native prairie habitat. The North Dakota Heritage database provided available records for Sprague's pipit within the Project Area (Duttenhefner, pers. comm., 2012). These records show occurrences of this species in Montrail, McLean, and Divide counties and the Pierce / McHenry county border. Many of their records are older, but a survey of Birding on the Net (2012) lists breeding records in 2012 for this species in McHenry and Divide counties. The principal causes for the declines in Sprague's pipit populations are habitat conversion to seeded pasture, hayfield, and cropland, as well as overgrazing by livestock. There is evidence that Sprague's pipits avoid roads and trails on the breeding grounds (75 FR 56028).

Rufa Red Knot (Threatened)

Population Rangewide The red knot migrates annually between its breeding grounds in the Canadian Arctic and several wintering regions, including the southeastern United States (Southeast), the northeastern Gulf of Mexico, northern Brazil, and Tierra del Fuego at the southern tip of South America. During both the northbound (spring) and southbound (fall) migrations, red knots use key staging and stopover areas to rest and feed. Long-distance migrant shorebirds are highly dependent on the continued existence of quality habitat at a few key staging areas. These areas serve as stepping stones between wintering and breeding areas. Many of the key migration staging areas are along the coasts but most records in the interior states show small numbers (fewer than 10) of knots, but there are multiple records in nearly every inland state including along the Missouri River and North Dakota (78 FR 60024). The final rule for listing the red knot as threatened was published December 11, 2014 (79 FR 73706).

North Dakota North Dakota migration records are scarce. Between 2002 and 2013 North Dakota Bird List Serve (www.listserve.nodak.edu) records identify eight counties in North Dakota within the migration route (McPhillips 2014). These counties include Ward and Williams counties which are in the Project area. Records exist for both spring and fall migration and birds frequently are seen in small numbers (1-25) (McPhillips 2014). Migration habitats are documented as being similar to habitats used by piping plovers which include wetlands with shoreline (typically alkali lakes in North Dakota or sewage lagoons with mudflats) and the Missouri River (Service 2014).

Pallid Sturgeon (Endangered)

Population Rangewide Pallid sturgeon have been documented in the Missouri River between Fort Benton and the headwaters of Fort Peck Reservoir, Montana; downstream from Fort Peck Dam to the headwaters of Lake Sakakawea, North Dakota; downstream from Garrison Dam, North Dakota to the headwaters of Lake Oahe, South Dakota; from Oahe Dam downstream to within Lake Sharpe, South Dakota; between Fort Randall and Gavins Point Dams, South Dakota and Nebraska; downstream from Gavins Point Dam to St. Louis, Missouri; in the lower Yellowstone River, Montana and North Dakota; in the lower Big Sioux River, South Dakota; in the lower Platte River, Nebraska; in the lower Niobrara River, Nebraska; and in the lower Kansas River, Kansas. Pallid sturgeon observations and records have increased with sampling effort in the middle and lower Mississippi River (Service 2013). Additionally, in 1991, the

species was identified in the Atchafalaya River, Louisiana; and in 2011, pallid sturgeon were documented entering the lower reaches of the Arkansas River (Service 2013).

Missouri River Population The pallid sturgeon occupies the Missouri and Yellowstone rivers in North Dakota. The majority of the sturgeon in North Dakota are in the Yellowstone River and in the Missouri River upstream of the Yellowstone River confluence. Approximately 50 wild adult pallid sturgeons are estimated to exist in the Missouri River upstream of Fort Peck Reservoir (Service 2007c). An estimated 125 wild pallid sturgeon remain in the Missouri River downstream of Fort Peck Dam to the headwaters of Lake Sakakawea, as well as in the lower Yellowstone River (Jaeger et al. 2009). Current abundance estimates are lacking for the Missouri River between Gavins Point Dam and St. Louis, Missouri (Service 2013).

The Corps has established spring pulse criteria for the benefit of the pallid sturgeon. Included in the technical criteria for each spring pulse is a Missouri River System storage drought preclude level, below which the corresponding pulse would be foregone that year. Currently, the Missouri River System storage drought preclude level for the March pulse is 36.5 million acre-feet (MAF), and the drought preclude level for the May pulse is 40.0 MAF. The magnitude of the spring pulses is constrained by flood control flow limits downstream of Gavins Point Dam. The Master Water Control Manual also contains provisions for Fort Peck flow modification tests to benefit pallid sturgeon and other native river fish. These tests involve a combination of Fort Peck spillway and power plant releases during the early-June timeframe.

Water levels in the reservoirs impounded by Fort Peck Dam (Fort Peck Reservoir), Montana and Garrison Dam (Lake Sakakawea), North Dakota and anoxic headwater conditions (Guy 2015) may be impediments to larval pallid sturgeon survival (Service 2013b, Guy 2015). However, two confirmed wild larval pallid sturgeon were found at the mouth of the Milk River in 2011 and in 2012 on the Yellowstone River (SWC 2013b) and in 2014 there was evidence that spawning occurred on the Powder River, a tributary of the Yellowstone River (http://www.pallidsturgeon.org/2014/06/update-regarding-the-status-of-adult-pallid-sturgeon-upstream-of-intake-dam/ Accessed August 21, 2014)

The Service (2013) estimates that an isolated remnant population of less than 50 individuals remains in the Garrison reach of the Missouri River below Garrison Dam. Garrison Reservoir is not preferred pallid sturgeon habitat. In fact, Lake Sakakawea is considered an impediment to larval pallid sturgeon survival (Service 2013). The Missouri River in North Dakota is in the Great Plains Management Unit and is identified as such in the Draft Recovery Plan for the Pallid Sturgeon (Scaphirhynchus albus) (Service 2013). The Great Plains Management Unit is defined as the Great Falls of the Missouri River, Montana to Fort Randall Dam, South Dakota. This unit includes important tributaries like the Yellowstone River, as well as the Marias and Milk Rivers. The biggest issues that negatively influence pallid sturgeon throughout the Great Plains Management Unit include blocked passage; entrainment; and factors affecting recruitment, including anoxic conditions, flows and temperature (Service 2013, Guy 2015).

Gray Wolf (Endangered*)*

North Dakota The gray wolf is an infrequent visitor to North Dakota, occasionally entering the state from Minnesota or from the province of Manitoba, Canada. However, lone wolves occasionally appear, primarily in the eastern portion of the state. Pups were reported in the Turtle

Mountains of North Dakota; one wolf sighting was confirmed in early 2004, and two wolf depredation incidents were verified north of Garrison in late 2005 (71 FR 15266). In 2003, the Service changed the classification of the gray wolf under the ESA, and three separate ESA listings for the species were established, which correspond to three geographic areas in the lower 48 states with gray wolf recovery programs. North Dakota and Minnesota wolves are within the Gray Wolf Eastern Distinct Population Segment (DPS). On December 28, 2011, the Service announced the final rule to delist the gray wolf in the western Great Lakes, and the wolf was no longer protected under the ESA after January 27, 2012 (76 FR 81666).

The gray wolf was delisted in Minnesota and in the portion of North Dakota north and east of the Missouri River at the North Dakota/South Dakota state line upstream to Lake Sakakawea and east of the centerline of Highway 83 to the Canadian border as of January 27, 2012, but remains listed as endangered in western North Dakota. Therefore, in the Project Area the wolf was considered delisted east of Highway 83 and endangered west of Highway 83. In June 2013, the Service evaluated the classification status of gray wolves (Canis lupus) currently listed in the contiguous United States and Mexico under the Endangered Species Act of 1973, as amended (FR 78:114, 35664). Based on the Service's evaluation, they proposed to remove the gray wolf from the List of Endangered and Threatened Wildlife. This proposal included the population in North Dakota that remained as endangered (i.e., west of Highway 83 which includes the Project area). The Service reopened the comment period on the proposed delisting several times due to additional information on the nature of wolf taxonomy (Service now recognizes 3 wolf subspecies in the U.S.) and a final decision is anticipated by the end of 2014. A recent court decision (December 2014 Civil Action No. 13-186(BAH) Humane Society v. Sally Jewell (DOI) v. State of Wisconsin etc.) vacates designating a western Great Lakes DPS. The delisting of this DPS has been vacated and the species is now considered endangered throughout North Dakota. Due to the relative absence of secluded habitat in most of North Dakota, there is considerable uncertainty regarding whether a wolf pack will establish or become more common in the state. According to Licht and Huffman (1996), wolves could recolonize portions of their former range on the prairie in the Dakotas. However, the agricultural dominated landscape (cropland, hayland and pasture) and relatively high densities of roads would facilitate negative encounters between wolves and humans, which could preclude their re-establishment. As the Minnesota and Canada populations continue to increase, North Dakota could expect to see additional transients.

Dakota Skipper (Threatened)

Population Rangewide Dakota skippers are small butterflies that are found widely scattered across the tallgrass and mixed-grass prairie of Illinois, Iowa, Minnesota, South Dakota, North Dakota, Manitoba, and Saskatchewan (Service 2002). The distribution of the Dakota skipper has become extremely fragmented, mostly due to prairie conversion. Dakota skippers no longer exist in Iowa or Illinois and are currently distributed in western Minnesota, the eastern half of North Dakota, and northeastern South Dakota at much reduced levels (Service 2002). In October 2014, the Service listed the Dakota skipper as a threatened species under the Endangered Species Act of 1973, as amended (79 FR 63672). They also proposed to list critical habitat for the Dakota skipper in North Dakota, South Dakota, Illinois, Iowa, Indiana, Michigan, Minnesota, Wisconsin, and Manitoba, Canada (78 FR 7863625) but no final determination has been made as of the date of this document.

