

The Economic Impact of Utah's Drought

Overview

Some parts of the Western United States have been in drought for the past five years. The four corners area of Utah, Arizona, New Mexico, and Colorado is the center of the drought and has experienced the most severe consequences. Utah's drought is compounding the state's economic difficulties. The drought appears to have reduced employment change by 0.4%. During 2002, job change was -1.0%. Without the drought, job change might have been -0.6%, 0.4% higher than what actually occurred. The hardest hit sector was agriculture, where 2,600 jobs and almost \$40 million in income were lost.

2002 Summary

Although not yet at the dust bowl stage of the 1930s, some parts of the Western United States have been in drought for five years. The four corners area of Utah, Arizona, New Mexico, and Colorado is the center of the drought and has experienced the most severe consequences. Without a return to normal precipitation, vegetation will slowly die off, ultimately changing the area from arid grassland to desert. Though impacts are less severe in other areas of the West, the lack of water in this region is harming agriculture, natural vegetation, and wildlife. At their June 2002 meeting, the Western Governors Association called for a change in the management of the drought. Specifically, the governors want the country to move from our current costly, ad-hoc, response-oriented approach to a proactive, "preparedness" approach.

Utah's drought is compounding the state's economic difficulties. The drought appears to have reduced employment change by 0.4%. During 2002, job change was -1.0%. Without the drought, job change might have been -0.6%, 0.4% higher than what actually occurred. The drought is making the recession even more difficult. Best estimates are that livestock sales are down \$100 million due to the drought; hay sales are down \$50 million; and, because of drought related fires, tourism sales are down \$50 million. The combined effects of the drought in these three sectors resulted in a loss of over 6,100 jobs during 2002, and over \$120 million in lost income.

The hardest hit sector was agriculture, where 2,600 jobs and almost \$40 million in income were lost. The sectors serving tourists -- retail trade and services (primarily hotels) -- were the next hardest hit sectors. Services lost about 1,300 jobs and \$25 million in income. Retail trade lost over 1,000 jobs and almost \$15 million in income. Construction, manufacturing, and wholesale trade have all been impacted by the drought.

Drought is an extended period of low precipitation, often accompanied by higher temperature. The weather has normal variation in the amounts of precipitation recorded during given periods of time. A drought is beyond these norms in terms of low precipitation for an extended period, typically several years, over a large area. The Utah State Drought Committee is charged with monitoring drought conditions in Utah and recommending policy action to the Governor. In addition to precipitation, the Drought Committee focuses on reservoir capacity, soil moisture, snow pack, and stream flow, which are critical indicators of water availability.

In a typical year, water demand begins to build in late March, peaks in July and August, and tapers off during September and October. The measure of concern for the Drought Committee changes as the watering

season progresses and ends. Storage relative to capacity is always a concern, but October 1 storage and soil moisture are the critical indicators of what sort of winter is necessary to avoid water shortage the following summer. April 1 storage is the critical indicator of how difficult the summer is likely to be. During winter, the focus shifts from storage to snow pack. During spring and summer, the focus shifts to stream flow.

Statewide, the water situation began to deteriorate between 2000 and 2001. April 1 storage during 1998, 1999, and 2000 was just above 85% of capacity. From 2000 to 2001, April 1 storage declined from 85% to 75%, and by 2002 it had declined to 63%. Precipitation will have to be much higher than normal across the state this winter for the April 1, 2003 storage to return to 63%. It appears the water situation during 2003 may be worse than 2002.

Many reservoirs hold water that is not available for human use. The capacity of a reservoir is the amount of water available for human use when full. In some cases, a reservoir's capacity is nearly the same as when the reservoir is full, in others, it is significantly less. For example, when Bear Lake is empty from a storage perspective, it contains 5 million acre-feet of water, almost a decade's worth of residential water use statewide.

For Utah, storage was 44% of capacity as of October 1, 2002. On that date, the statewide storage deficit was over 3.0 million acre-feet, while average flow into storage is just 1.8 million acre-feet per year. With no water withdrawals from storage, almost two recharge seasons would be required to fill the state's reservoirs. With normal withdrawals and average recharge, it may be years before the reservoirs are refilled. With below average recharge, as will occur if the drought persists, less water will be available than has normally been used, and some water users will have access to less water. The hay crop was off \$50 million because hay irrigators couldn't obtain water.

