

Solomon Basin High Priority Issue Minimum Water Levels in Webster Reservoir January 2009

Issue

Increase water levels in Webster Reservoir for improved recreational opportunities.

Description

Webster Dam and Reservoir are located on the South Fork Solomon River in Rooks County approximately eight miles west of Stockton. It is a modified, homogeneous, earth-filled embankment with a structural height of 154 feet above the streambed and a crest length of 10,720 feet. Top of the conservation pool is elevation 1,892.45 feet above mean sea level. The dam, which impounds Webster Reservoir, was completed in June 1956.

Webster Reservoir was built by the U.S. Bureau of Reclamation (Bureau) for irrigation, flood control, recreation and fish and wildlife purposes. The Webster Reservoir has afforded recreation as a byproduct of storage space in the lake for other purposes. The State of Kansas may have the opportunity to acquire storage for recreation. The space has become available as a result of a decision by the Webster Irrigation District No. 4 to negotiate the possible sale or lease of a portion of its storage in the reservoir. The Kansas Water Appropriation Act limits the consumptive use of the hydrologic system to the historic amounts. Any changes to the water rights and use of the reservoir would require that the consumptive use of the system be at or below present levels. Capacity of Webster Reservoir is 400,422 acre feet for dead, inactive, conservation and flood control storage. The conservation storage capacity is 76,157 acre feet.

When the reservoir is at the top of the conservation pool, water backs upstream approximately five miles from the dam. At this level, the reservoir has a shoreline length of approximately 45 miles with a water surface area of 3,739 acres. The total controlled storage of Webster Res-

ervoir is 259,510 acre feet. The lake capacity includes 1,256 acre feet of dead storage, 6,096 acre feet of inactive storage, 71,926 acre feet of active storage, and 183,353 acre feet for flood control.

The Bureau is required by the Reclamation Act of 1956 to provide irrigation districts holding long-term water service contracts the first right to a stated share of the available water supply. The available water supply to the Webster Irrigation District No.4 is the natural flows of the South Fork of the Solomon River and the storage waters available for release above the established reservoir shutoff elevation.

The normal irrigation season for Webster Irrigation District No.4 is from May 1 to September 30. Irrigation water can be released any time during this period. The District has a water right to store water in Webster Reservoir. The District also has a storage use right in Webster Reservoir and a natural flow water right for irrigation from the South Fork Solomon River of 158 cfs (23,607 acre feet per year). There are 8,537 irrigable acres within the District. Water is initially released into the South Fork Solomon River and diverted into the Osborne Canal approximately 19 miles downstream at Woodston Diversion Dam 1.5 miles west of Woodston (Figure 1). Bypasses are made at the request of the state for senior water rights.

The diversion control system includes one 8-foot by 18-foot radial sluiceway gate and one 84-inch by 78-inch canal outlet gate to the Osborne Canal. Fifty-four acres of the Woodston Diversion Dam land area is operated and maintained by the Webster Irrigation District No. 4. The Kansas Department of Wildlife and Parks (KDWP) under a lease with the Bureau, is responsible for wildlife