North Dakota Dakota skippers are found in native prairie containing a high diversity of wildflowers and grasses. Habitat includes two prairie types: (1) low (wet) prairie dominated by

bluestem grasses, wood lily, harebell, and smooth camas; and (2) upland (dry) prairie on ridges and hillsides dominated by bluestem grasses, needlegrass, pale purple and upright coneflowers, and blanket flower. Critical habitat was proposed at 14 sites in North Dakota including sites in Richland, Ransom, McHenry, Rollete, McKenzie, Ransom and Wells counties. Only McHenry County is in the Project area but no alternative components are proposed in or near potential critical habitat sites.

Northern Long-eared Bat (Proposed Endangered)

Population Rangewide The northern long-eared bat ranges across much of the eastern and north central United States, and all Canadian provinces west to the southern Yukon Territory and eastern British Columbia. In the United States, the species' range reaches from Maine west to Montana, south to eastern Kansas, eastern Oklahoma, Arkansas, and east to the Florida panhandle (Figure 8). In the west this bat can be found in caves and abandoned mines of the Black Hills of South Dakota and Wyoming and in the badlands areas of the Dakotas. Summer habitat can be found in large forested areas along the Missouri River and in the Turtle Mountains.

Their winter habitat includes hibernacula that usually include caves or abandoned mines. During summer they favor tree roosts and form small colonies. Buildings can also act as roosts. These bats usually tuck themselves under small crevices like under the bark of large trees. Bats usually emerge at dusk to forage in upland and lowland woodlots and tree-lined corridors, feeding on insects, which they catch while in flight using echolocation. This species also feeds by gleaning insects from vegetation and water surfaces. As with many other bat species, these bats migrate between their winter hibernacula and summer habitat. The spring migration period likely runs from mid-March to mid-May, with fall migration likely between mid-August and mid-October.

The biggest threat to this bat white-nose syndrome . If this disease had not emerged, it is unlikely the northern long-eared population would be declining so dramatically. Since symptoms were first observed in New York in 2006, white-nose syndrome has spread rapidly in bat populations from the Northeast to the Midwest and the Southeast. Population numbers of these bats have declined by 99 percent in the Northeast, which along with Canada, has been considered the core of the species' range. The degree of mortality attributed to white-nose syndrome in the Midwest and Southeast is currently undetermined. Although there is uncertainty about how white-nose syndrome will spread through the remaining portions of the species' range, it is expected to spread throughout the United States.

North Dakota Little work has been conducted to document the distribution of this species in North Dakota (Gillam and Barnhart 2011). Summer surveys in North Dakota (2009–2011) documented this species in the Turtle Mountains, the Missouri River Valley, and in the Badlands (Gillam and Barnhart 2011). Gillam and Barnhart (2011) found most of this bat species using tree roosts particularly cottonwoods. To date, no hibernacula have ever been described in the state, nor has bat activity been documented during the winter months but survey work continues searching hibernacula in Theodore Roosevelt National Park. Based on this species ecology and range it could occur in the Action Area during the summer in forested areas along the Missouri River, Souris River, and in the Turtle Mountains in the vicinity of Bottineau.

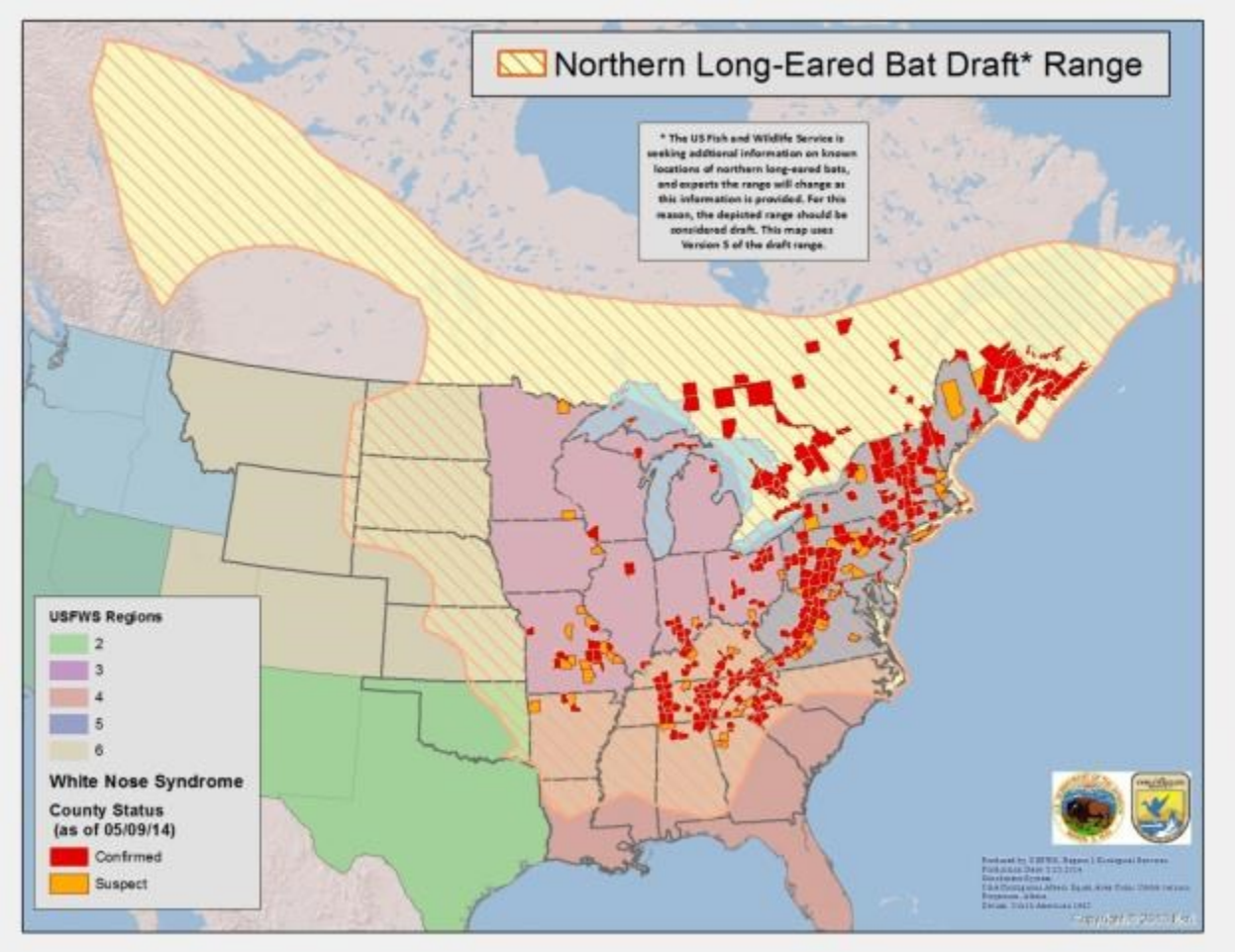

Figure 8 Range of the Northern Long-eared Bat.

Effects Analysis

The term "effects of the action" refers to the direct and indirect effects of a proposed action on listed species and designated critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline…(50 CFR §402.2). Reclamation reviewed the action area settings, life history, habitat information, and environmental baseline for each of the federally listed species to evaluate potential effects. The results of this analysis are reported below.

The Service has identified 3 potential conclusions regarding analyses for impacts on listed species or critical habitat:

- *No effect* - the appropriate conclusion when the action agency determines its proposed action will not affect listed species or critical habitat, or
- *Is not likely to adversely affect* – the appropriate conclusion when effects on listed species are expected to be discountable, or insignificant, or completely beneficial.
    - Beneficial effects are contemporaneous positive effects without any adverse effects to the species.

  - Insignificant effects relate to the size of the impact and should never reach the scale where take occurs.
  - Discountable effects are those extremely unlikely to occur.
- *Likely to adversely affect* – the appropriate conclusion if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not: discountable, insignificant or beneficial.

For proposed species the call is likely or not likely to jeopardize proposed species/adversely modify proposed critical habitat.

The preferred alternative would slightly increase Missouri River depletions as compared to the environmental baseline (current conditions). Existing Missouri River depletions are 12.7 MAF per year and the preferred alternative would add 0.0136 MAF of depletions. Assessing effects under ESA is different than under NEPA. The section 7 implementing regulations refers to the effects of a proposed action are added to the baseline to evaluate the potential effects of a proposed action on species and their habitat. The environmental baseline under Section 7 is a "snapshot" of a species health at a specified point in time. Usually this is considered the current conditions. Under NEPA, our SEIS analysis is a comparison to the No Action Alternative, which represents the conditions anticipated in 2060, not "current conditions."

Potential adverse impacts on federally listed species could include direct and indirect mortality or temporary displacement of species caused by construction activities (habitat destruction and habitat disturbance). There could also be cumulative habitat losses and/or gains associated with Missouri River preferred alternative depletions in combination with reasonably foreseeable future depletions and with Missouri River System operations. These potential effects are evaluated below.

