

Upper Colorado River Basin Perspectives on the Drought

Don A. Ostler, P.E. - Executive Director and Secretary, Upper Colorado River Commission

Many in the Southwest and Intermountain West are looking forward with anticipation and hope for continued winter snow and substantial spring runoff in the Upper Colorado River Basin, where the bulk of water in the Colorado River drainage originates. The Upper Basin covers those areas that contribute flow to the Colorado River above Lee Ferry, and is comprised of major portions of Colorado, New Mexico, Utah, and Wyoming, and part of Arizona.

Upper Basin Conditions

While the spring runoff looks promising so far this year, we cannot ignore the hard realities facing us. The Colorado River Basin has now experienced five consecutive years of drought, the worst in recorded history. Inflow volumes to Lake Powell, at the downstream end of the Upper Basin, have been well below normal, ranging only 25 to 62 percent of average. As of Feb. 6, 2005, Lake Powell had fallen to an elevation of 3561.3 feet, just 35 percent of its live storage capacity.

Lee vs. Lees vs. Lee's Ferry

There *is* a difference. *Lee* Ferry is the point on the river on the geographic divide between the Upper and Lower basins, and is the point of reference for Upper Basin delivery compliance with the Colorado River Compact. *Lees* Ferry is roughly a mile upstream of Lee Ferry, and is where the U.S. Geological Survey has its stream gauge. The distinction is significant because the Paria River enters the Colorado River between Lees Ferry and Lee Ferry. A gauge on the Paria monitors its contribution to Upper Basin deliveries. Why not just install a single gauge at Lee Ferry? It was physically and logistically too difficult. (Editor's Note: In deference to the Apostrophe Protection Society [www.apostrophe.fsnet.co.uk], acknowledge that *Lee's* Ferry is the proper form, but is seen on few signs in the area.)

Interestingly, Lake Powell continued to fall even after the January storms because releases to the Lower Basin still exceeded inflow. Despite the drought, minimum objective releases from Lake Powell to Lake Mead have been maintained. On Feb. 6, Lake Powell was 139 feet below capacity and only about 71 feet above the minimum elevation required for generation of electrical power through the turbines at Glen Canyon Dam. Recreation facilities have been severely impacted and some are inoperable due to low water levels.

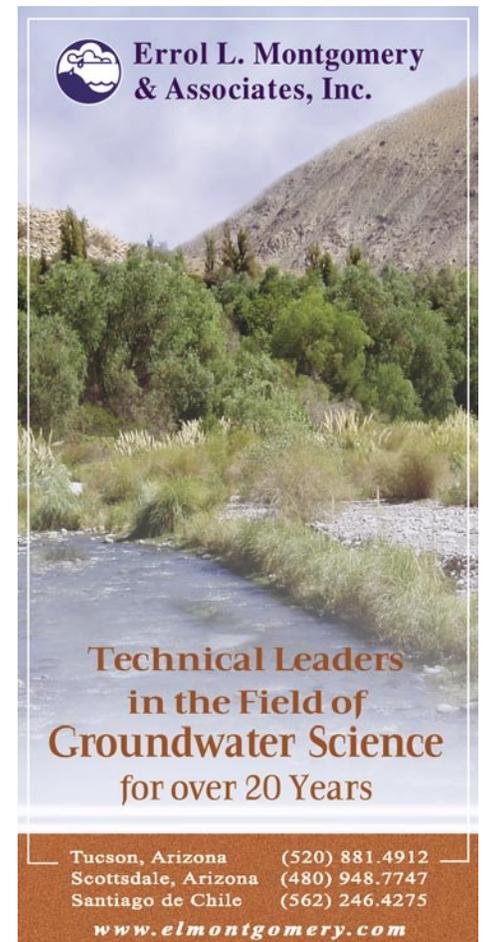
Lake Mead, the upper storage reservoir in the Lower Basin, has fared better and was at about 59 percent of capacity in February. It has continued to receive an undiminished minimum objective release of at least 8.23 million acre feet of inflow annually from Lake Powell throughout the drought. Lake Powell releases plus the early January storms caused Lake Mead to rise more than seven feet during January. The significant drop in water surface elevation of Lake Mead over the duration of the drought to date is due largely to Lower Basin uses exceeding the minimum objective release from Lake Powell plus allotted tributary flows and losses.

Although several other reservoirs in the Upper Basin provide storage, they are minor in comparison to Lake Powell, and cumulatively they do little to increase overall Upper Basin storage or avert problems at Lake Powell due to drought. Lower Basin releases are ultimately dependent upon Lake Powell storage.

Compared to recent years, water year 2005, which began last October, is off to a good start. Snowpack in the Upper Basin

is 121 percent of average as of Feb. 6. But it is too early to celebrate the end of the drought. Even if we exceed average precipitation, we do not know whether this is just one good year in the midst of a longer-term drought. Historical data have clearly shown that in spite of encouraging fall and early winter precipitation trends, the water year can end with below normal, normal, or above normal inflows to Lake Powell. Weather conditions through early spring are the determining factor. As of early February 2005, we cannot reliably

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predict whether the water surface elevation of Lake Powell will continue to decline or if it will rise this year due to improved runoff. It will take more than a decade of average flows to refill Lake Powell and Lake Mead.

Power Generation Concerns

With one or two more severely dry years, the water surface elevation of Lake Powell could fall below the minimum power pool. The turbines at Glen Canyon Dam provide the vast majority of Colorado River Storage Project power. Power supplied to approximately 200 municipalities would have to be replaced at approximately double the cost if power is not generated at Lake Powell. In addition, power generation revenues that support operation and maintenance costs for US Bureau of Reclamation projects, pumping costs for many irrigation projects, principal and interest payment on the debt for project construction, and various environmental projects critical to operation of Upper Basin reservoirs would be lost.

Agriculture Feels Impacts

Agriculture in the Upper Basin already has been significantly curtailed for several years due to the unavailability of water. Agriculture in the basin upstream from the reservoirs depends upon live streamflow; further down, farmers and ranchers count on reservoir storage. During this drought, some of the Upper Basin storage that historically has helped buffer the effects of droughts was significantly depleted. Overall, estimates of total curtailed water supply may be in the range of 600,000 to 900,000 acre-feet in a given year. Significant economic losses have accompanied the curtailments.

Future Actions

The Upper Colorado River Commission (UCRC), comprised of Colorado, New Mexico, Utah, and Wyoming, believes it is now urgent to begin discussions on how the system will operate during drought and shortages such as currently exist. These conditions are likely to occur more frequently in the future as development and uses increase. Clearly, there is not the firm

supply of water in the Colorado River that was assumed when the 1922 Compact was signed. Therefore, the UCRC requested an April review of the Annual Operating Plan, once more accurate spring runoff forecasts are available, to determine if the annual Lake Powell release volume for this year should be reduced. As reservoirs decline to unprecedented levels, the Upper Basin needs to know the minimum annual release from Lake Powell to the Lower Basin, based on Compact accounting, and if there

is a deficiency, as defined by the Compact, in meeting the requirements of the Mexican Treaty of 1944. The surplus flows common until several years ago diminished the need for accounting to demonstrate the Lake Powell release requirements according to the Compact, and to date, no such accounting has been performed.

Even strict Compact accounting may not be enough in the current drought. UCRC plans to proactively and cooperatively

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