At 12% of capacity on October 1, 2002, the Sevier River Basin which supplies water to Richfield, Salina, Delta and other communities in west-central Utah, is the area with the least available water supply. However, in terms of visible impact to the land from lack of precipitation, Southeastern Utah, particularly Four Corners, probably has the worst drought in the state, if not the nation. Reservoir storage in Southeastern Utah is primarily in the Wasatch Plateau area west of Price City. While reservoir storage in Southeastern Utah (30%) is more than twice the Sevier, parts of Southeastern Utah are faring worse than the Sevier Basin area. The Bear River Basin and Southern Utah are both at less than 30% of capacity.

Storage in the Provo River Basin, which provides water to the highly populated Provo/Orem and Salt Lake urbanized areas, is 62%. This is 18 percentage points, or 40% greater than the state average. Storage in the Weber River Basin, which provides water to the urbanized areas in Davis and Weber Counties, is just below the state average. Through a complex set of water works, water consumption throughout the Wasatch Front is interconnected. Much of the Salt Lake Valley's water is supplied with run-off from the Wasatch Mountains. Normal snow pack in the Wasatch mountains has reduced the need for Provo River water. A poor snow year in the Wasatch will increase the strain on the Provo River system.

Storage as a percent of capacity is a good indicator of the water situation, because some reservoirs are designed to fill more rapidly than others. However, storage deficit compared to average stream flow presents a better measure. By this measure, even though storage is just 12% of capacity in the Sevier River Basin, less than two years will be required to return the Basin to capacity, with normal stream flow. Reservoirs in Southern Utah, Southeastern Utah, and the Weber River Basin require less than a year to reach capacity, which puts them in better shape than the state as a whole. Provo River Basin reservoirs may require more than two years to refill.

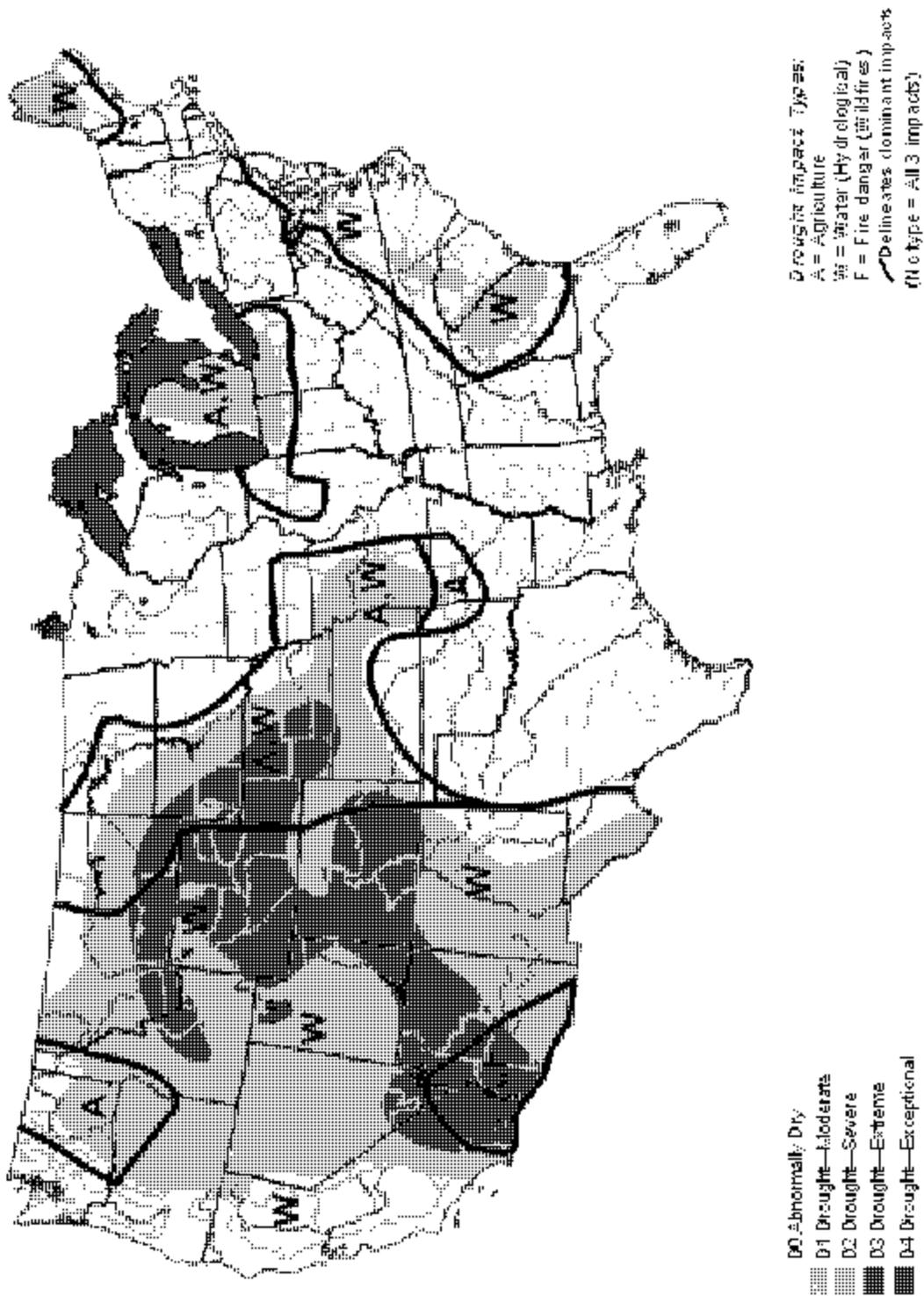
The Bear River Basin may have the most dire water situation in the state. With normal stream flow and normal withdrawals, it may take close to a decade for this basin's reservoirs to fill. Although Bear Lake is a natural lake, it is by far the largest reservoir in this basin and the main influence on storage. Because of its size, Bear Lake is also the largest source of the state's storage deficit. With an October 1, 2002 storage deficit of 1.1 million acre-feet, Bear Lake accounts for over one-third of the state's 3.0 million acre-feet deficit, and is the single largest source of the deficit. Bear Lake's storage (370,000 acre-feet) is just 25% of its 1.5 million acre-feet capacity.