Methods for Evaluating Project Effects

Analysis of potential impacts on federally protected species was based on descriptions of the affected environment in Chapter 3 of the SEIS and analyses of impacts on related resources (e.g., water quantity, water quality, groundwater, fisheries and aquatic ecology, vegetation, wetlands, and wildlife) in Chapter 4. The methodologies for identifying habitat types are discussed in Chapters 3 and 4 of the SEIS. The resource analyses took into account applicable environmental commitments, including BMPs and environmental commitments (Appendix F of the SEIS). Candidate and proposed species are included because there is potential for these species to be listed prior to completion of the Project. Life histories were also reviewed for all species. Life history information was evaluated against potential habitat in the Action Area. Much of this habitat information was obtained during analysis of impacts on other resources, as noted above.

In addition to the above, Reclamation looked specifically at the effects of Missouri River withdrawals on federally listed species. Evaluation of potential impacts on Missouri River protected species, including the least tern, piping plover, red knot, and pallid sturgeon, also used information and results from the Corps' report, *Cumulative Impacts to the Missouri River for the Bureau of Reclamation's Northwest Area Water Supply Project* (2013a). The hydrologic effects analysis from the Corps' report (2013a) was used to address potential changes in Missouri River System storage, reservoir water levels, and dam releases. The Corps analyzed potential impacts

associated with the withdrawal of water from the Missouri River (Corps 2013a). Five simulations of the potential changes that affect system regulation were analyzed for NEPA purposes (Corps 2013a). These simulations include (see Table 3):

- **Existing Conditions** – Simulation of Missouri River System operations with existing (2010) level of Missouri River depletions. Necessary for evaluating the consequences of the No Action Alternative (i.e., comparing No Action to existing conditions) and for use in Section 7 consultation under the ESA.
- **Sedimentation 2060 –** To separate out the effects of future sedimentation and reasonably foreseeable future non-Project Missouri River depletions (2010 to 2060), a simulation was run that included the effects of existing depletions and continuing sedimentation in the Missouri River System reservoirs.
- **No Action** – Simulation of future (through 2060) Missouri River System operations with existing and reasonably foreseeable future non-Project Missouri River depletions and decreased storage capacity due to sedimentation. Reasonably foreseeable future non-Project depletions include planned/authorized projects within the basin that could withdraw water from the Missouri River or its tributaries. All action alternatives are compared to No Action as required by NEPA.
- **Average Annual Project Depletions** – Simulation of future (2060) Missouri River System operations, including existing and reasonably foreseeable future non-Project Missouri River depletions plus decreased storage capacity due to sedimentation and the average annual Project Missouri River depletions of 0.0136 MAF.
- **Maximum Possible Project Depletions** – Simulation of future (2060) Missouri River System operations, including existing and reasonably foreseeable future non-Project Missouri River depletions plus decreased storage capacity due to sedimentation and the maximum possible Project Missouri River depletions of 0.0291 MAF.

In the SEIS analysis, the Missouri River and Groundwater Alternative was compared to the No Action. No Action included sedimentation effects though 2060 and the future water supply and conditions anticipated in 2060 without additional Reclamation funding for the Project. For purposes of the ESA, the comparison of No Action and the Missouri River and Groundwater Alternative provides a look at the cumulative effects that might occur in 2060 which is relevant to this consultation. However, for the purposes of analyzing direct and indirect impacts to the species identified in this biological assessment, the Average Annual Project Depletions simulations is used as the depletion for the Missouri River and Groundwater Alternative. As explained in the SEIS, the simulation of Maximum Possible Project Depletions is not technically feasible in terms of operation of this alternative so it is not pertinent to this ESA analysis. An additional analysis is done comparing existing conditions to the Missouri River and Groundwater Alternative to provide a full consideration of endangered species as required by Section 7. These simulations and the resulting hydrologic effects were then used to address any life history or habitat concerns for the protected species.

Table 3. Summary of Simulations

Simulations	Depletions and Loss of Storage Capacity
Existing Conditions	12.7 MAF/year of existing depletions
Sedimentation 2060	Existing depletions plus 2.8 MAF of anticipated lost storage capacity in 2060 due to reservoir sedimentation
No Action	13.2 MAF/year (Existing depletions + 0.516 MAF of reasonably foreseeable future non-project depletions) plus 2.8 MAF loss of storage capacity due to sedimentation
Average Annual Project Depletions	0.0136 MAF Project depletions + No Action depletions (13.2 MAF) plus 2.8 MAF loss of storage capacity due to sedimentation
Maximum Possible Project Depletions	0.0291 MAF Project depletions + No Action depletions (13.2 MAF) plus 2.8 MAF loss of storage capacity due to sedimentation

Note:
MAF = million acre-feet

Effects of Construction and Operations: Souris River Basin

In the Souris River Basin of the Action area, impacts of this preferred alternative on federally listed, proposed, and candidate species and critical habitat during operation would be similar to current conditions because it would use the existing city of Minot wellfields, currently in use in the Minot and Sundre aquifers, as a supplement to Missouri River water. However, the volume of water used from the aquifers would be greatly reduced compared to current use. We are not aware of any adverse impacts to federally listed, proposed, or candidate species occur under present day operations of these wellfields and none is anticipated under the reduced use associated with this alternative. This alternative also includes bulk distribution pipelines, upgrades to the Minot WTP, storage reservoirs at Lansford and Bottineau, and pump stations, As noted in the SEIS (see Chapter 3for specifics on methods) facilities proposed for construction including pipeline routes, storage reservoir and pump station locations were evaluated for federally listed, proposed, and candidate species habitats and critical habitat designations (Table 2 above). No habitat was specifically noted for any of these species at proposed construction sites and BMPs and mitigations measures as identified in the Project Description section of this BA are designed to specifically avoid impacts to these species. No adverse impacts to federally listed, proposed or candidate species and critical have been identified for these Souris River Basin components with BMPs and mitigation measures outlined in the SEIS. This determination is based on the implementation of the BMPs and environmental commitments (Appendix F of the SEIS) established to avoid construction of components in habitats occupied or potentially occupied by listed, proposed or candidate species or by their absence from the Action area. More specifically the avoidance of wetlands (to avoid impacts to red knot, whooping crane, and piping plover), native prairie habitats (to avoid impacts to Dakota skipper and Sprague's pipit) and forested areas with trees greater than 3 inches diameter (to avoid impacts to northern long-eared bat) , avoidance of nesting/brooding times, and pre-construction review by the Impact Mitigation Assessment Team prior to construction that could require pre-construction surveys for any species potentially present in habitat that may not be avoided. No effect for the gray wolf nor the pallid sturgeon is anticipated as the occurrence of the gray wolf is highly unlikely and the pallid sturgeon does not occur in the Souris Basin.

Effects of Construction and Operations: Missouri River Basin

The use of Missouri River water for this preferred alternative could potentially affect federally listed, proposed or candidate species using the Missouri River including the interior least tern, piping plover, whooping crane, red knot, and pallid sturgeon. Impacts to these species as well as the gray wolf, northern long-eared bat, Dakota skipper, and Sprague's pipit could also result from additional construction activities at the proposed Missouri River intake site and the associated buried pipelines, Biota WTP, and South Prairie storage reservoir.

Effects of Facilities Construction

The proposed intake construction may affect but is not likely to adversely affect pallid sturgeon because screening is provided at the intake to prevent any potential but highly unlikely entrainment of sturgeon. It is also not likely that pallid sturgeon would be found in or near the intake site as the reservoir is not preferred sturgeon habitat.

As noted in the SEIS (see Chapter 3 see specifics on methods) facilities proposed for construction including pipeline routes, storage reservoir, pump station locations and the Biota WTP were evaluated for federally listed, proposed, and candidate species habitats and critical habitat designations (Table 2 above). No habitat was specifically noted for these species at construction sites and BMPs and mitigations measures as identified in the Project Description section of this BA are designed to specifically avoid impacts to these species. Associated construction of a buried pipeline, the Biota WTP, the intake and the South Prairie storage reservoir are not likely to adversely affect the pallid sturgeon, least tern, piping plover, whooping crane, Sprague's pipit, red knot, and have no effect on the gray wolf, northern long-eared bat and Dakota skipper because either the BMPs or environmental commitments are in place to avoid construction impacts and reduce any effects to insignificant or discountable levels, and/or the species are not known to occur at any of the sites proposed for construction. No construction is proposed in proposed critical habitat for the Dakota skipper nor critical habitat designated for the northern Great Plains population of the piping plover. Modifications to the Snake Creek Pumping Plant on Lake Sakakawea would occur onsite at the plant within existing facilities. None of the area proposed for construction contains piping plover critical habitat. Construction of the intake and connecting pipeline would be completed using BMPs which include seasonal restrictions prohibiting construction within 1/2 mile of designated piping plover breeding/brood rearing areas during the breeding season (April 15 through August 31) if/when these species are present. Therefore there would be no adverse modification to piping plover critical habitat due to construction.

Effects of Operations

The Corps' (2013a) analysis evaluated the Missouri River and Groundwater Alternative as previously discussed. Project depletions, as defined in the Average Annual Project Depletions simulation, were used in this ESA analysis. The 0.0136 MAF per year Average Annual Project Depletion consists of the average monthly water use in the Action area plus 20 percent to account for water losses that may be experienced during Biota WTP operations.