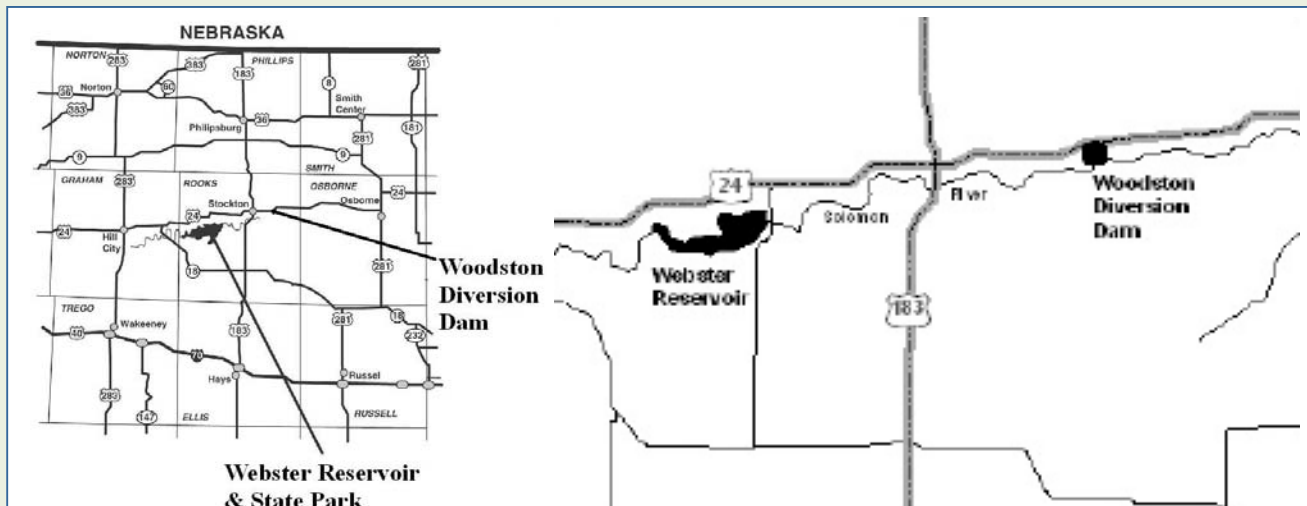


Figure 1. Webster Reservoir Irrigation Components.

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management on the remaining 210 acres of land surrounding the diversion dam. KDWP also manages 54 acres reserved for operation and maintenance purposes.⁽²⁾

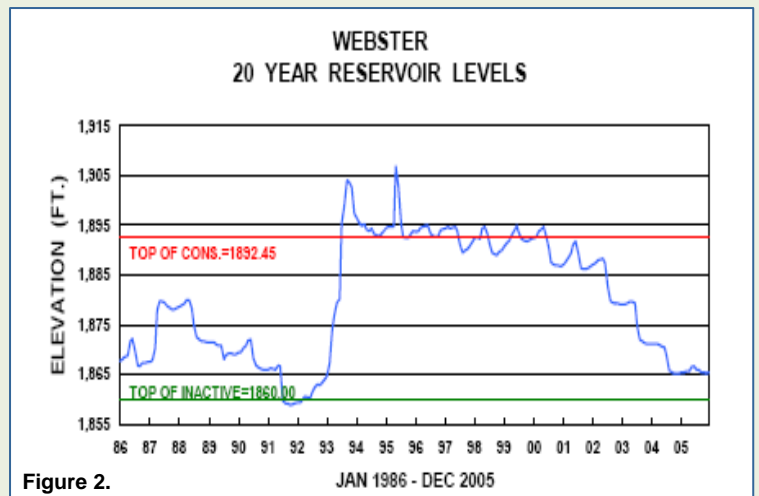
The *Solomon River Basin Resource Management Assessment and Environmental Assessment/Finding of No Significant Impact* was completed in May 2002 to analyze the conversion of the Webster Irrigation District No. 4's long-term water service contract to a repayment contract. Specifically, the alternative contract provides for minimum pool elevations at Webster Reservoir, which results in secondary benefits to fisheries and recreation by providing carryover irrigation storage. In addition, the alternative provides for an increased delivery efficiency of nine percent for Webster Irrigation District No. 4 and to increase collective on-farm irrigation efficiency by five percent.⁽¹⁾

The preferred alternative identified in the assessment provides for the inclusion of specific environmental measures in the District's operating plans. Those related to water level include:

- Continue irrigation with specified water conservation goals and practices to be outlined in the Irrigation District's Water Conservation Plan. There is a minimum pool elevation at Webster Reservoir of 1,863.0 feet above mean sea level (msl) (7,352 acre feet). The annual shutoff elevation for Webster Reservoir would be established according to the Webster Irrigation District Operating Plan.
- Establish policies to maintain reservoir levels.

