

## EXECUTIVE SUMMARY

This Final Engineering Report presents a selected plan for implementation of the Fort Peck Reservation Rural Water System (FPRRWS) Act of 2000 (106-382, 114 Stat. 1451, October 27, 2000). The project will provide safe and adequate drinking water to the residents of the Fort Peck Indian Reservation and residents of the Dry Prairie region of Roosevelt, Sheridan, Daniels, and the east side of Valley Counties outside the Reservation. The project will also provide industrial, commercial and livestock water throughout the two service areas: water for all purposes associated with a contemporary municipal, rural and industrial water project. The location of the project and the facilities to divert, treat and deliver water are shown on Figures 1-1, 1-2, and 1-3. A full discussion of the authorizing federal legislation for the project is provided in Chapter 1.

### Need for Project

Most public and private water supplies of the Fort Peck Indian Reservation and the Dry Prairie region are derived from groundwater. Groundwater sources generally produce small quantities of water relative to demand for public supply, and groundwater quality is poor throughout the area. Dissolved solids range from 748 (Brockton) to 2,332 mg/l (Fort Kipp), and sulfates range as high as 1,120 mg/l (Fort Kipp), which are generally higher than suggested limits for drinking water of 500 and 400 mg/l, respectively.

The most abundant groundwater in the region is contained in the Flaxville gravels which trend from east to west through the center of the project area. While this source would otherwise constitute a suitable supply for part of the area, as many as 84% of wells in the aquifer produce nitrate levels exceeding the maximum contaminant levels for drinking water<sup>1</sup>.

Glasgow, St. Marie and Culbertson are the only communities (of the 22 public water systems in the project area) that receive water directly from the Missouri River. Water is adequate from this source, and raw water quality is good. Dissolved solids average 425 mg/l, and sulfates average 93 mg/l, well within recognized limits of acceptability for most purposes.

The regional project proposed here will provide for a single treatment plant on the Missouri River near Poplar, Montana, and will distribute water through 3,200 miles of pipelines. Present and future federal and state water quality criteria will be met by this single water treatment plant rather than through 22 community plants. A single water source on the Missouri River will replace 22 individual community sources.

Water required from the Missouri River for the design year of 2030 is 6,200 acre-feet annually from an available streamflow on the average of 6,895,000 acre-feet. Demand is 0.1% of the annual

---

<sup>1</sup>Nimick, David A. and Joanna N. Thamke, June 1998, p. 1.

streamflow. The Assiniboine and Sioux Tribes have a compact with the State of Montana for present and future water rights in the Missouri River of nearly 1 million acre-feet annually with a priority date of 1888. The Tribes have offered and agreed to supply the full requirements for the regional project, including Dry Prairie, from Tribes' water rights.

The regional project will serve a growing population in the service area and will provide needed personal income and employment during the planning, design, construction, operation, maintenance and replacement phases.

## **Population**

The 1990 population of the area was 24,829. The design population for year 2030 is 31,102. The Indian population on the Fort Peck Indian Reservation is growing in excess of 2.1% annually. The non-Indian population in the Dry Prairie region and on the Fort Peck Indian Reservation is declining at slightly less than 1% annually. The regional project design assumes that the Dry Prairie population will stabilize at the 1990 level.

## **Income Levels and Ability to Pay**

Median household income through the project area was \$20,816 in 1990. Per capita income was \$10,442. The population below poverty level averaged 14%. Indian income was significantly lower, with median household income at \$13,822 and per capita income at \$4,778. The Indian population below poverty level was 45.3%, consistent with an unemployment rate of 30%.

The Indian population on the Fort Peck Indian Reservation has an ability to pay of \$0.66 per month for water, and the population of the Dry Prairie region has an ability to pay of \$11.26 per month. These conclusions were based on an "ability to pay" analysis involving statistics from the 1993 American Housing Survey. Eighty percent (80%) of those included in the American Housing Survey paid less than the "ability to pay" in the project region for comparable levels of residual income after deductions for housing, fuel and sewer costs.

## **Water Use and Water Conservation Plan**

The project design was based on 69 gallons per capita per day (gpcd) for in-house residential uses and 66 gpcd for outside residential uses, such as gardening and lawn watering, a total of 135 gpcd for residential purposes. Commercial and industrial water use was based on 45 gpcd. Livestock water use was based on 12 gallons per animal unit (or equivalent) per day.

Average day requirements in year 2030, based on the criteria cited above, are 5,536,000 gallons. Designs of the intake, water treatment plant, main pipelines and pumping stations were based on maximum day requirements of 12.1 million gallons per day, which is equal to 9,133 gallons per minute or 6,200 acre-feet per year.

