

# 2008 Colorado Drought Impact Report

## A Report to the Governor

September 1, 2008

### Background

This is the tenth year of our ongoing drought. After so many years of below average conditions, many reservoirs across the state are empty, soil moisture for crops is nonexistent, municipalities are scrambling to provide usable water to their residents, and our natural environment is reeling.

Droughts are sneaky. Most, like this one, begin with a series of apparently harmless beautiful days and generally end just as stealthily with a gradual return to more typical conditions. We have already been fooled twice into thinking that the end of our drought was near, once in 2003 with the 100-year March blizzard, and again in 2005.

No one knows when this drought will end. Experts have warned for years that the twentieth century was anomalously wet relative to the 400-year tree-ring record. Several severe sustained droughts appear in this record that dwarf the Dust Bowl in intensity and duration.

While it is difficult to quantify the total economic impact of this drought, this is a disaster of the first order. It is costing Colorado billions of dollars, and its impact is being felt by every sector. Nationally, when compared to other billion-dollar weather disasters over the last 30 years, droughts account for the largest share of total losses. Of 58 billion-dollar weather disasters since 1980, the most costly was the estimated \$62 billion drought of 1988. By the time this drought ends, however, losses nationwide will significantly exceed that amount.

### Current Conditions

The following reports are issued pursuant to your request for activation of the task forces under Colorado's Drought Mitigation and Response Plan.

**Agricultural Impact Task Force:** Dry land wheat, irrigated corn, and dry land corn are almost complete losses again this year. The estimated direct cost to crop producers is in excess of \$2 billion. Many ranchers liquidated their herds in 2006 and their long-term losses are approaching \$1 billion. Increasingly, farmers are selling their water rights to cities and their land to developers. Farming communities are experiencing high levels of unemployment, and suicides have spiked in the past few months.

**Tourism Impact Task Force:** Revenues for boating and whitewater rafting, as well as visits to parks, have declined by 75 percent. After the drought of 1981, most ski areas installed snowmaking machinery to buffer the impacts of low snow years. The system worked until this year when winter stream flows were at record lows and empty reservoirs prevented any additional stream diver-

sions for snowmaking. Many ski areas were open for only two months this past winter, and several have gone out of business. National news broadcasts showing ravaged forests, dried up streams, and dead fish have resulted in the cancellation of thousands of hotel reservations. Mountain resort communities, like their farming counterparts, are experiencing high levels of unemployment and business failures.

**Municipal Water Impact Task Force:** Denver Water and other municipal water providers in the Front Range have been limiting outdoor watering, which consumes over half of municipal water supplies, to two days per week for the past several years. This year, most have banned all outdoor water use except to keep trees and shrubs alive. Athletic fields across the state have closed because there is no water for turf. Most cities have imposed stiff surcharges for water usage. In some communities with especially vulnerable water supplies, households have been rationed the minimum amount of water deemed necessary for health and safety.

**Wildfire Impact Task Force:** Massive forest dieback caused by the combined impact of drought and beetle infestation is now common. Numerous wildfires are burning across the state, affecting millions of acres of weakened or dead trees. Two hundred people have lost their lives so far, and hundreds of homes have been destroyed. Fire suppression costs are nearing half a billion. Air quality in cities east of the fires has deteriorated so badly that several advisories have been issued for at-risk populations to remain indoors.

**Wildlife Impact Task Force:** Thousands of fish have died so far this year as reservoirs have been drained and rivers have become highly polluted due to low flows. The state has lost \$5 million in revenues because of declines in fishing license sales. In the last few years the state issued drought mitigation hunting licenses in order to intentionally cull the elk herds, which, already weakened and threatened by disease, were further at risk as a result of declining winter forage. As a result we now have lower target harvests and lower license revenues.

**Health Impacts Task Force:** Numerous communities have issued bottled water advisories or have had to import potable water due to declining water quality. In many cities, residents have been banned from using nearby creeks because of harmful bacterial levels.