The Corps' analysis (2013a) compared this Project depletion simulation to existing conditions and the potential hydrologic impacts to water storage, reservoir levels and dam releases were used to address any life history or habitat concerns with federally listed Missouri River species, including the least tern, piping plover, red knot, and pallid sturgeon.

Comparison of the Project depletion simulation with existing conditions showed that the effects of Project depletions would be relatively small (Corps 2013a). Small differences are noted during the four extended droughts on record, since the Missouri River System is managed to conserve water during droughts. The Corps' (2013a) analyses found that the biggest changes anticipated during the life of the Project (2060) were due to sedimentation which reduces the availability to store water in the reservoir. Details of the Corps analysis can be found in their report and outcomes are summarized below. The Corps (2013a) report is available at http://www.usbr.gov/gp/dkao/naws/index.html.

Reservoir Elevation and Storage Because the Project would remove water from Lake Sakakawea and transport it out of the Missouri River basin, each acre-foot of water removed from Lake Sakakawea would be an acre-foot of depletion. For the Project, operating under the current Corps Master Manual for Missouri River Operations project withdrawals have been demonstrated to be relatively small (Corps 2013a). The Corps analyses plots the reservoir elevations over the 81-year period of analysis which shows the variability in the system as it responds to drought and high inflows. Differences can be seen more easily if only the differences from a single baseline like Existing Conditions. The Corps analysis includes the part of the plots with differences between plus 5 feet and minus five feet to illustrate the differences when comparing No action, sedimentation and Project deletions to Existing Conditions. All of these impacts are demonstrated to be relatively small. For example, the effect on water surface elevations of the upper three Missouri River reservoirs (Fort Peck, Garrison, and Oahe), between the Project average annual depletion simulation and existing conditions was less than 2 feet over 80% of the period of record (see Figures 24, 26, & 27 in Corps 2013a). Taking into consideration the effects of sedimentation in No Action, which could reduce storage yet raise elevation levels (e.g. raise Garrison elevations 80% of the time (Corps 2013a)), in addition to reasonably foreseeable future depletions through 2060, the cumulative effects of future Project withdrawal on reservoir elevations is also relatively small as demonstrated and documented in the SEIS and Corps 2013a (Figure 25).

As documented in the Corps' analysis (2013a), reservoir levels remain constant 40-50 percent of the time at Fort Peck, Garrison, and Oahe dams when comparing the Project depletion simulation to existing conditions. The No Action simulation (reasonably foreseeable future depletions plus sedimentation) would result in approximately a 1-foot change more than 90 percent of the time over the historic record for these reservoirs. This is because future sedimentation could cause reservoir elevations to rise. As an example, Figure 9 illustrates these elevation differences for Garrison Reservoir. The differences from existing conditions are very similar for the No Action simulation (which includes future sedimentation and non-Project depletions) and the Project simulation (which includes future sedimentation, non-Project depletions, and proposed Project depletions). It is apparent that the differences from existing conditions are largely related to sedimentation and future non-Project depletions, with Project depletions having very little effect. To put all of this in perspective, the simulation for the Project showed a decrease in the mean elevation of Garrison Reservoir of less than 0.1 inches when compared to No Action or 0.6 feet when compared to existing conditions. Thus the effects of Project withdrawals on the Missouri River would be practically unmeasurable, either individually or cumulatively.

During the least tern and piping plover nesting season (May to August), mean historical reservoir levels vary by almost 4 feet at Fort Peck Dam, almost 6 feet at Garrison Dam, and 2 feet at Oahe Dam (Corps 1999). A 1-foot change in water levels over the historical record for a majority of the time (60-70 percent compared to existing conditions and over 95 percent of the time under future conditions) is relatively small and falls within current reservoir level fluctuations during the birds nesting/brood rearing season. These potential reservoir level changes due to Project depletions, are within the range of normal reservoir variation during the nesting/brood rearing season and will not result in any measureable take of a tern plover, or their habitats. Therefore, the determination for this Project is may affect but are not likely to adversely effect on least terns, piping plovers, or their critical habitat. The same rationale can be applied to the red knot as they may use Missouri River reservoir shoreline or sandbar island complexes as stop over areas during migration (April-May and August-September). It should also be noted that these small changes in reservoir levels would not cause the Corps to change the way they operate the reservoirs, particularly during the nesting/brood rearing season where the Corps takes conservation actions to ensure that nests would not be inundated due to Corps operations.

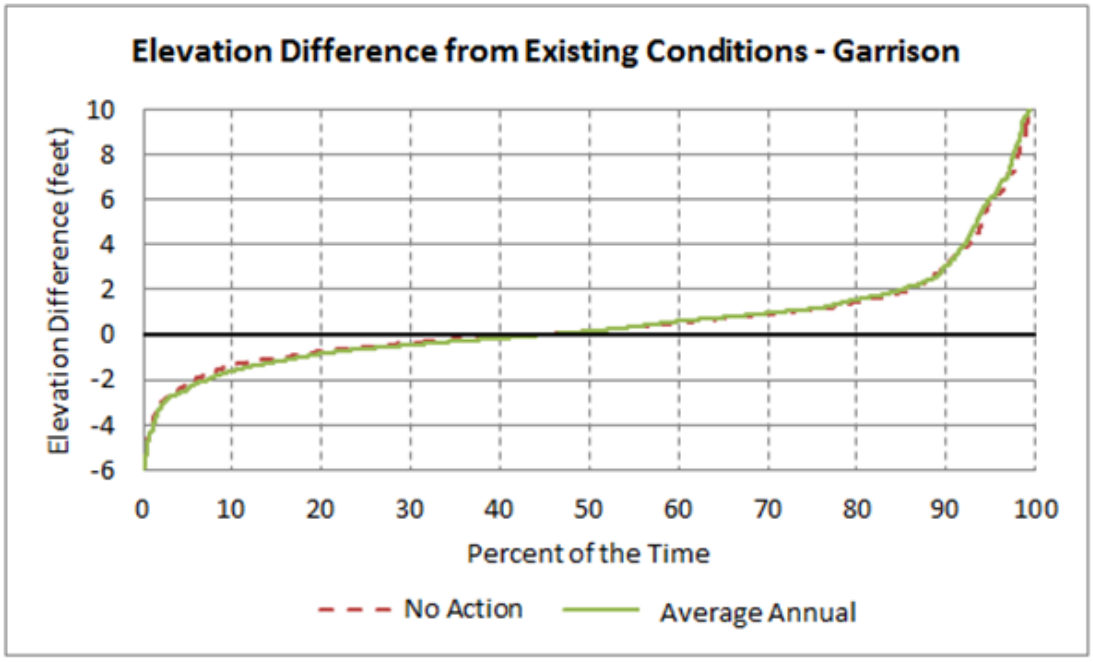

Figure 9 Garrison Reservoir Sorted Daily Water Surface Elevation Differences Comparing Average Annual Project Depletion to No Action

Likewise, the small potential changes in reservoir levels during spring and fall migrations are not likely to have any effects on the whooping crane or red knot considering their opportunistic use of Missouri River reservoir habitats, the infrequency of sightings, and the availability of wetland and staging/feeding habitat outside the reservoirs.

Reservoir level fluctuations would have no effect on pallid sturgeon because the reservoirs are not generally used by pallid sturgeon. However, reduced reservoir elevations result in additional river habitat at the head of the reservoir allowing pallid sturgeon larvae longer drift distance before encountering the reservoir's anoxic zone (Guy 2015).

The Corps' analysis (2013a) also evaluated the potential Project effects on annual minimum Missouri River System storage, as this is the primary factor for determining releases to the lower Missouri River. Because minimum storage is most important during droughts, the Corps' analysis considered the two greatest droughts of record in the Missouri River basin – the 1930s and 2000s. The differences in minimum Missouri River System storage between Existing Conditions and the Project Average Annual Depletion simulation are less than 4 MAF distributed throughout the reservoir system during the extended droughts of record (Figure 10 and 11). The No Action alternative was included to demonstrate the principal changes in system storage levels are due to estimated future sedimentation. The impacts of sedimentation on reservoir elevations were discussed previously and these small differences in system storage may affect but are not likely to adversely affect least terns and piping plovers or their critical habitat. Changes in reservoir levels as noted above would be within the normal reservoir level variation during the nesting season. Usually, these birds' habitats on the reservoirs will increase as water levels drop during the beginning of a drought and decline with vegetative advancement over the course of the drought period. The same rationale can be applied to the red knot as they may use Missouri River reservoir shoreline or sandbar island complexes as stop over areas during migration (April-May and August-September).

Small changes in reservoir storage during whooping crane migration seasons would not affect this species considering their opportunistic use of these habitats, the infrequency of sightings, and good availability of alternative habitat adjacent to and outside of the reservoirs.

Reservoir level fluctuations would not affect pallid sturgeon because the reservoirs are not generally used by pallid sturgeon. However, reduced reservoir elevations result in additional river habitat at the head of the reservoir allowing pallid sturgeon larvae longer drift distance before encountering the reservoir's anoxic zone (Guy 2015).

