

Report on Red River Valley Water Supply Project Needs and Options

Water System Assessment Executive Summary Final Report



**U. S. Department of the Interior
Bureau of Reclamation
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EXECUTIVE SUMMARY

The purpose of this Water System Assessment is to document the current and future conditions of selected Municipal, Rural, and Industrial (MR&I) water systems in the Red River Valley. Information from this report will be included in the water system evaluations discussed in the *Report on the Red River Valley Needs and Options* (Needs and Options Report). The purpose of the Needs and Options Report is to evaluate future water needs of the Red River Valley and to identify alternatives to meet those needs. According to the project's authorizing legislation (the Dakota Water Resources Act of 2000), these water needs include municipal, rural, and industrial; water quality; aquatic needs; recreation; and water conservation measures.

MR&I systems evaluated in this assessment eventually could be served by the Red River Project depending on their future water needs. MR&I water systems were evaluated to identify present or future water quality and quantity problems that could be resolved by an alternate water source. The Needs and Options Report will identify alternatives to meet projected water needs.

Information on water quantity and quality data, water demands, population data (including unserved rural residents), water system characteristics, and water rates for selected MR&I water systems were compiled by the Bureau of Reclamation in cooperation with water system managers and/or their consultants. Information in Table S-1 summarizes the data collected.

Only larger municipalities with a population of 500 or more were evaluated. It was assumed that communities with a population of less than 500 would be served by rural water systems by 2050. Individual water system summary reports for each MR&I system are on file with Reclamation, but this information will not be released for security reasons. Water system data sheets were also completed by the evaluated water systems. These data sheets contain similar but more detailed information than the water system summary reports. Information presented in the data sheets has also been summarized in Table S-1 since specific data for these systems cannot be released for security reasons. Information found in the water system summary reports and water system data sheets is subject to change as new and more accurate information becomes available for each of the MR&I water systems.

Red River Valley MR&I systems were analyzed to determine the quality of their existing water sources in regard to Environmental Protection Agency's primary, secondary and potential future regulations under the Safe Drinking Water Act (SDWA). The drinking water standards considered in the assessments are summarized in the Reclamation report, *Water Quality Needs, Regulatory Overview of the Safe Drinking Water Act*. All of the MR&I water systems in the Red River Valley currently meet National Primary Drinking Water Regulations (NPDWR); however, a few will not be able to meet a future lower arsenic standard. Some of the MR&I water systems have problems meeting National Secondary Drinking Water Regulations (NSDWR). Total dissolved solids (TDS), pH, and sulfate appear to be the contaminants that most MR&I water systems have levels exceeding NSDWR standards.

Table S-1 identifies any significant water quality concerns noted during water system assessments. If a water system expressed an interest in an alternative water supply, that is also noted in the table. The *Water System Assessment Report* does not attempt to develop recommendations of specific actions MR&I systems should take to resolve any water quality or quantity issues of concern. That will be addressed in the Needs and Options Report. This report

simply summarizes the current conditions of MR&I systems so a more comprehensive analysis can be conducted in the Needs and Options Report.

Current water rates for the MR&I water systems in the Red River Valley were also collected. The water rates will be used to determine whether the alternatives developed for the Needs and Options Report are affordable. The current rates also were used in the Reclamation 2004 report *Water Conservation Potential Assessment* to evaluate water costs and the influence it has on present water use in the Red River Valley. The *Water Conservation Potential Assessment* evaluated measures used to conserve water, one of which was an inverted rate structure. The majority of MR&I water systems in the Red River Valley have declining rate structures. Converting to an inverted rate would be an incentive for water users to conserve water.

Each water system summary report includes detailed information about the water system including the items previously discussed. Comments that relate to the water quantity and quality of these systems are found in Table S-1 below. Issues of concern for the MR&I water systems are listed in the comment column.

Table S-1 – MR&I Water Systems Data Summary.

| Water System | Water Service | Primary Water Source | Comments |
|---|------------------------------|----------------------|---|
| North Dakota Communities and Rural Water Systems | | | |
| Agassiz Water Users | Agassiz Water Users | Groundwater | No water quality or quantity issues were listed. |
| Barnes Rural Water District | Barnes Rural Water | Groundwater | TDS exceeds NSDWR. |
| Cass Rural Water - Phase I, II & III | Cass RWS – Phase I, II & III | Groundwater | <p>Phase II pH level is lower than the recommended level for NSDWR.</p> <p>Current permitted water withdrawal would be exceeded in 15 years if population continues to increase.</p> |
| Cooperstown | Cooperstown | Groundwater | TDS exceeds NSDWR. |
| Dakota Water Users | Dakota Water Users | Groundwater | Arsenic in the northern system exceeds NPDWR. |
| Drayton | Drayton | Surface water | <p>Aluminum and pH exceed NSDWR.</p> <p>Could have a water shortage during a drought and would consider Red River Valley Water Supply Project as a backup water source.</p> <p>Pending future regulations and capital improvement costs, Drayton may consider the Red River Valley Water Supply Project for a primary water source.</p> |
| Enderlin | Enderlin | Groundwater | Sulfate and TDS exceed the NSDWR. The pH level is lower than the recommended level for NSDWR. |
| Fargo | Fargo | Surface water | <p>The pH level is lower than the recommended level for NSDWR.</p> <p>Fargo favors the Red River Valley Water Supply Project as a primary water source and is interested in being a regional water treatment provider.</p> |

