WATER FOR WALKER LAKE

Background

The Walker River flows through an arid and sparsely populated part of the western United States. Water in general is scarce in this region, and even in years of above average snowpack in the Sierras, there is little water available in the watershed for all those who would like to use it. Agriculture is by far the major user of Walker River water. Water began to be diverted from the river for agriculture in the last half of the 19th century in the Smith and Mason Valleys in Nevada and Antelope Valley in California.

Several water rights decrees, culminating in Decree C-125 in 1936, have allocated water rights according to the prior appropriation doctrine. Typical of most early water rights agreements, instream beneficial uses of water were not protected. Thus, in allocating rights to Walker River water, little thought was given to the effect that diversions would have on Walker Lake at the terminus of the river. As a result largely of agricultural diversions, the level of Walker Lake has fallen more than 120 feet since the early 1900s. The Nevada Department of Conservation and Natural Resources (NDCNR) has estimated that the average annual deficit (i. e., the difference between water entering the lake and water evaporating from it) over the last 30 years has been about 33,000 acre-feet per year. [1]

Since 1930, the average annual rate of decline of the surface elevation has been about 1.4 feet, according to the Nevada Department of Wildlife (NDW).[2] However, there is some disagreement and/or confusion over the rate at which the lake is falling, and indeed, the rate calculated depends on the span of years used for the calculation. The Walker River Irrigation

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[1] See State of Nevada, Department of Conservation and Natural Resources, Water River Basin Water Rights Model, June 1993 (Draft).

[2] M. Seven, Supervising Fisheries Biologist, Nevada Department of Wildlife, "Walker Lake, 'An Endangered Ecosystem, ' How Much Time is Left for the Lahonton Cutthroat Trout Fishery?" draft report, July 1993. p. 5.

District suggests the historic rate of decline is 0.9 feet per year. Between 1987 and 1992, a period of severe drought throughout the West, the level of Walker Lake fell about 3.7 feet per year.[3]

The current maximum depth of Walker Lake is about 110 feet. The U.S. Geological Survey estimates that Walker Lake will eventually stabilize at a maximum depth of about 40 feet absent any changes in how water is allocated among competing users.[4] At that point, the lake would have a much smaller surface area, and inflow would balance evaporation. However, since minerals become concentrated in terminal lakes through evaporation, Walker Lake would slowly become saltier than seawater.[5]

Long before the lake level stabilizes, however, the concentration of total dissolved solids (TDS) will become too high for the Lahontan cutthroat trout and other fish species in the lake to tolerate. The NDW has calculated that at historic levels of decline, the fishery could be lost in from 5 to 11 years; at levels of decline experienced during the 1987-92 drought, the concentration of TDS could be too high for the fish in as few as 2 years.[6]

The potential disappearance of the cutthroat trout fishery has served as a "wake up call" to recognition of the inherent problems associated with current management practices on the Walker River. Although Walker Lake has been declining for decades, concern had been minimal, probably because no vital interests had been threatened. Now that the threshold lake

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[3] Seven, op. cit., p. 5.

[4] See California Department of Water Resources (DWR), Walker River Atlas (Sacramento, CA: DWR, 1992), p. 34.

[5] Note that even if extra water is allocated to Walker Lake, the concentration of minerals through evaporation will continue, although this process may be stretched out over a much longer time span.

[6] Seven, op. cit., p. 5

level, below which fish will not be able to survive, appears to be rapidly approaching, the situation has changed. As with other western water problems, different interest groups have a stake in the management of the river, and their interests are not always compatible.

Farmers in the Walker River Irrigation District. Agriculture is long-established in the Mason and Smith valleys, and towns such as Yerington depend heavily on an agricultural economy. Farmers have acquired senior rights to irrigate some 80,000 acres and to divert almost 300,000 acre-feet of water per year (afy).[7] Pasture irrigation and alfalfa production are the largest agricultural water uses. Like some other rivers in the West, water rights on the Walker have been overallocated. The Walker River Task Force notes that during a normal water year (i. e., when the snowpack is 100 percent of normal) only 84 percent of agricultural water rights can be satisfied. A snow pack of 120 percent of normal is required to provide the full allocation of water rights, and historically this situation has occurred only 45 percent of the time.[8] Overallocation of water rights may make finding a solution to Walker Lake's decline more difficult, since the rights of more senior water users may have to be satisfied before additional water could be made available for the lake.