In summary, fluctuations in reservoir storage and reservoir levels documented in the Corps' analysis (2013a) of the Average Annual Project Depletion simulation when compared to Existing Conditions may affect because of small potential beneficial effects but are not likely to adversely affect whooping cranes, terns, plovers, red knots or pallid sturgeon and their habitats including no adverse modification of designated critical habitat for piping plovers. Because impacts are identified as potentially beneficial, and small reservoir level changes due specifically to this project would be insignificant and discountable no take is anticipated nor identified.

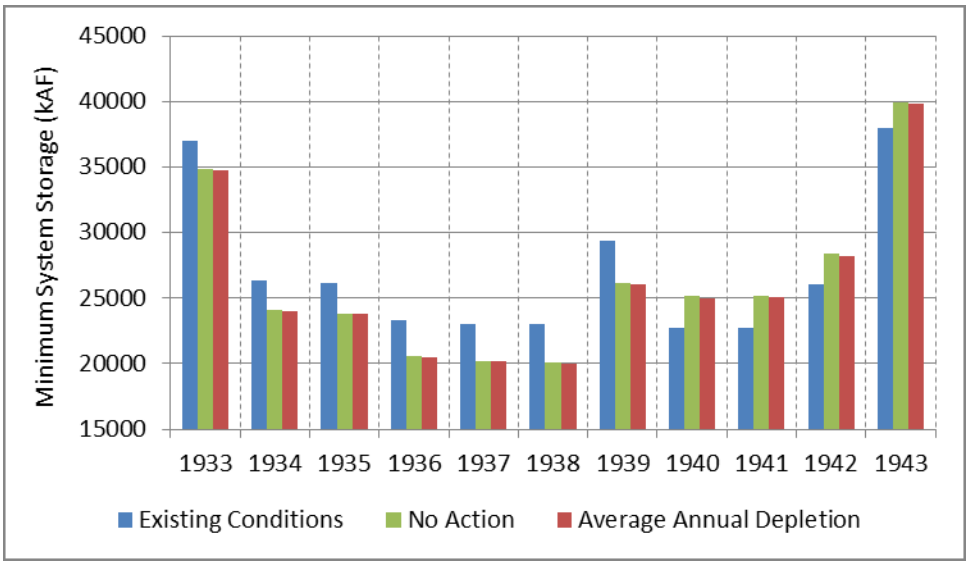

Figure 10 Simulated Annual Minimum System Storage Level Changes during a 1930s-Type Drought

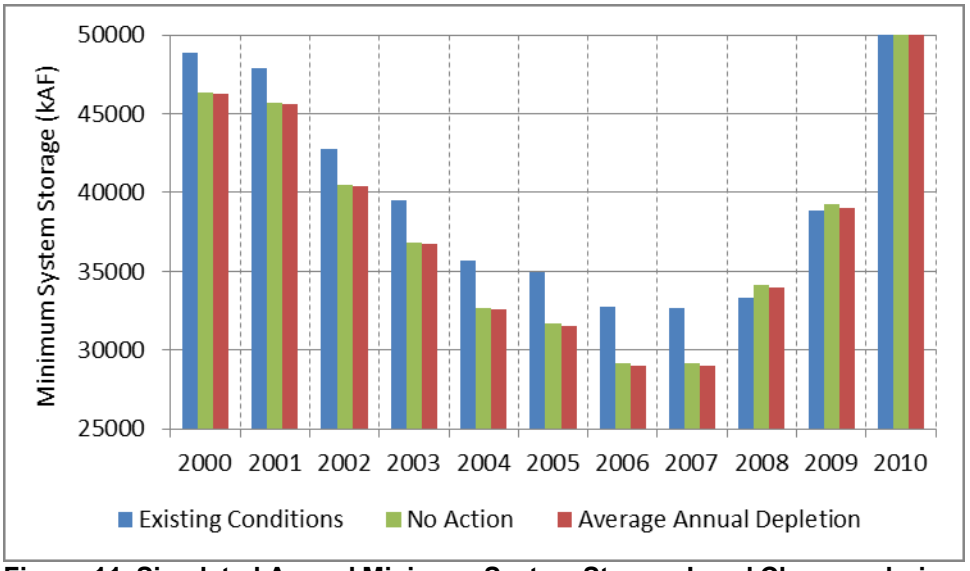

Figure 11 Simulated Annual Minimum System Storage Level Changes during a 2000s-Type Drought

Dam Releases Potential changes in dam releases could affect pallid sturgeon, least tern, and piping plover, red knot, and their habitats including piping plover critical habitat. Whooping cranes would not be affected because they are not likely to occur in areas below the dams. The Corps analyzed releases at Fort Peck, Garrison, Oahe, and Gavins Point dams (Corps 2013a) as these releases have the potential to affect pallid sturgeon, least tern, piping plover, red knot, and their habitats including piping plover critical habitat. Fort Randall Dam releases were not specifically addressed in the Corps' analysis (2013a), as these releases mirror releases out of Gavins Point Dam. Results of the analysis show the differences between the Average Annual Project Depletion simulation and Existing Conditions in annual releases from these four dams to be so small that they are barely detectable. Results from the Gavins Point analysis are

illustrated below (Figure 12) because this dam is the control point, the last dam on the Missouri River system.

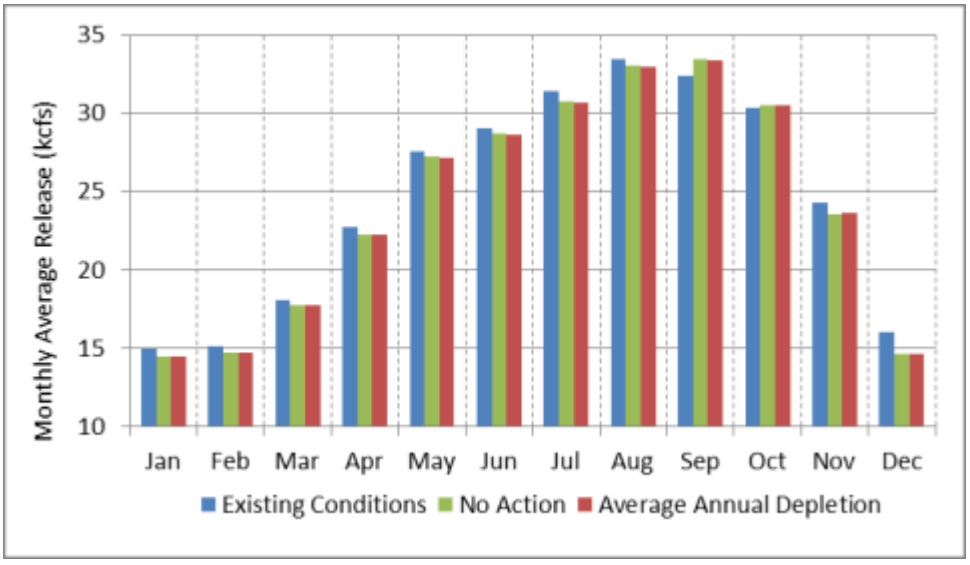

Figure 12 Average Monthly Gavins Point Dam Releases Comparison

Figure 12 also shows the effects of future sedimentation, as the No Action alternative includes sedimentation and reasonably foreseeable future depletions through2060. The specific impacts of sedimentation are documented in the SEIS and Corps (2013a).

This negligible change in dam releases is not likely to have adverse impacts on channel and sandbar formation and therefore should not have adverse effects on terns, plovers, or pallid sturgeon and their habitats including designated critical habitat for the piping plover. Although small decreases in flows may be beneficial because they would allow more exposure of sandbar habitats, it would not likely be noticed or measureable during the nesting season. Furthermore, the Corps generally operates during the nesting season with steady flows to avoid impacts on terns and plovers and their habitats including piping plover critical habitat. Because impacts are identified at insignificant and discountable levels and beneficial no take is anticipated nor identified.

Cumulative Impacts

As noted previously, the Corps' (2013a) analysis for Reclamation evaluated several simulations. Regarding cumulative impacts of water withdrawals on Lake Sakakawea and the Missouri River, the NEPA analysis considered effects of the two Missouri River alternatives on depletions, reservoir levels and storage, dam releases, and water quality. Specific details can be found in the comparison of Project depletions to No Action as briefly discussed above and in detail in the SEIS and the Corps' report (2013a). Proposed Project depletions would be small (average annual depletion of 0.0136 MAF) compared to existing and reasonably foreseeable future non-Project depletions under No Action (13.2 MAF). The cumulative effect of the Project depletions would be an increase of less than 0.2% in annual Missouri River depletions compared to No Action depletions (depletions anticipated in 2060 plus sedimentation). Effects of Project withdrawals on water surface elevation and system storage would be small as discussed above in the comparison to the No Action alternative and in the SEIS and Corps' report (2013a). Project depletions

would have a small effect on dam releases even when considering reasonably foreseeable future depletions as analyzed in the SEIS and in the Corps' report (2013a). Differences in average annual releases from Fort Peck, Garrison, and Oahe dams would be less than 0.2%. Because the effects of Project depletions on Missouri River water quantity would be negligible, there would be no measurable water quality impacts. Therefore, potential effects to federally listed species would be insignificant and discountable.

Reclamation is not aware of impacts of future solely state or private actions that are in the action area that are resulting in impacts to the species evaluated for baseline purposes that when added to the may affect not likely to adversely affect determination for this Project would rise to a level of a cumulative concern.