The good news is that the public is willing to cut water use. Because of the wise water use campaign, especially the 10am to 6pm no-watering promotion, water use declined substantially during 2002 relative to 2001. Along the Wasatch Front, water use declined 13% during 2002, from 97 billion gallons to 84 billion gallons. This was despite the fact that summer 2002 was actually hotter and dryer than summer 2001.

Conclusion

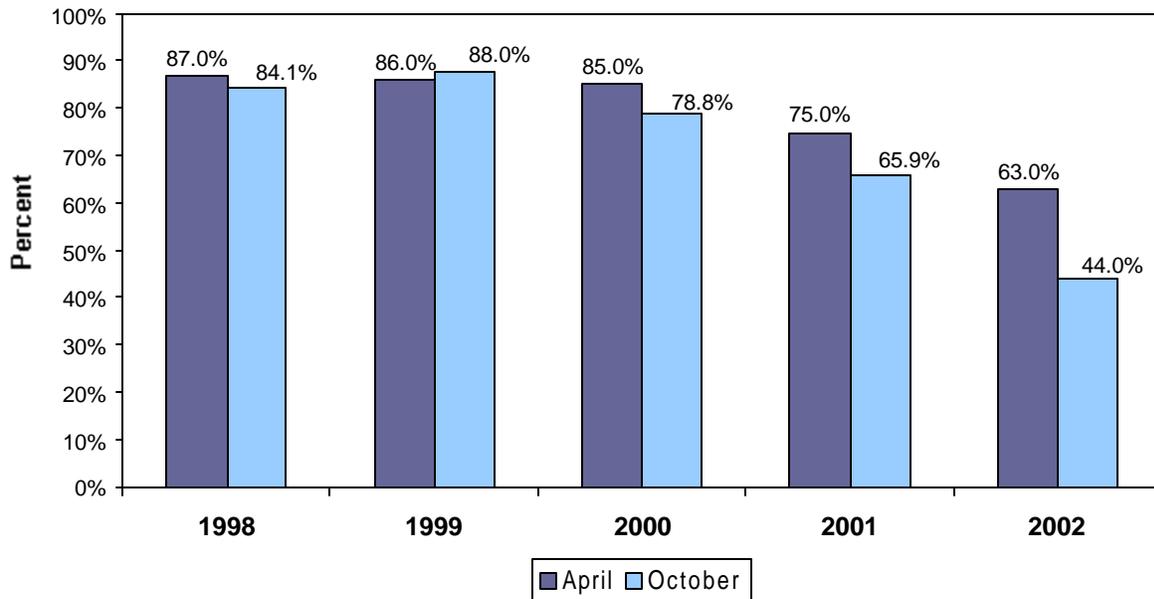
No area of the state has been spared from the drought, although the highly populated Wasatch Front is faring well. Reservoir storage deficits in the Provo and Weber Basins which supply the Wasatch Front, mean the water supply situation for most Utah residents will be tight. While storage appears low in several river basins, normal winter precipitation could remove a large portion of the deficit.

