

Responses to Minnesota Department of Natural Resources

Comments on the Draft Report on the Red River Valley Water Supply Project Needs and Options



Minnesota Department of Natural Resources

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October 3, 2005

Dennis Breitzman
Dakota Areas Office, Bureau of Reclamation
P.O. Box 1017
Bismarck, North Dakota 58502

RE: Comments on Red River Valley Water Supply, Needs and Options study

Dear Mr. Breitzman:

Thank you for the opportunity for the Minnesota Department of Natural Resources (MDNR) to provide comments on the Red River Valley Water Supply, draft Needs and Options study, hereinafter referred to as The Draft Report. As you know, we have been commenting on various aspects of this project since onset of the feasibility studies in 1998. We most recently commented on a draft of Chapter 5 of The Report (Letter from Kent Lokkesmoe to Signe Snortland, December 29, 2004.)

It is becoming harder to distinguish between the topics to be addressed in the Needs and Options study and the Environmental Impact Statement (EIS). Therefore, some of the attached comments are perhaps more relevant to the EIS, but we feel they are relevant at this time and we want you to have them before the draft EIS is released.

The attached comments focus on following topics:

I. Alternatives analysis and selection. The main focus of The Draft Report appears to be a demand forecast and description of options (alternatives) for meeting demand. Great care is needed in selecting alternatives for study in the Environmental Impact Statement (EIS).

II. The use of a 50-year planning horizon. We have a number of suggestions for making the transition from the analysis and conclusions in The Draft Report and for the upcoming NEPA analysis in the EIS. As we have previously stated, we are concerned with implications in The Draft Report—which is an engineering study according to your January 12, 2005 responses to our previous letter—that the alternatives analysis in the EIS will be restricted to only the seven engineering options that are identified. It is our view that “designing a water supply system for the year 2050” is a technical problem, and is not a sufficient basis to serve as a “comprehensive study” of options for meeting demands as required in the DWRA and NEPA.

The policy choices regarding water needs and options must also be driven by the problems associated with the inherent difficulties of a long planning horizon. Our reasons for these conclusions are explained in the attached comments and include recommendations to address the deficiencies.



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Response to Comment 1

See responses to specific comments below.

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III. Continued development of options on the Minnesota side of the Red River Basin We appreciate that the USBR responded favorably to earlier suggestions for studying Minnesota-side options for meeting water quality and water quantity needs of North Dakota Red River communities. This approach recognizes that options for meeting some water needs in North Dakota during severe droughts should include consideration of cross-border solutions similar to interstate water compacts used in certain dry areas in the Western United States. More elaboration of how this would proceed is needed.

IV. Specific recommendations regarding alternatives. We have several recommendations as to specific alternatives, including further elaboration on our previous proposals.

V. US Geological Survey Biota study. We provide preliminary comments because, as many of our previous comments pointed out, the biota transfer topic is crucially important to Minnesota natural resources, and because the USGS study proceeded under the Needs and Options part of the Dakota Water Resources Act studies. The comments focus on important assumptions and certain important parts of the analysis that need to be directly addressed and rectified prior to the completion of the draft EIS. More specific comments will be provided when the draft EIS is released.

VI. Miscellaneous comments. We also request two additional reports that are supporting documentation for the USGS Biota Study.

Attachment 2 is the comments that we solicited from the Minnesota State Demographers Office. These comments summarize their critical review of the population estimates used to derive the needs portion of The Draft Report.

Finally, as MDNR clearly stated while participating in the Technical Committee meetings, we reserve the right to comment in the EIS phase on any part of the technical studies that have been prepared in the lead up to the EIS.

If you have any questions, please give me a call, and we look forward to working with you and your staff as these studies progress.

Sincerely,



Larry R. Kramka
Regional Hydrologist

LRK/PS:cda

Attachments

c: Mike Carroll, DNR NW Regional Director
John Linc Stine, MDH
Will Haapala, MPCA
Dave Koland, GDCC
file

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ATTACHMENT 1

COMMENTS ON THE RED RIVER VALLEY WATER NEEDS AND OPTIONS STUDY
OCTOBER 3, 2005
MINNESOTA DEPARTMENT OF NATURAL RESOURCES

I. ANALYSIS AND SELECTION OF ALTERNATIVES

I. A. Requirements of the Dakota Water Resources Act with respect to Minnesota interests. It is important that the Needs and Options Report reflect the interests of Minnesota in a proper selection of alternatives to allow thorough consideration of impacts to Minnesota natural resources. The Dakota Water Resources Act of 2000 (DWRA,) states:

“(b) Report of the Red River Valley Water Needs and Options

(1) IN GENERAL . . . The Secretary of Interior shall conduct a comprehensive study of the water quality and quantity needs of the Red River Valley in North Dakota and possible options for meeting those needs. (Emphasis added.)

... (3) PROCESS. In conducting the study, the Secretary through an open and public process shall solicit input from gubernatorial designees from states that may be affected by possible options to meet such needs as well as designees from other federal agencies with relevant expertise.” (Emphasis added.)

As noted, the DWRA requires consultation with Minnesota, and it is to be a comprehensive study. We fully recognize the emphasis in the DWRA on North Dakota, but to the extent that Missouri River water imports are studied, the word “comprehensive” is much more significant. This clearly expands the study scope to consider alternatives based on factors other than engineering criteria.

As a practical matter, it is clear that the intent of Congress was for The Draft Report to have a function beyond the specific requirement that it be prepared. Minnesota has, by law, a significant advisory role in its preparation, and by policy because Minnesota can be adversely affected by biota transfers. Furthermore, some proposed features are located in Minnesota.