Interrelated and Interdependent Actions

Interrelated actions are part of a larger action and depend on the larger action for their justification (50 CFR, Section 402-02). Interrelated actions are typically "associated with" the Proposed Action. Interdependent actions have no independent utility apart from the Proposed Action (50CFR Section 402-02). Interdependent actions are typically "because of" the Proposed Action.

The above discussions about the impacts of this project address these definitions of interrelated and interdependent. Most interrelated and interdependent actions were considered as direct effects. The construction of powerlines for the Project may be considered interrelated as they are associated with the Project. Reclamation considered the construction of these lines during consideration of impacts and identified specific BMPs to protect migratory birds including federally protected species from collisions and electrocutions. No specific interdependent actions outside of those already discussed were identified. For example, construction staging areas or construction road access may be considered interdependent because they exist because of the project. During evaluation of specific habitat types the affected environment evaluation included a ½-mile corridor along either side of the proposed pipelines and around other proposed facilities, all impacts were accounted for in the evaluation of effects. The methodologies for identifying habitat types are discussed in Chapters 3 and 4 of the SEIS.

Conclusions

Reclamation has thoroughly evaluated the potential effects of the Project on federally listed and proposed species including the interior least tern, piping plover, critical habitat for the northern Great Plains breeding population of the piping plover, red knot, pallid sturgeon, gray wolf, Dakota skipper, and whooping crane as discussed above. Furthermore, Reclamation has evaluated for this Project the potential effects to candidate or proposed species including the Sprague's pipit and northern long-eared bat. With the implementation of BMPs and environmental commitments no impacts to species are anticipated from construction. When evaluating the effects of the withdrawal of Missouri River water for the Project impacts were identified as beneficial or relatively small and practically immeasurable for Missouri River species. No changes to the Corps operation of the Missouri River are anticipated as a result of the Project.

Therefore, the project with the implementation of BMPs and environmental commitments, and limited records of presence in the Project area no effect is anticipated for the gray wolf, Dakota skipper, Sprague's pipit, and northern long-eared bat. As the Sprague's pipit and northern long-eared bat are proposed species; this Project is not likely to jeopardize this species. For the interior least tern, piping plover, pallid sturgeon, red knot, and whooping crane beneficial and very small and insignificant and discountable effects are anticipated with the implementation of the preferred alternative for the Project. Impacts have been identified as beneficial, insignificant and discountable and no incidental take for any species has been identified. Critical habitat for the northern Great Plains breeding population of the piping plover only occurs on the Missouri River portion of the Project area. BMPs and environmental commitments are identified to ensure that there is no destruction or adverse modification of critical habitat of the northern Great Plains piping plover. This Project will also not adversely modify proposed critical habitat for the Dakota skipper as no proposed critical habitat lies within the Project area

Interior Least Tern

Based on the analysis of the potential impacts and effects of the preferred alternative for the Project as described above, it has been determined that the Project as proposed may affect, but is not likely to adversely affect the interior least tern.

Piping Plover

Based on our analysis of the potential impacts and effects of the preferred alternative for the Project as described above, it has been determined that the Project as proposed may affect, but is not likely to adversely affect the piping plover.

Piping Plover Critical Habitat

Based on our analysis of the potential impacts and effects of the preferred alternative for the Project as described above, it has been determined that the Project as proposed may affect, but is not likely to adversely modify piping plover critical habitat.

Whooping Crane

Based on our analysis of the potential impacts and effects of the preferred alternative for the Project as described above, it has been determined that the Project as proposed may affect, but is not likely to adversely affect the whooping crane.

Rufa Red Knot

Based on our analysis of the potential impacts and effects of the preferred alternative for the Project as described above, it has been determined that the Project as proposed may affect, but is not likely to adversely affect the red knot.

Sprague's Pipit

Based on our analysis of the potential impacts and effects of the preferred alternative for the Project as described above, it has been determined that the Project as proposed will have no effect on the Sprague's pipit. As a proposed species this Project is not likely to jeopardize the Sprague's pipit.

Pallid Sturgeon

Based on our analysis of the potential impacts and effects of the preferred alternative for the Project as described above, it has been determined that the Project as proposed may affect, but is not likely to adversely affect the pallid sturgeon.

Gray Wolf

Based on our analysis of the potential impacts and effects of the preferred alternative for the Project as described above, it has been determined that the Project as proposed will have no effect on the gray wolf.

Dakota Skipper

Based on our analysis of the potential impacts and effects of the preferred alternative for the Project as described above, it has been determined that the Project as proposed will have no effect on the Dakota skipper. The Project is also not likely to adversely modify proposed critical habitat for this species.

Northern Long-eared Bat

Based on our analysis of the potential impacts and effects of the preferred alternative for the Project as described above, it has been determined that the Project as proposed will have no effect on the northern long-eared bat. As a proposed species this Project is not likely to jeopardize the northern long-eared bat.

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APPENDIX M
Summary of Missing or Incomplete Information

Northwest Area Water Supply Project
Supplemental Environmental Impact Statement

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Appendix M
Summary of Incomplete or Missing Information

Background

This appendix provides a summary of specific resource analyses conducted in support of the SEIS involving incomplete or unavailable information pursuant to 40 CFR 1502.22. Although discussion throughout the SEIS, appendices and supporting documents discloses the availability of data and information, how the available data were used, as well as discussion of the uncertainty resulting from the incomplete or unavailable information; this appendix is intended to summarize discussions on this topic and explain how Reclamation was able to complete thorough analyses and draw informed conclusions from the information available.

At the onset of the SEIS, Reclamation worked collaboratively with its NEPA contractor and representatives from the cooperating agency team to identify analyses needed for the SEIS, data needed to support the analyses and where data gaps existed. Through continued discussions with the cooperating agency team and relying upon Reclamation's professional knowledge and opinions, Reclamation identified a course of action to best utilize the available data and information in order to be able to make an informed decision at the conclusion of this NEPA process.

The Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR Parts 1500-1508) inform federal agencies what they must do to comply with the procedures to ensure that environmental information is available to decision makers and the public before decisions are made. Information used in the analyses must be of high quality; however Section 1502.22 of the Implementing Regulations does address instances where data and information are incomplete or unavailable. The regulation states:

> **1502.22 Incomplete or unavailable information**
>
> When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.
>
> (a) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.
> (b) If the incomplete information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement:
>
> 1. a statement that such information is incomplete or unavailable;

2. a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment;
3. a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment, and
4. the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. For the purposes of this section, "reasonably foreseeable" includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.

Throughout the SEIS process of formulating a reasonable range of alternatives and identifying and evaluating the affected resources, Reclamation conducted a methodical process to identify the data needs, gather the data, and document where data gaps existed.

Where information was found to be missing or incomplete, Reclamation evaluated its relevance to any reasonably foreseeable significant adverse effects on the human environment. Based on this evaluation, Reclamation either proceeded with gathering the information or clearly discloses within the SEIS why the costs required to obtain this information are exorbitant and therefore it was not obtained, and otherwise complies with the requirements of Section 1502.22. If the missing or incomplete information was not essential to the alternative formulation process or it was not essential to a reasoned analysis among the alternatives, the SEIS clearly identifies the information as missing or incomplete and provides an explanation as to why it is not essential to inform the decision maker (i.e., addressing its relevance), and otherwise complies with the requirements of Section 1502.22.

SEIS Analyses

Engineering Design of Alternatives

Reclamation's design process for a municipal, rural and industrial water supply project generally consists of several phases including: conceptual design (10%), appraisal design (30%), feasibility design (60% - 90%), and final design (100%). Reclamation has completed an appraisal level (30%) design of the alternatives evaluated in the SEIS (Detailed in Appendix J). The appraisal level is appropriate for the proposed action because it provides sufficient detail to make a direct comparison of the alternatives, and also provides the information needed to assess the environmental impacts. A more detailed design is appropriate following a Record of Decision, and if significant changes occur during future design that are outside the scope of the SEIS analyses, further NEPA analysis would be completed as necessary. All analyses performed by Reclamation to determine water availability in the Project area were appropriate for the appraisal level design of the alternatives.

At this appraisal level of engineering, all available information for the Project was gathered and analyzed to determine engineering solutions and develop the alternatives. Categories of data obtained include:

- Groundwater Levels,
- Groundwater Quantity,
- Surface Water Flow Data,
- Surface Water Quality,
- General location information (GIS Data)
- Cost Estimates

Existing data were gathered from cooperating agencies, local and state government web-sites, and preliminary investigations completed by the project sponsor. Using these data, Reclamation was able to complete the appraisal design of both the Inbasin alternatives and Missouri River alternatives. There are two specific areas within the appraisal design (groundwater analysis and surface water analysis) where incomplete or missing information was identified and addressed in the SEIS process. This is further explained in the following paragraphs.

Groundwater Analysis The inbasin groundwater sources for the Project were investigated during the earliest conceptual design phase. Based on the available information, technical experts determined that inbasin groundwater would be a feasible component of an alternative to carry forward to the appraisal level. The North Dakota State Water Commission maintains a database of detailed well data for groundwater wells across the state. Information was available that described the Minot and Sundre aquifers in the project area, including their characteristics and extents. Information in the database was used to perform a GIS analysis for availability of water and determination of the feasibility of aquifer recharge. Appendix A of Appendix J in the SEIS describes the level of detail of the groundwater analysis.