Figure 91
Drought Conditions in the United States: Autumn 2002



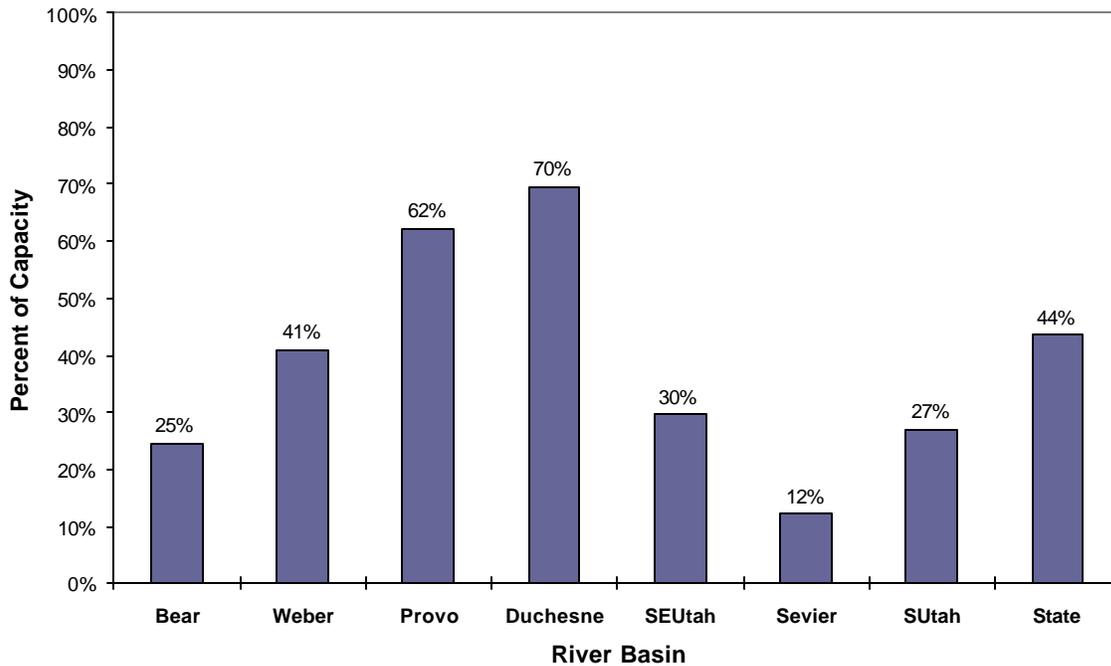
Source: National Climatic Data Center

Figure 92
 Statewide Reservoir Storage as a Percent of Capacity: April and October, 1998 to 2002