I.B. Alternatives analysis required by NEPA. As our 12/29/2004 letter noted, according to CEQ regulations, the alternatives section of an EIS “is the heart of the environmental impact statement . . . it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis of choice among options . . .”

We also cited CEQ requirements that NEPA requires federal agencies that are preparing an EIS to not only be inclusive in studying alternatives that are environmentally more compatible, but to actually go outside the scope of specific Congressional charges, as follows:

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Response to Comment 2

Reclamation has solicited input from Minnesota and other potentially affected states throughout the preparation of this report. The process has been open and public. All of the plans of study that guided preparation of the report were developed with input from stakeholders, including Minnesota. These plans of study and results of analyses were discussed in detail at Technical Team meetings convened by Reclamation. Staff of Minnesota Agencies (Minnesota Department of Natural Resources, Minnesota Pollution Control Agency, and Minnesota Department of Health) have actively participated in Technical Team meetings, and the Minnesota Department of Natural Resources is a member of the Cooperating Agency Team for the environmental impact statement.

Two teams of stakeholders (Technical Team and Study Review Team) were formed to incorporate public involvement in study planning. Gubernatorial designees from states that could be affected by the Project and other representatives of federal, state, local agencies, tribes, and environmental groups were invited to serve on the teams. In 2003, the Study Review Team was combined with the Technical Team. Technical Team members reviewed and commented on plans of study and draft reports. Organizations and agencies whose representatives attended Technical Team meetings are listed in table 1.3.1. of the Final Needs and Options Report. The Draft Needs and Options Report was distributed to the Technical Team, the public, federal agencies, and potentially affected States for a 120-day review. Comments received from reviewers were given serious consideration and were used in preparing the Final Needs and Options Report.

Public involvement extended beyond the Technical and Study Review Teams. Reclamation, with the assistance of the North Dakota State Water Commission, conducted water users meetings in eight communities in the Red River Valley during October 2002. The purpose of these meetings was to present information about the studies being conducted for the Needs and Options Report and solicit the assistance of local communities in these efforts. This also gave the water users an opportunity to learn about previous Reclamation Red River Valley studies and to provide comments. Comments received during these meetings and during public scoping of the DEIS (draft environmental impact statement) were taken into consideration and assisted Reclamation in developing the options described in the Final Needs and Options Report.

Response to Comment 3

A full range of reasonable options (alternatives) are described in the Final Needs and Options Report and in the DEIS. The alternatives were developed with input from stakeholders through the scoping process for the DEIS. If you have ideas for other specific alternatives that meet the stated needs, we would appreciate receiving information on these for consideration.

“Memorandum: Questions and Answers about NEPA Regulation

2b. Q. Must the EIS analyze alternatives outside the jurisdiction or capability of the agency or beyond what Congress has authorized?

A. An alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable. A potential conflict with local or federal law does not necessarily render an alternative unreasonable, although such conflicts must be considered. . .

Alternatives that are outside the scope of what Congress has approved or funded must still be evaluated in the EIS if they are reasonable, because the EIS may serve as the basis for modifying the Congressional approval or funding in light of NEPA goals and policies.”

(Emphasis added.) (Source: NEPA Deskbook, p. 275)

According to The Draft Report, *“Population and water demands were projected to 2050. Designing a water supply system for the year 2050 is consistent with the typical service life, without major rehabilitation, of project features such as water treatment plants, pumping plants, and storage reservoirs. . .The DEIS (draft EIS) evaluates the environmental effects of the options identified in the Needs and Options Report.”* (Page 1-3.) An engineering-alone approach would be suitable for a substantially shorter planning horizon, but with so many other variables at play, a 50-year NEPA alternatives analysis must be broader than engineering analysis.

The Draft Report identifies seven alternatives for meeting the projected water demands at the end of a 50-year time period. The Draft Report implies that only these seven, plus the “no action” alternative, will be addressed in the EIS. The next section discusses why we feel this is not appropriate.

II. THE ANALYTIC APPROACH TO A 50-YEAR FORECAST OF WATER SUPPLIES AND SOLUTIONS.

It is our opinion that a 50-year engineering water demand forecast is insufficient grounds for setting public policies on a major interbasin bulk water transfer. The Draft Report estimates water demand for 2050 and describes various physical facilities that will need to be constructed by then. Little analysis of demand management is provided in this approach. Some effort is given to controlling demand through some water conservation measures, but the fact that no drought measures are included indicates how little attention this receives.

Such an approach limits the types of alternatives provided and does not adequately inform the important public policy decisions that have to be made by the project proposers as well as other states and the federal government.

For example, a large public financial investment will be needed to meet the demand that understandably peaks at the end of the 50-year time frame. But more significantly, the public investment to meet the 50-year demand must be done in the near term for the Missouri River options. Who pays also differs among alternatives, and the “up front” investment for

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Response to Comment 4

The water demand projections developed for this study were based on the best available information. These projected demands include the implementation of reasonable and sustainable water conservation measures. In addition, Reclamation conducted an evaluation of potential drought contingency measures. The results are summarized in the Final Needs and Options Report, chapter four, pages 4-36 through 4-41. An explanation of the complete analysis is included in Appendix C, Attachment 9. The analysis shows that imposing drought contingency measures that result in water savings up to 7.5% would have minimal economic impact, but water demand reductions above 7.5% would result in negative economic impacts that would outweigh potential cost savings.

The 2050 planning horizon used in the report is consistent with the typical life of major project features, including pipelines and treatment plants. Reclamation agrees that projections based on this horizon are inherently more uncertain than they would be if a shorter planning horizon had been used. Nonetheless, Reclamation believes that the demand projections, coupled with the potential for a severe drought, support the need for developing additional water supplies in the Red River Valley.

The financial impacts of all alternatives, including federal vs. non-federal costs, are described in the DEIS.