A basin groundwater model was included in the analysis using basic mass balances through spreadsheet analysis which is described in detail in Section 4.0 Hydrogeology of the Minot and Sundre Aquifers, and Section 7.0 Groundwater Flow Simulations (Appendix A of Appendix J). The basin model included assumptions about the aquifer and used historic groundwater level data to determine the effects of withdrawals on the groundwater levels for both the Minot and Sundre aquifers. These assumptions are disclosed in the discussion of this modeling effort.

The level of analysis completed for the SEIS is appropriate for an evaluation of alternatives using inbasin groundwater sources. Reclamation considered the time and costs needed to gather data and develop a more sophisticated groundwater model and these estimates are disclosed in the SEIS and Appendix J. Development of a more sophisticated model would require field testing and data development that is time intensive and expensive to obtain. This level of design would be completed if an inbasin alternative is selected for implementation in the Record of Decision.

Surface Water Analysis To determine the availability of water and the effect of Project withdrawals on the Souris River, Reclamation gathered USGS data from four gage locations

along the U.S. portion of the Souris River. Information available from the USGS included historical flow data from 1903 – 2011.

Although flow data are available for the Souris River, a specific river operations model has not been developed by the U.S. and/or Canada. Development of such a model for the SEIS would be exorbitant and was not necessary for this analysis. The International Souris River Board of the International Joint Commission is responsible for Souris River transboundary water management through mandates for flow apportionment and flood control. The 1989 Agreement between the Governments of Canada and the United States for Water Supply and Flood Control in the Souris River Basin, as amended in 2000 authorizes Canada to store or divert up to 60 percent of the Souris River flow for water supply and flood control before it reaches the international border. Canada's ability to divert and store Souris River water is based on the Rafferty-Alameda Project. This project was developed between 1988 and 1995 as a multipurpose project to provide water for the area in Saskatchewan, and flood protection for residents downstream in Saskatchewan and North Dakota, including the City of Minot. The Rafferty-Alameda Project is not operated for water supply in North Dakota, and neither Reclamation nor the Project sponsors have authority to change operations of the Rafferty-Alameda Project. Because the international agreement governing the operations of Souris River reservoirs has not been modified since 2000, it is reasonable to assume that the reservoirs will continue to be operated under the terms of the existing agreement (particularly for non-flood operations) throughout the 50 year analysis period. An operations model would not provide additional insight into potential Project effects on Souris River flows because the flows upstream of Minot would not change based on Project withdrawals. Souris River flows near Minot determine the availability of water for Project withdrawals, and those flows would be the same under all alternatives, including No Action.

Based on the 100-plus years of flow data available, Reclamation determined that other analytical tools available were appropriate for evaluating the potential effects of Project withdrawals on the flows of the Souris River downstream of Minot. Two types of hydrologic analyses were used to characterize the potential effects of the Project on flows in the Souris River. These included, (1) time series analysis and trend analysis with subsequent hydrologic statistics and graphical comparisons; and (2) the Indicators of Hydrologic Alteration (IHA), as described in detail in Chapter 4 of the SEIS. This level of analysis can be used to characterize the flows anticipated at the four gage locations in the river for each of the alternatives considered. The IHA output information includes statistical analysis as shown in the Water Resource Section of Chapter 4. Reclamation, with concurrence of the cooperating agency team, determined this analysis was appropriate for assessing the potential effects of Project withdrawals on the quantity and timing of Souris River flows.

Engineering Cost Estimates Reclamation developed cost estimates for each of the proposed alternatives based on the appraisal level of design. The estimated costs are summarized in Chapter 2 of the SEIS. Appendix F of Appendix J contains the detailed cost estimate worksheets and also describes the assumptions used to develop those estimates. The unit costs associated with all the estimates are based on similar past projects and professional opinion as of 2012. These cost estimates provide sufficient information and detail to conduct a relative comparison of alternatives as part of the SEIS analysis.

Transbasin Effects Analysis

In assessing the potential impacts associated with a Project-related aquatic invasive species (AIS) transfer, Reclamation conducted a detailed literature search for data and information regarding the species of concern identified in the SEIS (Table 3-17). Also, as described in the Aquatic Invasive Species - Methods section of Chapter 4, an extensive review of potential risk methodologies and models, and potential ecological receptors of concern in the source and receiving basins, and the identification of data gaps was undertaken. Reclamation also worked collaboratively with the cooperating agencies to develop a Plan of Study for the Transbasin Effects Analysis to ensure that the analysis was based on the best available data and established scientific methods and principles. After an exhaustive literature search it was determined that sufficient ecological and biological data were not available for some species of concern. This missing and incomplete information is disclosed in the SEIS and the *Transbasin Effects Analysis Technical Report*, along with discussion of why it could not be obtained and the resulting uncertainties in the analysis.

There are many uncertainties regarding the risks and consequences of biological invasions through both Project-related and non-Project pathways. These uncertainties necessitated a largely qualitative approach to evaluating risks and consequences of AIS transfer associated with each of the alternatives evaluated, including No Action.

While some aspects of the Project-related risk can be quantitatively estimated (e.g., treatment efficacy, risk of pipeline failure), these risks cannot be directly translated into the risk of transfer and establishment of any particular AIS. For example, many of the AIS evaluated are not known to occur in Lake Sakakawea. If they are indeed absent, the Project-related risk is presently zero. If they are present but undetected, there would be some level of Project-related risk if ecological receptors, including hosts for parasites and pathogens, are present in the receiving waters. A quantitative estimate of risks would require detailed information on the distribution and abundance of each of the AIS evaluated in the Missouri River basin, Hudson Bay basin, and adjacent drainage basins, which simply does not exist.

An exhaustive survey of the Missouri River basin, Hudson Bay basin and surrounding basins would be cost prohibitive and require many years of data collection. Even the most aggressive studies, however, would not eliminate the uncertainty surrounding the presence and abundance of AIS. It would not be possible to accurately characterize the microbial community contained in the surface waters and sediments of large hydrologic basins. The apparent absence of many AIS, especially for organisms occurring in low numbers spread over large areas and distances, is better interpreted as “unknown,” when characterizing the distribution of rare species.

As discussed on page 10 of the *Transbasin Effects Analysis Technical Report* (Appendix E), the Missouri River basin, Hudson Bay basin, and adjacent and neighboring drainage basins are extremely large open systems and even the most extensive sampling programs would not deliver finite presence/absence and concentration information for AIS. In addition, the abundance of microorganisms in surface water may fluctuate seasonally and in response to environmental changes. Ultimately, these are not static or constant measurements. Definitive concentrations of AIS in drainage basins adjacent to the Hudson Bay basin are not available and could not be obtained with additional surveys regardless of the survey effort. Such concentrations would be vital input parameters for a quantitative analysis. Most of the available data on presence/absence

and distribution in publicly accessible databases and published literature are largely anecdotal. For example, the presence of fish pathogens is often undetected unless a substantial fish kill occurs. The lack of comprehensive species distribution information represents an uncertainty that reduces the ability to identify the most likely sources of introduction, quantify the risks of these transfer mechanisms, and predict potential impacts associated with AIS establishment with specificity.

There is also considerable disparity in existing literature associated with each of the AIS evaluated, and thus reasonable certainty or, conversely, uncertainty varies from one species to another. For example, there is considerably more available information on the distribution of zebra mussels, and as a species of concern it represents less uncertainty with respect to geospatial occurrence than species characterized by relatively poorly developed distribution data, e.g., most of the fish pathogens.

Non-Project pathways may be highly diffuse, with attendant risk even harder to quantify than for Project-related pathways. For example, intentionally released (authorized or unauthorized) or escaped AIS resulting from fish stocking and aquaculture trade, including hitchhikers that occurred on or in cultured organisms (e.g., parasites and pathogens), and AIS that occurred in water, food, growing medium, nesting or bedding, pose a significant but ultimately unquantifiable risk. For such pathways, risks were assessed based on a review of the published literature regarding historic invasions.

Due to the high degree of uncertainty associated with individual effects from infection and the nexus with population-scale effects, potential environmental and economic impacts related to AIS introduction are extremely difficult to estimate or predict with specificity. But, the potential impacts would be the same regardless of the transfer pathway. Because there are numerous competing pathways, it would likely be impossible to definitively distinguish between dispersal of AIS through the Project and dispersal that occurred through other anthropogenic or natural processes, which could contribute to misinterpretation of causal linkages between sources and appearance of AIS.

There were no discoveries of further material acquisitions that were not cost prohibitive and would have enhanced or strengthened the analysis. As confirmed by an independent peer review, sufficient information was obtained to support sound scientific analysis, even in the absence of additional information that could have reduced uncertainty. Reclamation has determined that the available information was more than sufficient to allow Reclamation to evaluate the risks of AIS introduction and the potential impacts of an establishment in the Hudson Bay basin.

