

FLOW-RELATED RECREATIONAL OPPORTUNITIES AND NEEDS ASSESSMENT

The recreation information used in the flow-related recreational opportunities and needs assessment analysis was readily available from applicable studies and reports dealing with recreation activities on streams and rivers in North Dakota and from reports on river recreation trends/preferences in the United States. No new information has been generated for this analysis. Appendix I contains the full text of the Flow-Related Recreational Opportunities and Needs Assessment.

North Dakota's river recreation is important to the residents of the state, with 42 percent of adults participating in some type of river recreation in 1996. Changes in the way a river is operated will have an impact on the recreationists who may wish to use the river. Changes in historic flows would have increased benefits for some users and decreased benefits for others. The fact that most recreation users participate in recreation activities during the summer months is problematic throughout the western United States. The peak season for water-based and associated land-based river recreation often occurs at the same time that water is in great demand for other purposes (i.e., agriculture, flood control, municipal and industrial, and fish and wildlife).

Existing Recreational Use

River-based and associated land-based recreation activities on the Red River of the North and the Sheyenne River continue to be very important to the people of North Dakota. Statewide during 1996, fishing, sightseeing, walking/jogging, camping, boating/water skiing, picnicking, hunting, and bicycle riding were the river-related recreation activities most often participated in by the residents of North Dakota (North Dakota Parks and Recreation Department 1997). Fishing continues to be the number one river recreation activity for the State.

To identify a trend in river recreation for the rivers of North Dakota, the North Dakota Parks and Recreation Department (NDPRD) compared its 1987 rivers survey with the survey completed in 1996. The Missouri, Red River of the North, Little Missouri, Sheyenne, Souris, and James rivers were the six most popular recreation rivers in the State, ranked by priority use. Statewide over the last 10 years, the Sheyenne River has gone from sixth place to fourth in terms of recreation use. The Red River of the North continues to receive the second most recreation activity-days of any river in the State.

Red River of the North recreation activities include sightseeing (21.8 percent), walking/jogging (20 percent), bicycling (13.3 percent), fishing (10.7 percent) snowmobiling (8.5 percent) and picnicking (5.0 percent)(North Dakota Parks and Recreation Department 1997). Fishing has declined over the past few years on the Red River of the North, but continues to be ranked among the top six river activities in the State. The decrease in fishing on some North Dakota rivers and streams is likely due to the decline in the State's riverine fisheries resources (North Dakota Game and Fish Department 1997). Most of the decline is a result of degraded habitat (U.S. Environmental Protection Agency 1997; Kelsch and DeKrey 1997; and, Peterka and Koel

1997). The index of watershed indicators, which is based on 15 cumulative indicators (U.S. Environmental Protection Agency 1997), ranked the upper Red River of the North as having serious water quality problems.

Sheyenne River recreation activities include walking/jogging (20.1 percent), fishing (13 percent), sightseeing (10.5 percent), hunting (10.4 percent), hiking (8.3 percent), photography (8.3 percent), and picnicking (6.3 percent)(North Dakota Parks and Recreation Department 1997).

In 1987, river survey respondents reported that increased or improved river access, followed by increased picnic and camping areas, riverfront park areas, and public swimming areas were the types of river recreation improvements most desired (North Dakota Parks and Recreation Department 1987). In 1996, river survey respondents were asked which two facility improvements would provide them with a better recreation experience along or on North Dakota rivers, and they reported that “clean rivers” (42.3 percent) and “shoreline access” (35.9 percent) were the two most important. Other facility improvements that were important to river recreation users were modern restrooms (33.9 percent), trails (20.9 percent), picnic/playgrounds (20.3 percent), and watercraft landings (19.5 percent)(North Dakota Parks and Recreation Department 1997).