| Water System | Water Service | Primary Water Source | Comments |
|-----------------------------------|--------------------|----------------------|--|
| Grafton | Grafton | Surface water | <p>Current pH levels exceed NSDWR. The current water source has seasonal aesthetic problems.</p> <p>Grafton future demands may exceed the available water supply during a drought and would consider the Red River Valley Water Supply Project as a backup water source. Grafton would consider the Red River Valley Water Supply Project for a primary source, depending on feasibility.</p> |
| Grand Forks | Grand Forks | Surface water | <p>Current pH levels exceed NSDWR.</p> <p>Grand Forks would like to receive water from the Red River Valley Water Supply Project because of current water quality issues.</p> <p>Grand Forks has expressed an interest in being considered as a water treatment provider for the surrounding region.</p> |
| Grand Forks-Traill Water District | Grand Forks Traill | Groundwater | <p>Grand Forks-Traill Water District would consider the Red River Valley Water Supply Project as a supplemental water supply alternative if additional appropriations for the Elk River Aquifer are not granted to them.</p> <p>The Red River Project as a backup water supply is also a possibility for the Grand Forks-Traill Water District.</p> |
| Gwinner | Gwinner | Groundwater | <p>No water quality or quantity issues were identified.</p> |
| Hankinson | Hankinson | Groundwater | <p>Arsenic level exceeds NPDWR.</p> <p>Iron and manganese levels both exceed NSDWR.</p> |
| Harwood | Harwood | Groundwater | <p>TDS and iron exceed NSDWR.</p> |
| Hillsboro | Hillsboro | Groundwater | <p>TDS, manganese, and sulfate levels exceed NSDWR.</p> <p>Hillsboro would consider the Red River Valley Water Supply Project as a backup potable water supply or as a long-term water supply alternative to the Page/Galesburg Aquifer.</p> <p>If a regional system is not possible, Hillsboro could consider the Red River Valley Water Supply Project as a water supply replacement option.</p> |

| Water System | Water Service | Primary Water Source | Comments |
|------------------------------|---------------|---|---|
| Horace | Horace | Groundwater | Water quality, aesthetically, is marginal. Chloride, iron, manganese, sulfate and TDS all exceed NSDWR. |
| Lakota | Lakota | Groundwater | Arsenic levels may become a problem if the standard is lowered to 0.005mg/l. |
| Langdon | Langdon | Surface water | TDS, pH, and sulfate levels exceed NSDWR. Due to questionable reliability and relatively poor quality of the existing water supply, the City of Langdon could consider the Red River Valley Water Supply Project as a backup or as a permanent water supplier. |
| Langdon Rural Water District | Langdon | Purchase water from the city of Langdon | Langdon has concerns about the reliability of the existing supply during an extreme drought. TDS, pH, and sulfate levels exceed NSDWR. Due to questionable reliability and relatively poor quality of the current water supply, Langdon Rural Water could consider the Red River Valley Water Supply Project as a backup or permanent water supplier, if costs are not prohibitive. |
| Larimore | Larimore | Groundwater | Total hardness concentration is technically very high; 364 mg/l as calcium carbonate. Larimore would only consider the Red River Valley Water Supply Project as a backup supply option in the near future, pending costs. |
| Lidgerwood | Lidgerwood | Groundwater | Arsenic levels exceed the NPDWR. TDS and sulfate levels exceed NSDWR. |
| Lisbon | Lisbon | Groundwater | New well fields may be needed due to quality and quantity issues. TDS and sulfate levels exceed NSDWR. |