Climate Change Analysis

In the Draft SEIS, potential effects of climate change on streamflow were addressed quantitatively for the Missouri River basin and qualitatively for the Souris River basin. There are two main reasons for the different level of analysis for these basins. First, at the time that the Draft SEIS was being prepared, downscaled hydrologic projections were available for the Missouri River basin, but not for the Souris River basin. Thus, potential changes in Missouri River streamflow under climate change could be quantified, while potential changes in Souris

River flows could not. Second, in undertaking management of its projects on the Missouri River, the Corps of Engineers has developed detailed operational models for the Missouri River that can be used to simulate streamflow and reservoir operations based on measured and projected runoff. Similar models have not been developed by the U.S. and/or Canada for the Souris River basin. Therefore, it is not currently possible to simulate coordinated operations of Souris River reservoirs in the U.S. and Canada and resultant streamflows in Minot, ND where Project withdrawals could occur.

After the Draft SEIS was released for public review, new downscaled hydrologic projections for the Missouri River basin and the U.S. portion of the Souris River basin became available. Thus in the Final SEIS, it is possible to partially quantify potential effects of climate change on Souris River flows. However, available data for the Souris River basin are still not comparable to the specificity of the data available for the Missouri River basin. For example, about 80 percent of the contributing drainage area for the Souris River Minot lies within Canada, and is not covered by available hydrologic projections.

The downscaled hydrologic projections for the Missouri River basin used in the Draft SEIS analysis were based on 112 global climate projections developed by the World Climate Research Program (WCRP) through its Coupled Model Intercomparison Project phase 3 (CMIP3). In 2012-2013, WCRP released global climate projections from CMIP phase 5 (CMIP5). CMIP5 projections use a new generation of global climate models and an updated set of greenhouse gas emissions scenarios.

In July 2014, Reclamation and partners released an ensemble of 97 downscaled climate and hydrologic projections based on CMIP5 global climate projections. These hydrologic projections cover all of the contiguous United States, whereas previously available CMIP3-based hydrologic projections covered most of the western U.S. (but not the Souris River basin). Both CMIP3-based and CMIP5-based downscaled hydrologic projections are available for the entire Missouri River basin, while only CMIP5-based projections are available for the Souris River basin, and then only for the U.S. portion of the basin.

The downscaled CMIP3-based and CMIP5-based hydrologic projections are generally similar for most of the western U.S., but there are differences, primarily related to differences in the climate models and emissions scenarios (Reclamation 2014). Although CMIP5 is newer, it has not been determined to be a better or more reliable source of climate projections compared to existing CMIP3 climate projections. Until additional studies are completed by the climate modeling community, CMIP5 projections should be considered an addition to (not a replacement of) the existing CMIP3 projections (Reclamation 2014).

Climate change effects on Missouri River System operations have not been simulated using the newer downscaled hydrologic projections based on CMIP5 global climate projections. However, changes in mean annual runoff above Garrison Dam have been calculated for each of the 97 CMIP5-based downscaled hydrologic projections. The median projection shows an increase of about 11 percent in mean annual runoff above Garrison Dam, or about 5 percent more than the median increase based on CMIP3 projections. In either case, climate change is expected to increase the median annual Missouri River runoff by about 1,300 to 2,300 cfs, and the projected increase would dwarf the effects of Project water withdrawals (approximately 19 cfs).

The median annual inflow to Lake Sakakawea is 21,300 cfs, about 260 times greater than the median annual flow of the Souris River at Minot. Thus, although the CMIP5-based hydrologic projections show a similar percentage change in annual runoff for the Souris River and the Missouri River, the change in actual volume will be much greater for the Missouri River.

The availability of new hydrologic projections for the Missouri River does not warrant a reanalysis of climate change effects in the Final SEIS. As stated above, although CMIP5 projections are newer, they have not been determined to be a better or more reliable source of climate projections compared to existing CMIP3 projections. The newer CMIP5-based projections are similar to the CMIP3-based projections (i.e., slightly increased runoff) used to model Missouri River System operations in the Draft SEIS. Under the CMIP5 projections, water supply for Missouri River alternatives would be further increased, which would decrease the already negligible effects of Project water withdrawals on Missouri River resources.

Climate change could affect Souris River flows and hence the supply of water for alternatives using this water source. In preparation of the Final SEIS, Reclamation considered the available CMIP5 projections for the Souris River basin. For the Souris River above Minot, the median hydrologic projection shows an increase of about 10 percent in mean annual runoff, which is similar to the CMIP5-based projection for the Missouri River above Garrison Dam.

Because no operations model exists for the Souris River, it is not possible to simulate changes in runoff on a daily or monthly timescale as was done for the Missouri River. However, the projected change in annual runoff can provide perspective on potential climate change effects on Souris River flows.

Based on 109 years of historic flow records, the median annual flow of the Souris River at Minot is 82 cfs. Under the median hydrologic projection (a 10.5 percent increase in annual runoff), this will increase to about 91 cfs; an increase of 9 cfs. This increase would have a minimal effect on water supply for the Project under the inbasin alternatives would withdraw up to 87 cfs from the Souris River, which would frequently result in near-zero flow with or without the slightly increased runoff under climate change. The slight increase in flows under the median hydrologic projection would not substantially decrease the significant adverse impacts of Project withdrawals on Souris River resources as disclosed in the Draft SEIS.

Indian Water Rights on the Missouri River

Assessing the direct, indirect and cumulative impacts associated with proposed Project depletions from the Missouri River system was an essential piece of analysis within the overall SEIS evaluations. Reclamation collaborated with the U.S. Army Corps of Engineers in this analysis and relied, as appropriate on its expertise, data and system management tools for the analyses needed in support of the SEIS.

The impact analysis is discussed in the SEIS, Appendix D, and supporting documents. To assess the impacts it is necessary for the analysis to consider existing as well as reasonably foreseeable future depletions from the Missouri River system. Data on existing and reasonably foreseeable future depletions was collected through cooperative efforts with federal, state, and local

agencies. The SEIS and associated documents provide more detailed explanations of the data gathered and used in the analysis.

As is the case in estimating the future use of any natural resource; there is uncertainty associated with the outcome. However, in the depletion analysis for the Missouri River system, Reclamation has made concerted efforts to gather the best available data to be used in the analysis. Where data were unavailable, Reclamation disclosed this in the SEIS, explained why it could not be obtained and discussed how this missing data could affect the Project or other users/resources associated with the Missouri River.

An area of uncertainty acknowledged in the SEIS is associated with unquantified Indian water rights. Chapter 3 of the SEIS acknowledges that all tribal reserved water rights that have been quantified or are being quantified were included in the Missouri River depletions analysis. Reasonably foreseeable future tribal water supply needs and proposed irrigation projects were included as documented in the SEIS (Appendix D, Table D-6). Reclamation acknowledged the existence of potential unquantified reserved tribal water rights but did not attempt to quantify the volume of water that could be associated with these rights because doing so would be highly speculative.

As stated in the Environmental Impacts chapter, the depletion analysis of Missouri River resources included all future tribal depletions documented in written plans and tribal reserved water rights that have been quantified. Reclamation also recognizes that several tribes with reserved rights to Missouri River resources have not quantified that right and at such time in the future, should they choose to do so, the volume of water available for other users in the basin may be affected.

Reclamation understands the importance of Tribal water rights particularly in the Missouri River Basin and acknowledged and considered this in the SEIS. Pursuant to the Winters Doctrine, for tribes in western states, where the prior appropriation doctrine's "first in time, first in right" applies, the priority date of one's water right is critical. In times of shortage, the junior (most recent) water rights holders must curtail their usage before senior users. Most Indian tribes benefit from this aspect of western water law given their long histories in their respective territories pre-European settlement and expansion westward. Thus, Indian tribes enjoy a priority date no later than the date of their reservation's establishment. For federally recognized tribes that currently reside in the Missouri River basin or that have historic ties to the basin through treaties, the priority date falls before the established water rights permit for this Project.

NEPA is an environmental disclosure law. As noted in the SEIS, Reclamation acknowledges its trust obligations to federally recognized tribes and it also informs the public that Indian water rights exist related to Missouri River water under the Winters Doctrine. It is further disclosed that there is an adjudication process to account for those water rights. Reclamation consulted with its sister Interior agency Bureau of Indian Affairs, and is not aware of any adjudication process for Missouri River tribes beyond those already documented in the SEIS. The information pertaining to unquantified water rights within the Basin is not merely missing or incomplete, is it not capable of being known.

Once initiated the settlement process for water rights can take many years of negotiation, technical studies, and public involvement. The adjudication process is not one with a timeline that can easily be predicted. Therefore, the potential water rights of all federally recognized tribes that currently reside in the Missouri River basin or that have historic ties to the basin through treaties; to impact water availability for the Project cannot be predicted and are not reasonably foreseeable. At any time in the future should additional reserved tribal water rights be quantified, or tribes enter into Indian Water Rights Settlements, the volume of water available for other (junior) users in the basin may, indeed, be affected. This statement recognizes and discloses both the potential quantification and exercise of Indian water rights and the potential effect that any such quantification and exercise could have on the amount of water available for other users in the Missouri River basin.

Reference

Reclamation. 2014. *Downscaled CMIP3 and CMIP5 Hydrology Projections – Release of Hydrology Projections, Comparison with Preceding Information and Summary of User Needs.* U.S. Department of the Interior, Bureau of Reclamation, 110 p., available online at: http://gdo-dcp.ucllnl.org/downscaled_cmip_projections/techmemo/BCSD5HydrologyMemo.pdf