Statewide, North Dakota river recreation participants reported they participated in recreation activities most often during summer months, with 80 percent of participants using river associated recreation in July. About 34 to 39 percent of the statewide river recreation users participated in the different activities in the months of May and September. The month of March had the lowest recreation use, statewide. Red River of the North recreation users participated in river associated recreation during the months of June (69.9 percent), July (75.0 percent), and August (58.8 percent) (North Dakota Parks and Recreation Department 1997). Except for fishing and some other activities listed above, most of the recreation activities that people participated in during these months were land-based activities that are river-dependent. The optimum time for certain river-based activities such as canoeing and rafting are earlier in the year (April and May), when flows are historically higher. Other river-based activities such as fishing, sailing, swimming, and tubing, etc., would occur during June, July, and August, when the weather is typically better and existing flows allow for easy access to the river and associated beach and fishing areas.

There may be some opportunities for river managers to minimally increase recreation use without significantly altering existing flows. Immediate benefits might be achieved without significant changes in river operations by: (1) increasing public access, (2) providing public information on the available recreation opportunities, (3) providing a limited number of support facilities such as boat launch sites, trails, and swim beaches, and (4) cleaning up rivers. Managers would have to monitor the carrying capacities of different river segments and determine when carrying capacities are reached so that negative impacts to other resources and other users can be avoided.

Flow Evaluation and Effects on Existing Recreational Uses

To evaluate the potential effects of changes in flows on one form of river recreation, canoeing, North Dakota Parks and Recreation Department canoeing rating tables were utilized. Canoeing ratings of poor, fair, good, and excellent were defined by the State in terms of water depth, in feet. This reflects a users capability of achieving a certain level of canoeing experience. A canoeing rating system based on discharge, in cubic feet per second (cfs), was then created. An asterisk (*) denotes uncertain information.

Two selected sites on the Sheyenne River that were surveyed by the State included portions of the river near Cooperstown, at U.S. Geological Survey (USGS) gaging station 05057000, and at Lisbon, at USGS gaging station 05058700. Following were their findings:

Sheyenne River near Cooperstown- USGS gaging station 05057000

Rating	Depth (feet)	Discharge (cfs)
Poor	0-1.5	0* - 399
Fair	1.5-2.5	399 - 814*
Good	2.5-3.5	814*- 1260
Excellent	3.5-4.5	1260-1710

Sheyenne River at Lisbon - USGS gaging station 05058700

Rating	Depth (feet)	Discharge (cfs)
Poor	0-1.5	0* - 186*
Fair	1.5-2.5	186* - 380*
Good	2.5-3.5	380* -598
Excellent	3.5-4.5	598 -845

Three sites on the Red River of the North that were surveyed are Wahpeton, at USGS gaging station 05051500, Fargo, at USGS gaging station 05054000, and Grand Forks, at USGS gaging station 05082500. Following are their findings:

Red River of the North at Wahpeton - USGS gaging station 05051500

Rating	Depth (feet)	Discharge (cfs)
Poor	0-1.5	0 - 26*
Fair	1.5-2.5	26* - 108*
Good	2.5-3.5	108* - 294
Excellent	3.5-4.5	294-620

Red River of the North at Fargo - USGS gaging station 05054000

Rating	Depth (feet)	Discharge (cfs)
Poor	0-1.5	0 - 759*
Fair	1.5-2.5	759* - 1680*
Good	2.5-3.5	1680* -2760*
Excellent	3.5-4.5	2760* -3640*

Red River of the North at Grand Forks - USGS gaging station 05082500

Rating	Depth (feet)	Discharge (cfs)
Poor	0-1.5	Not available
Fair	1.5-2.5	Not available
Good	2.5-3.5	Not available
Excellent	3.5-4.5	1300* -3150*

In the evaluation, Reclamation compared average monthly flow (depths and velocities) at the different USGS gaging stations on the Red River of the North and the Sheyenne River, extending over the 54-year period from 1931 thru 1984 (Appendix B), with calculated aquatic life maintenance seasonal instream flow regime flows (depths and velocities). The comparison was made for both the spawning period - March-June (high flow period), and the maintenance period - July-February (low flow period).