Missouri River import options requires more federal funds (the biota containment facility is to be federally funded, for example.)

We have no objection to this time frame as long as the implications and uncertainties of such a forecast are carefully discussed, and as long as there is a willingness to address other alternatives not based solely upon physical options and features for meeting water demands 50 years in the future. It is clear that much effort has been made to quantitatively estimate all aspects of the many variables that would be at play in a 50 year forecast; nevertheless, any forecast out 50 years in the future is inherently speculative and a product of the assumptions more than any numerical characterization of the variable.

Finally, since such proposals would involve a major governmental funding intervention, other governmental interventions aimed at long-term demand reduction should also be included as an alternative. (See, for example, our specific recommendation regarding the Sustainability Alternative in Section IV.B)

II.A. Uncertainty and sensitivity analysis needed.

The Final Report needs to include a section that accurately describes and summarizes the consequences and uncertainties inherent in a 50 year planning horizon. The new section should include a discussion of key assumptions affecting 50-year forecasts of water demands, drought cycles, population, and costs. These assumptions profoundly influence numerical values throughout the report. Also needed is an analysis as to whether each alternative is affected differently by the various assumptions. Without such an analysis, The Draft Report is not useful for the set of decisions that must be made nor is it sufficient to support choices of alternatives.

The Draft Report describes a 50-year planning time frame as being necessary because this is approximately the life of the physical features to be constructed, and this is standard practice when dealing with municipal and industrial water supplies. The Draft Report then goes on to develop, for the year 2050, very specific water demand figures, population estimates, and estimated costs. (Pages 2-80, Section 2.3, and Section 4.5, respectively.)

Section 5 of the report compares the seven options using only the 2050 numbers (population, water demand, and project costs) as if they fully depict the differences among alternatives, and are adequate to define all appropriate NEPA and Clean Water Act alternatives.

The following are examples of key assumptions in The Draft Report that likely affect the quantitative results and choice of alternatives.

--Drought contingency water conservation measures are not included in the study: "*All of the options described in chapter four meet future water demands without incorporating drought contingency measures in the water demand estimates . . . (such) measures are an important safety factor that must be reserved for unforeseen events.*" (The Draft Report Page 2-13;

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Response to Comment 5

The two water demand scenarios developed for this study provide insight into the relationship among water demand, population, and option costs. Potential drought contingency measures are described in the Final Needs and Options Report, chapter four and Appendix C, Attachment 9. Additional sensitivity analyses regarding population projections, drought measures, water conservation, and water demands will be described in the FEIS (final environmental impact statement).

however this conflicts with a statement in the Final Water Conservation Potential Assessment that such measures “*will be addressed in the Needs and Options Report.*” (P. 1) In contrast, and without an analysis, The Draft Report also states: “*Options developed in this study are more about addressing water shortages associated with drought than they are about projected increases in water demand, although demands would be met.*” (Page 5-2)

--The water demand numbers in The Draft Report are a result of, and rely on, a drought frequency study by Meridian Environmental Technology, Inc that concludes that a 1930s style drought will again occur by 2050: “*The fundamental conclusion of the study was that the 1930s drought was not an anomaly occurring every 1000 years; it was a climatic event likely to be repeated before 2050.*” (page 5-1 and 2.) (The MDNR acknowledges that a 1930s drought is a reasonable scenario to be used for planning purposes.)

--Projected industrial water shortages are based on an NDSU study by the Agricultural Economics Department of NDSU that promotes value added economic growth in the agricultural sector: “*The industrial study concludes that value-added food processing, and the water required for this activity, would continue to increase through the 2050 planning horizon based on past trends.*” (Emphasis added, page 5-4.)

--The two differing demand scenarios used in the study are not based on an attempt to analytically capture the inherent uncertainty of a 50 year forecast, but rather the higher scenario relies on increased population estimates by those interested in growth in the Fargo area: “*Scenario Two includes 2050 population projections from water users and the high scenario future industrial water demand project.* . . (page 5-3, emphasis added, from the forecast of value added food processing in the NDSU study; most water users are in the Fargo area.)

--Water conserving infrastructure or operations for new industry is assumed to be absent. “*The (water) conservation measures involving new industrial water demands were eliminated because there was no scientifically sound method to estimate water savings of a theoretical industrial facility prior to its design.*” (P. ES-1, Final Water Conservation Potential Assessment, USBR)

MDNR comments on a proposed corn milling plant in North Dakota using Red River water resulted in a plant redesign that used substantially less water than originally proposed. (Letter 12/11/1995 from John Linc Stine, MDNR, to Dan Cimarosti, US COE, Bismarck, comment on 404 notice on proposed ProGold wet process corn milling plant near Wahpeton, ND.) These comments were supplied to USBR during deliberations on the Technical Committee.

Our review of The Draft Report and supporting documentation indicates no extrapolation over the 50-year period of other non-economic and non-engineering factors that can influence costs and water demands. For example, see Section V.B.2 below regarding the failure to forecast additional controls of invasive species.

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II.B. Implementation analysis and effects on financial risk and timing of construction.

The Missouri River import options are fundamentally different from all others in that they all involve immediate, large, up-front public investment to meet water demands that presently do not exist, and will not occur for 50 years. This affects cost issues among alternatives, likely indicates that the same cost assumptions cannot be made for all options. In addition, The Draft Report does not describe key differences among alternatives that greatly influence cost and financial risk.

Based on the high degree of uncertainty regarding population, technology, commercial industrial trends, and weather forecasting, “up-front” expenditures required for the Missouri River import options carry a substantial risk should the assumptions prove wrong. In an important sense, the in-basin alternatives, on the other hand, require more incremental investment since they are built as needed based on shorter term and using more reliable demand forecasts.