The effect of ground water depletion on base streamflow and farm conservation practices have greatly reduced inflow to the Reservoir. Since the mid 1950s, the surface water supply in the river [basin](#) has decreased significantly. The 10-year moving average inflow to Webster Reservoir has decreased from 81,800 acre feet in 1955, to 44,200 acre feet in 1970, to 12,700 acre feet in 1985, to 11,700 acre feet in 1992. This decrease in reservoir inflow has drastically changed District operations. The reduced inflow has created lower pool levels. Greater water surface fluctuation at these lower pool levels (Figure 2).

The Webster Irrigation District No. 4 is in negotiation with the state to establish a cooperative partnership between the two parties to achieve a minimum conservation pool in the lake. This pool would provide suitable habitat for fisheries production, safe access to the lake by anglers



and boaters, and habitat for water fowl and other wildlife more consistently.

Discussions include the possible state purchase or lease of the water rights/storage or maintenance of minimum water levels. Although recreation is an authorized use, no storage space in the lake has been dedicated to that purpose.

Recreation at Webster Reservoir includes on-lake boating and fishing as well as activities on federal land and Webster State Park. The state park offers five boat ramp lanes and three courtesy docks that provide boaters ample launching facilities at conservation level.

Raising the water level in the lake is considered to aid fisheries management at Webster Reservoir. Rising or stable water levels during the spring promote reproduction, survival and growth of various fish species by providing quality spawning habitat and nursery cover and enhancing primary productivity.

In a study conducted by the KDWP for the U.S. Bureau of Reclamation⁽³⁾, the total estimated economic value of the Webster fishery (stilling basin included) was \$11,129,238 during the 20-month period of evaluation. Past visitation records at Webster State Park show that the higher the water level, the higher the visitation. Activities enhanced by the higher, more stable lake levels are fishing, boating, skiing, swimming, and camping. These activities increase park customer satisfaction, which increases visitation and optimizes the economic benefits associated with the state park and the local economy.

The boat ramps within the state park and the wildlife area are usable when water levels are maintained at a higher level. As water levels decline to five feet below

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conservation level, the ramp on the Wildlife Area becomes unusable and ramp access to the water becomes more difficult and often unusable.

Recommended Actions

1. Establish a cooperative partnership between the Webster Irrigation District No. 4 and the State of Kansas to achieve the highest possible conservation pool water level in the Webster Reservoir.
2. Consider/negotiate water right acquisition in Webster Reservoir.
3. Obtain rights to water by (in order of preference):
 - a. Purchase of Webster Irrigation District's water rights and convert storage in Webster Reservoir for fish, wildlife, and recreation purposes;
 - b. Negotiation of a long-term lease; or
 - c. Negotiation of a partial purchase of Webster Irrigation District water rights and conversion to fish, wildlife and recreation storage.

Note: Purchase of water rights and associated storage is preferred.

4. Maintain consumptive use of the stream/aquifer/reservoir system at or below present historical levels.



Webster Lake.

Resources

1. U.S. Bureau of Reclamation. 2002. *Solomon River Basin Final Environmental Conversion of Long-Term Water Service Contracts to Repayment Contracts 2002*. <http://www.usbr.gov/gp/nepa/solomon/contents.htm>
2. United States Bureau of Reclamation. 2008. *Reservoir Resource Management Plan Webster Reservoir, Kansas Great Plains Region*. Page 60. http://www.usbr.gov/gp/rmp/webster_rmp/
3. Kansas Department of Wildlife and Parks, Fisheries and Wildlife Division, Region 1. 1979 – 1998; *annual reports. Fisheries Progress and Management Plans, Pratt, Kansas, USA*.
4. Kansas Water Office. 2008. *Lake Level Management Plans Water Year 2008*.