While the aquatic life maintenance seasonal instream flow regime might maintain aquatic life, the flows do not necessarily maintain or optimize recreational opportunities. There would be certain

gains in recreation benefits when the historic flows are less than the aquatic life maintenance seasonal instream flow regime. The aquatic life maintenance seasonal instream flow regime would tend to extend the recreation canoeing season for certain segments of the river when flows are historically low (i.e., July through February) and during most dry water years.

The frequency of obtaining a certain level of canoeing experience would vary depending on whether it was a dry water year, average water year, or a wet water year. As an example, the quality of the canoeing experience and the months available to the users to achieve that experience in a wet water year may be greater for the entire recreation season, depending on the type of experience the user is seeking (i.e., a white water experience or a leisurely float trip). If aquatic life maintenance seasonal instream flow regime flows are greater than historic flows, the opportunities for achieving a favorable canoeing experience may be enhanced. However, as flows increase (i.e., velocity), there is also an increased concern for public health and safety.

The evaluation indicated that there should not be a significant impact on the recreational use of either the Sheyenne River or the Red River of the North if the rivers are managed to meet the aquatic life maintenance seasonal instream flow regime. As previously mentioned, recreationists would be benefitted the most during low flow years when historic flows are normally less than aquatic life maintenance seasonal instream regime flows. The effects on canoeing range from poor to excellent, depending on the river, river segment, and site location of the canoeing experience. The specific effects that the aquatic life maintenance seasonal instream flow regime would have on other recreation activities were not analyzed.

River Management Suggestions

It is important that both rivers are managed by river segments according to river access points, types of use, and physiography of the river. Strategies applied to the management of one river segment are most likely not applicable to other segments of the river. Portions of each of the rivers that flow through urban areas should be managed as high density use areas, while remote sections should be managed as low density use areas with little development.

Increased river-based recreation may at some point compete with reservoir-based (flat-water) recreation and instream flows which may be established for other uses, such as water quality and fish and wildlife, as well as other priority uses such as agriculture and municipal and industrial. The interaction effect will be important for managers of both river and reservoir systems to consider in the future. A systematic approach for coordinated river management by a variety of water users will be necessary to assure a diversity of quality outdoor recreation experiences. A public information program which effectively monitors existing recreation use and future demand will be required. At some point in the water drawdown process, the level of recreation satisfaction declines and recreationists are displaced to other substitute areas or to other recreation or non-recreation activities. This happens when the physical, social, facility, and/or ecological carrying capacity limits have been reached.

There may be opportunities to accommodate minimal increases in recreation use on both the Sheyenne River and the Red River of the North even if there are no changes in historical flows. Studies that would be beneficial are those that: (1) determine the type of recreational uses within each river segment, (2) determine and describe the physical characteristics within the river segments, (3) determine the carrying capacity limits within each segment, and (4) determine future recreation demand and the potential effects on other resources. Determining limits of use within different river segments will indicate whether or not facility improvements or other changes need to be considered. Limits should be calculated by river segments based on projected instream flows. To comprehensively manage recreation and other resources in the river system, managers must determine what the future recreation demand will be and what impact the projected use will have on other resources. Long-term monitoring of recreation use will determine when use capacity limits have been reached.

By providing additional access points, either through acquisition of lands in fee title or through acquisition of rights-of-way or lease of existing lands over the entire length of both river corridors, dispersal of users to other areas may be possible. This may help alleviate the feeling of overcrowding which has been expressed by the public.

As the demand for recreation use increases, it may compete with other uses of the limited water supplies within the Sheyenne River basin and the Red River of the North basin. If future recreation demands are to be met, changes in infrastructure and management programs may be needed. Without these changes, public health and safety, as well as the character of the natural environment could be compromised. Decisionmakers should continue to communicate and address the impacts that future demand will have on the limited water supplies and other resources within the basin. They should strive to look for creative solutions to accommodate future demand.