Therefore, we recommend that an additional section be added to the Final Report to include:

--An analysis of the financial and social equity consequences of building a Missouri River import alternative that is not needed, e.g., that uses population and industrial growth projections lower than normal, and eliminating a 1930s drought from the 50 year planning frame, but still builds import option facilities early.

--An analysis of the cost savings of the incremental approach.

--An analysis of drought contingency measures, and other elements, that would be needed to address a near-future 1930s drought. Measures to address this shortage would not be burdened with the additional population growth that is projected to occur by 2050, and, furthermore, are a practical solution should such a drought suddenly occur in the near future. Essentially, this is emergency planning. This should include an analysis of whether there are Minnesota-side supply alternatives that could be implemented on a short-term emergency basis. This is essentially an analysis of a set of “good neighbor” approaches to get through a short-term emergency 1930s drought that might occur in the near future. Such an analysis would then also contribute to the long-term analysis by figuring in the options and features that are developed.

III. CONTINUED DEVELOPMENT OF OPTIONS ON THE MINNESOTA SIDE OF THE BASIN

It is unclear in The Draft Report when features in Minnesota would be proposed, and who would propose them. North Dakota has indicated to us that they are concerned as to how Minnesota would implement water supply features that would be used by North Dakota Red River communities. This analysis is needed in the Final Report so Minnesota can respond to this reasonable question and foresee the timing of regulatory issues and environmental reviews.

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Response to Comment 6

All of the options considered would require a large up-front investment to construct. Reclamation does not agree that there is a fundamental difference between Missouri River import options and in-basin options in this regard. Each of the options described in the report includes many component features. Some of these features would be amenable to phased construction, while others would not. Discussion of phasing construction of options is included in the Final Needs and Options Report, chapter four, pages 4-35 through 4-36.

Response to Comment 7

The financial and social impacts of all alternatives including No Action are identified in the DEIS.

Response to Comment 8

Discussion of phasing construction of options is included in the Final Needs and Options Report, chapter four, pages 4-35 through 4-36.

Response to Comment 9

Only the current 2005 and future 2050 planning horizon were investigated in the Final Needs and Options Report. The advantages of phasing construction of options are described in chapter four, pages 4-35 through 4-36.

Response to Comment 10

The options are reasonable and could be implemented. A discussion of how Minnesota water supply features would be implemented is premature and outside the scope of the Needs and Options Report, which is a needs assessment and engineering document.

This description is also needed to fully allow a comparison of alternatives, and to understand how implementation of Minnesota-side features could be analyzed and proceed accordingly.

IV. SPECIFIC RECOMMENDATIONS REGARDING ALTERNATIVES.

IV. A. Removal of the Lake of the Woods water supply

We reiterate our comments from the 12/29/2004 comment letter that this alternative should be removed from further consideration.

IV. B. Addition of a Sustainable Development alternative to the study.

Our 12/29/2004 letter recommended inclusion of a Sustainability Alternative (page 6). The USBR response to these comments (January 12, 2005) asked for specific elaboration on this proposal. As our comments in Section II above indicate, more analysis of reduction of demand for the 50-year time period is needed.

As noted elsewhere in these comments, The Draft Report in part relies on an NDSU study that forecasts strong growth in water intensive agriculture processing industries. It is our contention that, given the contemplated public investment involved in an interbasin transfer of water, another alternative needs to be developed whereby measures are taken to steer economic growth in the Fargo area toward less water-consumptive industries and steer new water-intensive agricultural users to technologies or operations that require less water, or to locations elsewhere in the state, such as in the Missouri River basin where water is available.

Therefore, this additional in-basin alternative would focus on various ways to reduce demand over the 50-year time period that would be sufficient to remove some of the more expensive features now included in the of the 50-year time period. Demand reduction measures would include:

--Focusing additional growth of value added industries in North Dakota to the Missouri River basin to utilize water without requiring out-of-basin diversion.

--Added water cost measures (such as higher costs to high volume users) to be invoked during the 1930s drought that is expected to be included in the 50-year time frame.

--Additional drought contingency measures and water conservation measures

--Strengthened government efforts to promote economic development that does not require heavy consumptive water uses

IV.C. Addition to the analysis of the list of in-basin alternatives analyzed for further study of the pipeline from Lake Ashtabula to Fargo.

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Response to Comment 11

Your comment is noted. The Lake of the Woods Alternative is reasonable and the environmental effects of this alternative are evaluated in the DEIS.

Response to Comment 12

All of the options considered are sustainable. The options were sized to meet projected industrial water demands. Encouraging water-using industries to locate in other parts of the state is outside the scope of this needs assessment and engineering report. Water conservation is included in all of the options. Additional demand reduction through implementation of drought contingency measures is discussed in the Final Needs and Options Report, chapter 4, pages 4-36 through 4-41.

Again, we reiterate our comments from the 12/29/2004 comment letter that this is the only alternative in The Draft Report where environmental criteria were used to eliminate an alternative. If the Lake of the Woods alternative is kept in for further study, so should this alternative be retained. The proper place to describe adverse impacts to the Sheyenne River from this alternative is the EIS.

V. US GEOLOGICAL SURVEY BIOTA STUDY.

USBR has indicated that the USGS biota risk study was done under the Needs and Options part of the overall studies required by the DWRA. Because of this, and because of the short time frames contemplated between now and publication of the Final Needs and Option study and draft EIS, we are providing general comments pertaining to key assumptions and analysis because these need to be corrected in the draft EIS and subsequent studies.

V.A. General comments. We have four general comments which cover the USGS study as well as the USBR engineering report "Water Treatment Plan for Biota Removal and Inactivation; Preliminary Design and Cost Estimates" that is one of the supporting reports for the Needs and Options study.