One of the requirements of the authorizing legislation (PL 106-382) is an approved water conservation plan. The requirements presented above were based on water conservation through year 2030. The water conservation plan provides for considerable public involvement and the implementation of steps to reduce in-house uses to as little as 45 gpcd. The water conservation plan will require sound measures to detect and repair leaks in the regional water system and within individual residences. A metering program is included in the construction cost estimate for all new connections outside existing public water systems. This, in combination with existing meters in the public water systems, will permit auditing of water use, isolation of leaks or other non-account water within the project and promotional water conservation rate structures in the Dry Prairie region. The water conservation plan will permit the project life to extend beyond 2030. Energy conservation will stem from the water conservation plan to the benefit of water users. Finally, water conservation will delay the need to implement expansion of wastewater facilities. The water conservation plan is contained in a separate document.<sup>2</sup>

### **Project Implementation Costs**

The selected regional water system will serve the full needs of the Assiniboine and Sioux Rural Water System and the Dry Prairie Rural Water System, the two service areas within the FPRRWS, at a total cost in October 1998 dollars of \$192,760,000. The Assiniboine and Sioux Rural Water System has a cost of \$125,487,000, and the Dry Prairie Rural Water System has a cost of \$67,273,000. Value engineering was undertaken and will be implemented in design level activities as described in Appendices A and B, Volume II.

PL 106-382 provides construction cost ceilings in October 1998 dollars of \$124 million for the Assiniboine and Sioux Rural Water System and \$51 million for the Dry Prairie Rural Water System. The State of Montana has implemented legislation (MRS 96-7-15, April 1999) that will provide for equal sharing of the difference in Dry Prairie costs and federal funding, a total of \$16.273 million. The State and Dry Prairie will each finance \$8.137 million of the project implementation costs.

### **Project Operation, Maintenance and Replacement Costs**

Total operation, maintenance and replacement (OMR) costs were estimated at \$3,540,000 annually (October 1998 dollars). The Assiniboine and Sioux and Dry Prairie Rural Water Systems have annual OMR costs of \$1,995,000 and \$1,545,000, respectively. Electrical energy and capacity will be purchased from the Western Area Power Administration at firm, wholesale power rates in the summer season and at non-firm rates in the winter season. Purchases from Western and charges for distribution of power have an estimated cost of \$860,000 annually. Replacements, chemicals at the water treatment plant, and other non-labor costs were estimated at \$873,000. Labor costs for staff to

---

<sup>2</sup>Fort Peck Assiniboine and Sioux Tribes and Dry Prairie Rural Water, December 11, 2001, *Water Conservation Plan, Fort Peck Reservation Rural Water System: Assiniboine and Sioux Rural Water System and Dry Prairie Rural Water System*, Poplar and Culbertson, Montana.

perform OMR functions were estimated at \$1,489,000 annually, and annual equipment costs were estimated at \$318,000.

OMR costs on the Fort Peck Indian Reservation will be funded through Congressional appropriations to the Bureau of Indian Affairs. OMR costs in the Dry Prairie region will be financed exclusively by the water users.

### **Project Employment and Earnings**

Construction of the project will produce an estimated 1,535 man years of equivalent full-time employment. Employment earnings will total \$49,991,000, with earnings in the Assiniboine and Sioux and Dry Prairie Rural Water Systems projected at \$32,443,000 and \$17,548,000, respectively.

### **Construction Schedule**

The construction schedule by statute is 10 years and will occupy the period from FY 2002 through FY 2011. Appropriations required for the Assiniboine and Sioux Rural Water System will begin moderately at the \$3,181,000 level in FY 2002 and increase to \$18,987,000 by FY 2005. Dry Prairie will begin “wet pipe” construction after the Assiniboine and Sioux project has completed the intake, water treatment plant and main pipeline system along U.S. Highway 2 in an East-West direction and along Highway 13 in a South-North direction to interconnection points on the Reservation boundary. Significant levels of construction will begin in the Dry Prairie service area near the midpoint of the ten-year construction schedule. The Tribes and Dry Prairie will adjust the schedule annually to address exigencies and changes in priority.

### **Construction Statistics**

The project will build 3,190 miles of pipeline with diameter ranging from 2" to 30" (See Figure 1-3). The project will build as many as 20 pumping stations on the main transmission pipeline and as many as 90 pumping stations on branch lines. Perennial streams will be crossed 71 times. Paved roads will be crossed 103 times, and unpaved roads will be crossed 170 times.

As project implementation is undertaken, project features will change due to the availability of easements and the desire and necessity to avoid cultural resources, wetlands and other environmental features. Therefore, the information in this Final Engineering Report is dynamic and will change with adjustments in the future. The project construction cost ceiling, however, is a statutory authorization that cannot be exceeded. Adjustments in the future will be designed to maintain the project within the authorized cost ceiling.