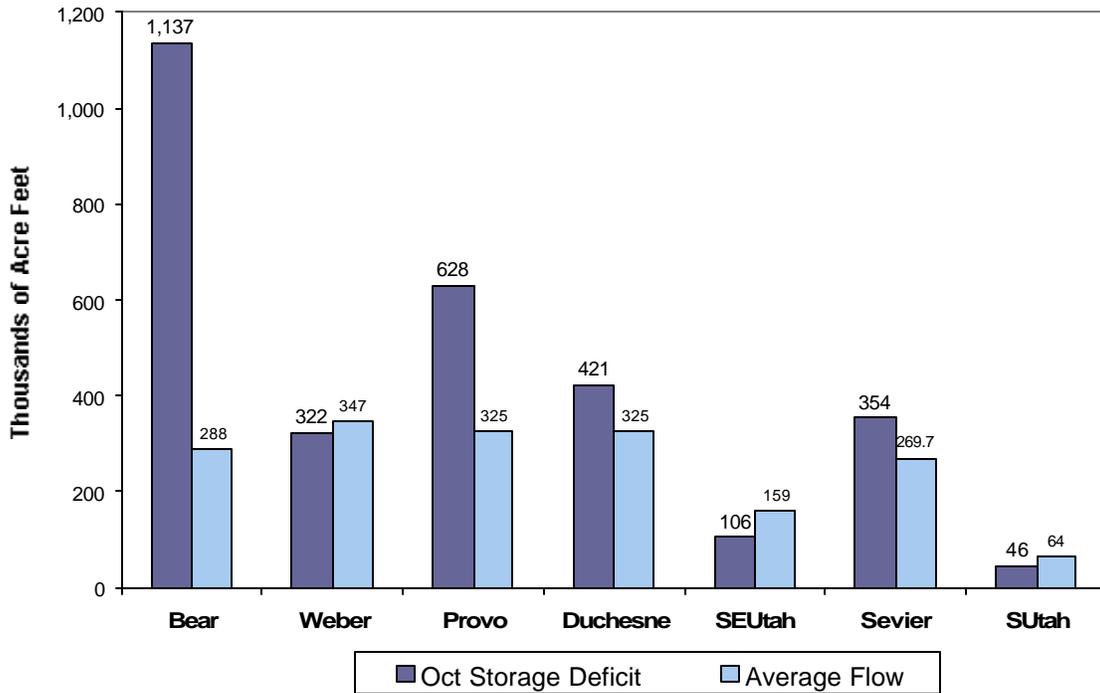
Source: Utah State Drought Committee

Figure 93
 Statewide Reservoir Storage by River Basin: October 2002



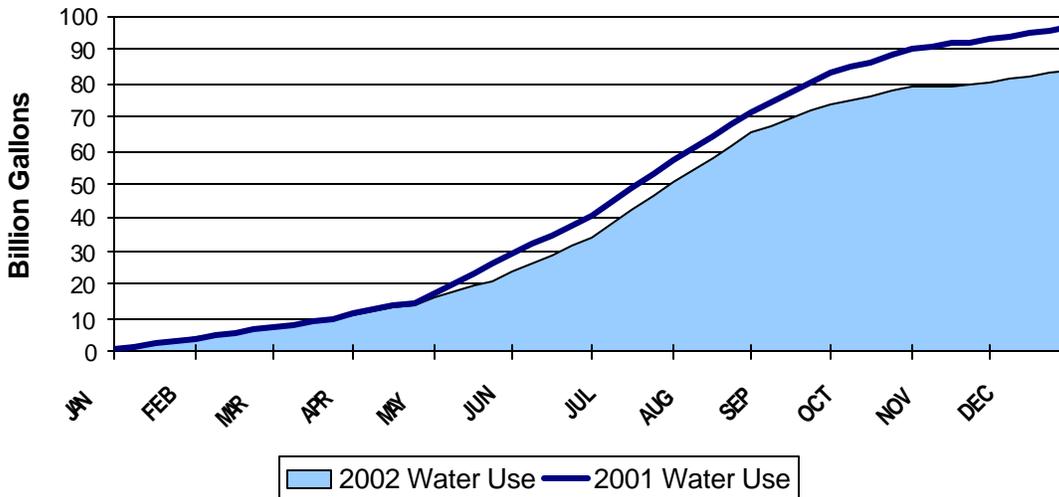
Source: Utah State Drought Committee

Figure 94
 Reservoir Storage Deficit by River Basin Compared with Average April to July River Flow: October 2002



Source: Utah State Drought Committee

Figure 95
 Comparison of Wasatch Front Total Water Use from 2001 to 2002



Source: Utah Division of Water Resources

Table 94
Economic Impacts of the Drought during 2002

Economic Sector	Employment (Jobs)	Income (\$ Millions)
Farm	-2,602	-\$38.6
Ag Services	-112	-1.9
Construction	-465	-16.1
Manufacturing	-114	-4.7
Trans. & Utilities	-97	-4.6
Wholesale Trade	-152	-6.7
Retail Trade	-1,035	-14.8
Finance	-201	-5.4
Services	-1,291	-25.1
State Government	-37	-1.5
Local Government	-56	-2.0
Total	-6,162	-121.4
Total as a percent of economy	-0.4%	-0.3%

Estimates Based on:

1. \$50 million reduction in hay sales
2. \$100 million reduction in livestock and product sales
3. \$50 million reduction in tourism sales

Source: Governor's Office of Planning and Budget