| Water System | Water Service | Primary Water Source | Comments |
|--|-----------------------------------|-----------------------|---|
| Mayville | Mayville | Surface water | <p>TDS, pH, and sulfate levels exceed NSDWR.</p> <p>Mayville anticipates problems meeting future lower turbidity and disinfection byproduct standards.</p> <p>Mayville expects that an alternate water source will be required.</p> |
| Minto | Minto | Groundwater | <p>Aluminum and pH levels exceed NSDWR.</p> <p>Minto has a reliable water supply during a sustained drought event.</p> <p>Use of the Red River Valley Water Supply Project as a treated backup source depends upon cost.</p> |
| North Valley Water District - System II Akra | North Valley WUA - System II Akra | Groundwater | <p>Proposed radon maximum contaminant level may impact the city of Gardar supply.</p> <p>No system shortages are anticipated.</p> |
| Park River | Park River | Surface water | <p>Sulfate levels exceed NSDWR.</p> <p>Due to indication of potential water shortages associated with drought and increased surface water drinking standards, Park River is considering converting to a groundwater supply.</p> <p>Park River would not need water from the Red River Valley Water Supply Project if they develop a groundwater source.</p> |
| Pembina | Pembina | Surface water | <p>Trihalomethane levels exceed the NPDWR.</p> |
| Ransom-Sargent Water Users District | Ransom Sargent Water Users | Purchased groundwater | <p>TDS, sulfate, and pH levels exceed NSDWR.</p> <p>In regards to the Red River Valley Water Supply Project, Ransom-Sargent Water Users District could provide service to rural users and small communities in the service area that would encounter shortages.</p> |

| Water System | Water Service | Primary Water Source | Comments |
|---------------------------------------|---------------------------------|-------------------------|---|
| Southeast Water Users District | Southeast Water Users | Groundwater | <p>Southeast Water Users District does not anticipate a water supply shortage.</p> <p>Water from the Red River Valley Water Supply Project would be considered for a backup supply of treated water in the event of contamination of their existing supply or in emergency situations.</p> |
| Traill County Rural Water Users, Inc. | Traill County Rural Water Users | Groundwater | <p>Sulfate and TDS levels exceed NSDWR.</p> <p>The hardness level is 572 mg/l, which is considered very hard.</p> <p>The Red River Valley Water Supply Project would be considered for a backup water supply or as a long-term water supply alternative.</p> |
| Tri-County Water Users | Tri-County Water Users | Groundwater | <p>No water quality or quantity issues were listed.</p> |
| Valley City | Valley City | Surface and groundwater | <p>Trihalomethane level exceeds the NPDWR.</p> <p>Valley City is proposing to increase its groundwater supply and use groundwater as a long term source.</p> |
| Wahpeton | Wahpeton | Groundwater | <p>No water quality or quantity issues were listed.</p> |
| Walsh Rural Water District | Walsh Water Users | Groundwater | <p>Some scaling problems were reported due to the hardness of the water.</p> <p>Walsh Rural Water District would prefer participating in the Red River Valley Water Supply Project to obtain a treated water supply in lieu of a backup supply; however, the feasibility depends on timing and affordability.</p> |
| West Fargo | West Fargo | Groundwater | <p>Future demands may necessitate increased storage and well capacity for this system.</p> <p>Some residents may experience problems with lead and copper in their tap water due to the composition of the service lines.</p> |
| Wyndmere | Wyndmere | Groundwater | <p>Wyndmere is having trouble meeting the new lower standard for arsenic.</p> <p>TDS and sulfate levels exceed the NSDWR.</p> |
| North Dakota Industries | | | |

| Water System | Water Service | Primary Water Source | Comments |
|--|--|-----------------------------|--|
| American Crystal Sugar Co. – Drayton | Own WTP – process water Traill RWS – potable | Surface water | No information on water treatment, quality, or quantity was provided. |
| American Crystal Sugar Co. – Hillsboro | Own WTP – process water City of Grafton – potable | Surface water | No information on water treatment, quality, or quantity was provided. |
| ADM Corn Processing – Walhalla | Water is pumped to reservoir tank – no treatment is needed | Groundwater | No treatment is performed. Water is only used in cooling towers. |
| Cargill Corn Processing Plant | Cargill, Inc. | Surface water | Water treatment is provided at the plant. |
| Cargill, Inc. of West Fargo | West Fargo | Groundwater | No information on water treatment, quality, or quantity was provided. |
| Minnesota Communities and Rural Water Systems | | | |
| Breckenridge | Breckenridge | Groundwater | No water quality or quantity issues were listed. |
| East Grand Forks | East Grand Forks | Surface water | East Grand Forks Water Treatment Plant expects that capital improvements will be required to meet future drinking water standards. |
| Moorhead | Moorhead | Surface and groundwater | Future surface water standards are expected to make compliance with drinking water standards more difficult to achieve. |
| Minnesota Industries | | | |
| American Crystal Sugar Co. – Moorhead | Moorhead | Surface and groundwater | No information on water treatment, quality, or quantity was provided. |