V.A.1. Draft EIS comments on the USGS study. MDNR comments on the USGS study will continue in the draft EIS. The USBR contracted with the USGS to prepare a report that was not open to public comment, even though USBR had committed to providing a draft of the USGS study prior to its completion. The USGS study was finalized before release and it was only given to us recently. Obviously, any information provided in the EIS that comes from the USGS report is open to our comments, based on CEQ regulations.

V.A.2. Accessibility of the USGS Study analysis to the public and stakeholders. In previous comments dating back to 1998, the MDNR has strongly indicated the importance of a careful and early assessment of the potential for biota transfer and a full assessment of the impacts that could ensue. Given that four of the alternatives for this project involve proposals to move bulk water across the Continental Divide into the Hudson Bay drainage, it is our opinion that this topic needs to be addressed in a manner that is fully accessible and understandable to decision makers and the public. MDNR has to answer to many citizens and public stakeholders. Any bulk water proposal of this policy magnitude, as well as importance to the citizens of Minnesota, must meet a high standard of readability.

It is our opinion that the USGS study is difficult to read, understand, and interpret. Any part of the EIS that is derived from this study *must* be written to make it accessible to decision makers and the public.

V.A.3. Biota containment system is central part of analysis of Missouri River import options. The "big picture" issues concerning prevention of the movement of biota into the Hudson Bay drainage for the Missouri River import options are lost in The Draft Report, supporting

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Response to Comment 13

Your letter of December 29, 2004, stated that “clearly, surface conveyance of water during dry periods results in large losses that do not occur if the conveyance is a pipeline.” In most cases using a pipeline instead of a river to deliver water reduces evaporation and seepage losses. However, hydrologic modeling indicates that channel losses in the Sheyenne River below Lake Ashtabula are low; therefore, it would not be feasible to construct a pipeline that provides insignificant additional efficiency.

Response to Comment 14

The plan of study for the biota transfer risk analysis was developed with input from many stakeholders, including Minnesota. The report was reviewed through the U.S. Geological Survey peer review process using outside scientists to ensure that it is technically sound.

The results of the risk analysis are summarized in the DEIS. Additional analysis on the potential for failure of control systems will be disclosed in the FEIS.

technical documentation regarding water treatment, and in the USGS study. It is recognized and accepted by all stakeholders that a containment system for preventing the spread of undesirable species from the Missouri River basin to the Hudson Bay drainage must be inherent in any proposal for an import option. It is also clear that all details of any such containment system must be open to careful review that covers its design details (including species-specific aspects), propensity for failures, cost, and funding sources. MDNR has repeatedly made this point. Since Congress must approve any such proposal, and compliance with the Boundary Water Treaty needs to be determined, the containment system design and associated risks will also be subject to Congressional discussion.

A thorough and clear discussion of all aspects of this topic is essential. The next section focuses on the current deficiencies with regard to the biota containment system, and has suggestions for addressing this in the draft EIS.

V.A.4. Limited utility of the Consequence Analysis. This portion of the USGS study only addresses a small portion of the possible economic consequences of possible invasive species. We question whether it is useful in any way in the preparation of the EIS. A thorough and clear discussion of this entire topic is absent, but is essential.

It lacks any discussion of the following issues, and we note that this is not a complete list of its deficiencies:

--Recognition of the natural resource consequences that are not conducive to economic assessment.

--Description of the natural resources economy.

--Costs of exotic species management.

--An assessment of ecosystem degradation and loss of ecosystem services.

--Consideration of impacts above Fargo and in the Minnesota Red River tributaries rather than only in the Red River itself.

V. B., Specific comments on key assumptions and the analytic approach.

The following comments on the USGS study need to be considered before the report is used in the draft EIS. These are:

V.B.1. Actual risk assessment vs. providing a range of risk reduction strategies. The USGS Study needs to make it more clear that it does not actually assess the residual risk of failure of any specific "biota treatment plant" designed for a Missouri River import alternative, or the risk of failure of the a containment system. Rather, the USGS Study describes the types of technology and water treatment scenarios as a range of theoretical scenarios. Section 4, "Risk characterization and uncertainty analysis" indicates it is left up to the USBR managers to

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determine an acceptable level of risk and then ask engineers to design a “biota treatment plant” to attempt to attain this (as yet undefined) risk level.

“Hence, our characterization of risks associated with biota transfers realized with control systems in place is “practically zero,” but will never equal zero. The selection of component technologies within the control system’s final design will influence the contribution of engineering failures to the invasion process, and as such, can be pursued once an acceptable risk is determined by Reclamation and Technical Team” (p. 4-81, emphasis added)

“Identifying acceptable risks, in part, relies upon resolution of differences in resource valuation among stakeholders. . . . Once acceptable risk is characterized, technical support within a resource management program can be fully tasked to develop control systems whose performance criteria attain that level of acceptable risk. . . .” (p. 4-81, emphasis added)

“. . . if control systems meet performance criteria, e.g. provide for “best available technology”() to achieve elimination of biota of concern, then risk associated with interbasin biota transfers and their subsequent establishment as invasive species (or significant increases in population of species currently resident in the receiving basin) are substantially reduced relative to risks associated with a control system that does not meet these performance criteria such as piped transfers of untreated source waters(*Distinctions between “best available technology” and “best available technology not exceeding excessive costs” are not considered in this characterization but may be pertinent to discussions among Reclamation, Technical Team, and other stakeholders.”)* (p. 4-83, emphasis added)

These quotes from the study indicate that our previous comments have been addressed. The following questions come to mind from this approach, and indicate that USBR has not yet addressed some important questions, including:

–We have consistently requested that the proposed biota containment system be specifically assessed early, and thoroughly. If this had not been done, how will the draft EIS address this important topic?