Water now used in agriculture is likely the largest potential source of additional water for Walker Lake. Additional water could be made available through improvements in irrigation practices, retirement of some marginal land, and conjunctive management of ground and surface water. How much additional water might be acquired through these means has not been determined. In its Walker River Atlas, the California Department of Water Resources notes that water rights purchases sufficient to yield an average of 60,000 to 85,000 afy would be needed to maintain the lake at close to or slightly above its 1992 elevation. This represents roughly 20 to 30 percent of water currently consumed by a combination of agriculture, other

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[7] State of Nevada, op. cit. See table 3-4, p. 57.

[8] Walker River Task Force, draft discussion paper, April 1993.

vegetation (i. e., phreatophytes), and evaporation from 3 small lakes.[9] Of the amount consumed, 60 percent is through irrigation, 34 percent through phreatophyte evapotranspiration, and 6 percent through lake evaporation.

Farmers and farming communities understandably wish to preserve their way of life and will likely resist any fundamental changes that could affect that. However, they appear willing to discuss water problems with other interest groups in the watershed. They recognize that irrigation efficiencies can be improved. They also note that some marginal agricultural land could be retired, but prefer to be compensated for doing so.

Walker River Paiute Indian Reservation. After leaving Mason Valley and just before entering Walker Lake, the Walker River flows through the Walker River Paiute Indian Reservation. The Walker River Paiutes divert a relatively small amount of water to irrigate some 2,100 acres of land on their reservation. As with the Walker River Irrigation District, accounting for water flows on the reservation is not very accurate. NDCNR has estimated inflows and outflows to the reservation, but their estimates do not accord with amounts the Indians say they are diverting nor with recent observations about the amount of water reaching Walker Lake. Lack of streamflow data in the area greatly limits an understanding of water movements on the surface and in the ground.

The Indians are concerned about the decrease in size of Walker Lake and wish to work with other groups to help stem the decrease. At the same time, they feel they have been unfairly treated by past water rights rulings and would like to expand the amount of irrigated land on their reservation. They also believe the Walker River Irrigation District, upstream, has not been delivering the amount of water specified in Decree C-125 (i.e., 26.25 cubic feet per second (cfs)) to the reservation.

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[9] State of Nevada, op. cit., Table 2-10

Residents of Hawthorne. The residents of the town of Hawthorne, to the south of Walker Lake, are concerned about the effect the potential demise of the Walker Lake fishery could have on their local economy. Recreational boating and fishing are major sources of revenue for this small town and are seen as the key to economic development in an area that doesn't have many alternatives.

Some citizens of Hawthorne have organized into the Walker Lake Working Group. The goal of this group is to seek a guaranteed volume of water to maintain the lake at a suitable level to sustain fish life. They hope to be able to convince upstream water users to change water use practices so the lake can be saved.

The environment. Preservation of Walker Lake is deemed desirable by all interest groups. However, local habitat preservation per se has not, until recently, had its own champion, and offstream users have at least a partial conflict of interest with environmental concerns. Nationally, concern about environmental preservation has grown dramatically in recent years, and it has become increasingly difficult to neglect environmental (or instream) uses of water. The recent examples of water reallocation for environmental purposes in California's Central Valley, in the Mono Lake area, and in the Carson and Truckee watersheds of California and Nevada point to a trend that, to one degree or another, is likely to continue in the Walker River watershed.

Several environmental groups have recently become concerned about Walker Lake. These include the Nature Conservancy, the Sierra Club, and the Environmental Defense Fund. Members active in Walker Lake discussions have, for the most part, also been involved in the Truckee-Carson negotiations. Environmental organizations are at an early stage in assessing Walker Lake's environmental problems, and to OTA's knowledge no group has yet formulated detailed policy proposals.