–What criteria will USBR use to determine the “acceptable level of risk” referred to above?

–How will USBR determine “excessive costs” in relation to measures to contain invasive biota, in relation to potential impacts to Minnesota natural resources, and in relation to complying with the Boundary Waters Treaty?

–Given that the USGS study has been finalized and the short time frame for the release of the draft EIS, the above quotes would seem to indicate that the draft EIS will not provide the needed analysis of the biota containment system. Does this mean the USBR intends to provide this critical analysis in an addendum to the EIS, or not until the Final EIS?

V.B.2. Need for extrapolating trends for controlling invasive species expansion in water

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systems.

The supporting report discussing the preliminary design of the water treatment plant indicates that current water quality standards, which do not contain biota containment standards, were used in the preliminary design. Surrogates for organisms potentially affecting fish and wildlife species, such as *Giardia lamblia* and *Cryptosporidium* were used instead:

"There currently are no federal water quality regulations for biota treatment for ecological protection prior to inter-basin transfer, with the exception of Giardia lamblia, Cryptosporidium and viruses, which are regulated as human health pathogens. USEPA standards do not apply, and there are no standards under the Boundary Waters Treaty, Invasive Species Act, etc. for biota. The "GDU Replacement Alternative" provides potable water that meets USEPA National Drinking Water Regulations under the Safe Drinking Water Act (SDWA). The other alternatives do not have a potable water requirement, but may have such a requirement in the future. In the absence of standards for treatment of non-native biota associated with potential interbasin water transfers, minimum treatment levels are compared to existing Primary standards for Giardia lamblia, Cryptosporidium, and viruses. Secondary standards are also considered, but only relate to compatibility issues and the GDU replacement alternative." (P. 10, Water Treatment Plant for Biota Removal and Inactivation: Preliminary Design & Cost Estimates, Technical Services Center, USBR, Denver.)

The rest of the Needs and Options study uses a 50-year planning time frame, while this study makes no attempt to follow the regulatory trends regarding control of invasive species. All of the trends are toward increasing regulation of these species, as awareness of the huge economic and environmental damage that they cause grows. Finally, several recent federal court decisions have found that invasive biota are considered to be controlled under the Clean Water Act.

V.B.3. Biota containment system needs to be specifically designed to treat target species potentially affecting fish and wildlife species.

The USGS study and supporting technical reports on water treatment methodology recognize that biota containment measures must be targeted at species-specific water treatment technology (filtering, disinfection, etc.) because of species-specific characteristics:

"More importantly from the perspective of its role as a disinfection chemical, chlorine provides poor disinfectant levels for Cryptosporidium spp. and other microorganisms characterized by chlorine-resistant stages in their life history (e.g. spore formation, see Appendix 3B). For target organisms such as Cryptosporidium spp., filtration provides an alternative disinfection method used singly or in conjunction with chlorination . . . As a disinfectant, (Chlorine dioxide) is as good or better than chlorine for the inactivation of Giardia and is better than either chlorine or chloramines for the inactivation of Cryptosporidium . . ." (see pp. 3-4 and 5, Appendix 12, USGS study)

The study evaluated *human pathogens* that have unique characteristics necessitating a specific response in treatment system design. Pathogens affecting fish and wildlife species will also

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have unique characteristics. The USGS study recognizes this in Section 6, Summary and Conclusions: "(7) *Biological invasions associated with treated waters transferred through a controlled and contained conveyance would be more likely to be successful as a function of life-history attributes of the biota being transferred and not highly dependent on mode of transfer alone.*" (pp. 6-9, emphasis added.)

The technology being contemplated in the engineering reports does not directly address invasive species that affect fish and wildlife species and habitats, and so cannot be considered a biota containment facility sufficient to address this topic in the study. The draft EIS, or the Final Needs and Options study, needs to provide a clear explanation as to why a water treatment plant technology designed to protect human health can be presumed to treat unknown pathogens and parasites potentially affecting many different fish and wildlife species. This topic is partially addressed in the USGS study, but not in a form useful for determining specific risks.

This causes problems for risk analysis in other ways. For example, the study notes that it did not attempt to make quantitative estimates of risks associated with indirect pathways and indirect effects on natural resources (page 6-9) "(9) *Interbasin water transfers are also likely to indirectly influence biota transfers, biological invasions . . . (and) attendant outcomes . . . Quantitative estimates of risks characteristic of indirect effects (cannot be obtained), given the unspecified engineering designs proposed . . . (11) For complex systems, the analysis of indirect effects becomes idiosyncratic and highly scenario dependent. The focus of the present report has been on risks potentially associated with direct effects attendant to interbasin water diversions . . .*" Page 6-9 and 6-10.

VI. MISCELLANEOUS.

The USBR Final Report "Water Treatment System Design Evaluation", August 2004, Technical Service Center, Denver, cites two reports prepared by Houston Engineering Inc. and Montgomery Watson Harza Americas for the Garrison Conservancy District. Acquiring these reports is necessary because the above referenced USBR report states in its conclusion: "the HM1 and HM2 reports provide an accurate and in depth look at water treatment options and coincide with our water treatment recommendations with a few exceptions."

These reports are titled:

1. "Red River Valley Water Supply Study, Needs and Options Report, Preliminary Water Supply and Treatment Analysis"(referred to as HM1 in the text);
2. "Design Criteria, Red River Valley Water Supply Study, Needs and Options Design Element." (Referred to as HM2 in the text.)

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Response to Comment 15

The Houston Engineering water treatment plant reports provided some information on water treatment, but the actual decision document is Reclamation's report titled *Water Treatment Plant for Biota Removal and Inactivation Preliminary Design & Cost Estimates, Red River Valley Water Supply Project*, which documents the biota treatment plants proposed for the import options.

Attachment 2

September 23, 2005

To: Tom Gillaspay
Minnesota State Demographer

From: Dr. Martha McMurry
Minnesota State Demographic Center

Subject: Comments on Red River Valley Water Supply Project

We were asked by Larry Kramka of the Minnesota Department of Natural Resources to comment on the population projections produced in connection with the Red River Valley Water Supply Project. These projections were published in 2003 by the Bureau of Reclamation Dakotas Area Office.

My discussion here focuses on Enclosure #2, which contains what the Bureau of Reclamation considers the "best estimates." The so-called best estimate shows the study area population growing from 462,400 in 2000 to 638,600 in 2050.

I found the descriptions of methodology to be cryptic and hard to evaluate, but after reading the chapter several times I inferred that the "best estimates" are whichever ones are the highest. This conclusion may support the aim of the Bureau of Reclamation, but it's not standard in the projections field.

My initial plan was to focus on the Minnesota portion of the projections, but when I looked at the numbers it's clearly North Dakota, particularly Cass and Grand Forks counties, that are driving the differences in the projections scenarios. The Bureau of Reclamation assumes strong growth in these two urban areas.

The first thing I noticed was that the projected numbers in Enclosure #2, the "Report on Red River Valley Water Supply Project Needs and Options," do not match the numbers in Enclosure #4, the consultant's report. Both documents were published in 2003. Why were the consultant's numbers not used? It appears that, instead of using the numbers from the consultant's report, whoever wrote the report created yet another set of projections.

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Response to Comment 16

Reclamation revised the *Report on Red River Valley Water Supply Project Needs and Options, Current and Future Population of the Red River Valley Region 2000 through 2050, Final Report* to provide additional clarification on population projections. Reclamation used the “optimistic” population projection of 417,600 (table 9) for the 13 eastern counties of North Dakota. This estimate was 15,100 higher than the estimate assuming lower migration shown in table 8, or a 3.8 percent increase. The difference was 27,079 or 6.9% higher than the projections provided by Northwest Economics Associates.

Reclamation contracted with Northwest Economics Associates to independently estimate population growth to compare to Reclamation’s projections. In either case, the difference in population has little effect on the option cost estimates, so no changes were made to the Final Needs and Options Report. As you stated in your critique of the population projections, “the “best estimate” projection is only about 26,000 more than the more conventional “trend migration” projection after 50 years, a difference of less than 5 percent. This is not a huge difference in the world of population projections.” We agree.

The next thing I noticed was that the “best estimate” in Enclosure #2, said to be based on a combination of methods, gives numbers in excess of the numbers from any of the methods shown. There is no real explanation of where this “best” number came from. **On page 18 it is hinted that the “best estimate” is based on combining the highest numbers from the two cohort-component scenarios, i.e. they used the “zero migration” scenario for declining rural counties and the “trend migration” scenario for growing urban counties.** When I tested this interpretation against the numbers, I found the regional total for Minnesota matched the sum of the highest values. But in North Dakota, the “best estimate” of 417,600 was higher than the sum of the highest county projections, 413,000. In addition, the authors of Enclosure #2 have redistributed the total valley population so that a higher proportion is in the urban areas and a lower proportion in rural areas.

Another concern I have — one that applies both to Enclosure #4 and Enclosure #2 — is that the projections for Cass and Grand Forks counties are out of line with projections for North Dakota as a whole. The Census Bureau projects the North Dakota population will decline between now and 2030. If we extrapolate the Census Bureau’s projected rate of decline for North Dakota out to 2050, the total state population would be about 584,000. **If we look at the Bureau of Reclamation “best” projections, we see that Cass/ Grand Forks counties combined are projected to grow 91% in 50 years. If we subtract these two counties from the Census Bureau state totals, the population in the rest of North Dakota would decline by 51%, or more than 200,000 people.** This is not a likely scenario. If Fargo/Grand Forks are booming as much as the Bureau of Reclamation suggests, there should be at least some spillover to the hinterland.

If you are going out 50 years into the future, any projection becomes highly problematic. The Bureau of Reclamation prefers to err on the high side rather than the low side, but that doesn’t mean their numbers are wrong. My problem with their projections is that they make no plausible case for the higher numbers. One could make such arguments. Perhaps the Census Bureau projections for North Dakota are too low. Maybe more immigrants will move to the area, or people from the Coasts will move there to avoid high housing prices and hurricanes. But the Bureau of Reclamation doesn’t make these arguments. Instead, for the so-called “best estimate” they use numbers that are higher than any of their various projections methods show.

Despite my various criticisms, I should note that the “best estimate” projection is only about 26,000 more than the more conventional “trend migration” projection after 50 years, a difference of less than 5 percent. This is not a huge difference in the world of population projections.

Specific Comments on “Enclosure 2”

On page 11, the discussion of the percentage change attributable to net migration is confusing. It’s not clear how these values are transmitted from the state to the county level.

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On page 11, net in-migration for Cass County is projected to increase steadily each year. The rationale for this assumption is not given, though it probably has a major effect on the large population increase projected for this county.

On page 11, they say they used our 1990-2000 estimates of net migration for Minnesota counties, but do not state how they translate these into age-specific rates.

On page 11, the report states that the results in Tables 7 and 8 are combined and results presented in Table 9. However, as noted earlier, the figures in Table 9 are considerably higher than those in either Table 7 or Table 8. My interpretation is that they used whichever number is higher and then added a few thousand extra for the North Dakota portion.

On page 11, the report states that the growth rate of the “best estimate” is higher than the growth using historical rates, zero migration, or the past migration scenario. No rationale is given for why the future growth rate will be higher, except for the vague statement that they assume “stabilized rural population and continued growth of the urban population.”

On page 14, the report states that it is “unlikely” that the percentage of regional population in Cass County will decline. This result was shown in two of the projections scenarios. One could argue that this result is not unlikely; if the Fargo area continues to grow, population growth is likely to expand to neighboring counties in the usual pattern of suburbanization.

Northwest Economic Associates Projections

Northwest Economic Associates was hired by the Bureau of Reclamation to prepare population projections for the Red River Valley. This report is labeled Enclosure 4 and titled “Population Projections for Red River Valley Counties and Municipalities, 2000 through 2050.” NEA uses a cohort-component model and has two scenarios: a zero migration scenario and a scenario trending current migration rates. They assume constant survival rates (conservative) and adopt the Census Bureau’s assumption of rising fertility rates (not my choice, but defensible considering the source.)

In some places the consultant’s description of the method is a bit vague. For example, they don’t explain how they translate from mortality data by 10-year age group they obtained from the National Center for Health Statistics to the 5-year mortality data they need to do projections. Also, they say they use in and out-migration, but the description suggests they are using net migration.

Though one can always quibble about some of the details and assumptions, the consultant report seems to take a fairly conventional approach. **However, it seems the final Bureau of Reclamation “best estimates” don’t use these numbers, so they are basically irrelevant.**

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Comparison of Bureau of Reclamation Projections

	1950	2000	2050, zero mig Enc. #2	2050, zero mig Enc. #4	2050, trend mig Enc. #2	2050, trend mig Enc. #4	2050, average "best"	2050, average Enc. #4
North Dakota	619,636	642,200	214,100	141,900	227,500	244,545	254,800	193,223
Cass County	58,877	123,138	81,100	79,407	107,100	85,459	107,100	82,433
Grand Forks County	39,443	66,109						
All others	521,316	452,953						
RRV ND total			373,600	308,597	402,500	399,384	417,600	353,991
Minnesota RRV		173,950	173,000	174,653	210,600	179,346	221,000	176,999
Clay		51,313	56,300	61,053	56,200	58,286	83,600	59,699
Other Tail		57,222	51,100	51,329	98,200	69,845	81,700	60,857
All other RRV		65,415	65,600	62,271	56,200	51,215	55,700	56,443

Population Projections in "Enclosure 2" Report

State	Table 3, Sources, 2000 or 2030 Census		Table 4, 2020 or 2030 Census	Table 7, 2050 zero migration	Table 8, 2050 trended migration	Table 9, "Best estimate" 2050
	2000	2030	2050 trends	2050 migration	2050 migration	2050 estimate
North Dakota	123,138	151,651	191,200	214,100	227,500	254,800
Cass	66,109	68,238	101,800	81,100	107,100	107,100
Grand Forks	284,351	296,140	334,700	373,600	402,500	417,600
Red River Valley						
Minnesota	51,229	53,570	65,700	56,300	56,200	83,600
Clay	57,159	78,250	65,800	51,100	98,200	81,700
Other Tail	173,911	195,730	168,100	173,000	210,600	221,000
Red River Valley						

Table 3 State Sources is the last year available: 2020 for North Dakota; 2030 for Minnesota
 Table 4 Valley totals were not calculated in the report. I added up the counties.

Implied Growth for Areas in North Dakota
 Assuming Census Bureau State Projections and Bureau of Reclamation "Best Estimate" for Counties

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Census 2000	Census State 2050 Projection		Implied Change 2000-2050	Implied % Change 2000-2050
	BuRec County "Best"	2050		
North Dakota	642,200	583,928	-58,272	-9.1
Cass + Grand Forks	189,247	361,900	172,653	91.2
All other North Dakota	452,953	222,028	-230,925	-51.0

Census 2050 is based on most recent U.S. Census Bureau projections for North Dakota, extrapolated from 2030 to 2050.

Alternative projections in Enclosure #2

North Dakota	n	Latest state projection		Table 7		Table 8		Highest of 7 "Best Estimate"	
		2020 or 2030	2050	2050	2050	or 8 2050	2050	2050	
Barnes	5,900	11,675	11,600	10,100	11,600	7,200			
Cass	191,200	151,651	214,100	227,500	227,500	254,800			
Cavalier	0	3,614	4,000	3,400	4,000	2,400			
Grand Forks	101,800	68,238	81,100	107,100	107,100	107,100			
Griggs	0	2,099	2,200	1,900	2,200	1,400			
Nelson	0	3,542	2,900	2,400	2,900	1,800			
Pembina	2,800	7,810	7,900	6,800	7,900	4,900			
Ransom	2,700	5,840	5,300	4,600	5,300	3,300			
Richland	16,600	17,218	18,800	16,500	18,800	18,800			
Sargent	800	4,272	4,000	3,400	4,000	2,500			
Steele	0	2,074	2,100	1,800	2,100	1,300			
Traill	5,900	7,771	8,300	7,200	8,300	5,100			
Walsh	7,000	10,336	11,300	9,800	11,300	7,000			
ND RRV counties	334,700	296,140	373,600	402,500	413,000	417,600			
Minnesota									
Clay	65,700	53,570	56,300	56,200	56,200	83,600			
Kittson	1,500	5,220	4,600	5,600	5,600	3,600			
Marshall	4,500	9,050	9,400	9,000	9,400	6,900			
Norman	2,500	7,180	7,300	6,200	7,300	5,100			
Other Tail	65,800	78,250	51,100	98,200	98,200	81,700			
Polk	25,200	31,650	32,400	26,500	32,400	32,400			
Traverse	0	3,740	3,900	3,200	3,900	2,800			
Wilkin	2,900	7,070	8,000	5,700	8,000	4,900			
MN RRV counties	168,100	195,730	173,000	210,600	221,000	221,000			

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