While these task force reports describe the most direct drought impacts, we should not overlook the indirect, long-term effects that this drought could have on the general economy and society as a whole. These impacts in-

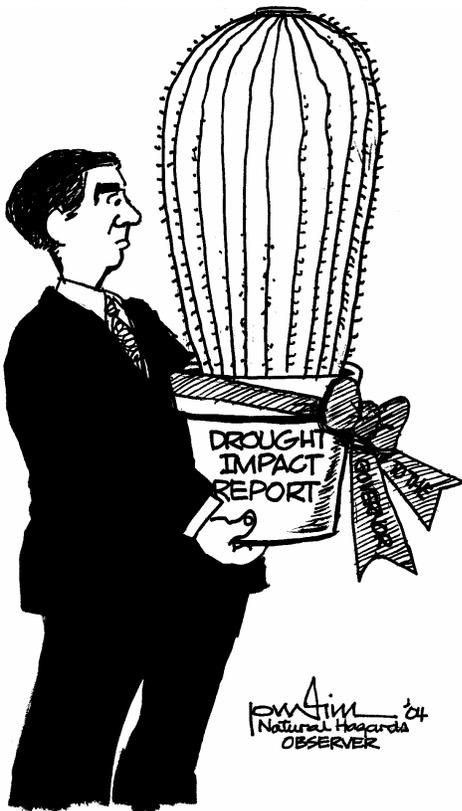
clude greater unemployment, reduced income, poor housing sales, residential and business relocations, and, ultimately, a severely weakened tax base, diminished quality of life, and increased crime rates.

### Future Considerations: Colorado River Compact

Under the 1922 Colorado River Compact, California, Arizona, and Nevada receive priority over Colorado, Utah, Wyoming, and New Mexico for Colorado River water during extreme droughts. With Lake Powell nearly empty, provisions in this compact may soon force a first-ever “compact call.” This action would prevent Colorado from accessing approximately half of its normal Colorado River water. To give you an idea of the seriousness of a compact call, for starters, the following would occur:

- All Front Range municipalities that divert water from across the Continental Divide would lose 25 to 50 percent of their normal water supply. Denver Water, for example, supplier for 1.2 million Front Range residents, would immediately lose 30 percent of its normal supply.
- The Colorado-Big Thompson Project would not be able to supply water to 30 cities and 600,000 acres of irrigated land in the Northern Front Range.
- All large reservoirs on Colorado’s Western Slope, including Wolcott, Ruedi, Taylor, and Blue Mesa would be prevented from filling.

Should a compact call become reality, plan on spending many of your days dealing with this unprecedented issue.



### Where Do We Go from Here?

The excess capacity in our system provided by water used in agriculture for low-value crops, such as hay, and by water used for lawn watering in cities is an important first line of defense in our ability to deal with drought. These uses can be curtailed during drought with few long-term effects. Because water is a finite resource, accommodating new growth in Colorado generally means that these less valuable water uses are the first to be converted to more valuable—and less flexible—uses, such as indoor municipal use. The end result, paradoxically, is that in future droughts we will have fewer low-valued uses to curtail. We will be faced with cutting back on critical demands. Simply put, growth increases vulnerability to drought.

Analysis of tree ring records shows natural climate variability is much greater than the weather of the twentieth century indicated. Changes in Colorado’s climate could mean an even more active hydrological cycle with more extreme drought events in our future. Severe recurring drought may be an ongoing reality for Colorado for many years to come.

New, limited water storage may be appropriate in some areas, but the state engineer concedes that offsetting a drought of this magnitude with storage is “virtually impossible.” Weather modification techniques such as cloud seeding have not been proven to be highly effective. And although, when not “mined,” our underground aquifers can provide us with another critical source of water when surface supplies are low, the costs associated with tapping this source are becoming almost prohibitively expensive. In the long run, drought preparation and mitigation will have to increasingly focus on curtailing demand rather than increasing supply.

This *Invited Scenario* was written by Bobbie Klein, Center for Science and Technology Policy Research, Cooperative Institute for Research in Environmental Sciences, and Brad Udall, Western Water Assessment, both at the University of Colorado at Boulder.

### Suggested Internet Resources

<http://www.ncdc.noaa.gov/oa/reports/billionz.html>  
Billion Dollar U.S. Weather Disasters, 1980-2003

<http://www.dola.state.co.us/oem/Publications/droughtplan.402.pdf>  
*Colorado Drought Mitigation and Response Plan*

<http://www.drought.unl.edu/>  
National Drought Mitigation Center

[http://cwcb.state.co.us/owc/Drought\\_Planning/2003\\_Drought\\_Impact\\_and\\_Mitigation\\_Report\\_Final.pdf](http://cwcb.state.co.us/owc/Drought_Planning/2003_Drought_Impact_and_Mitigation_Report_Final.pdf)  
*2003 Drought Impact and Mitigation Report*

[http://www.cpc.ncep.noaa.gov/products/expert\\_assessment/seasonal\\_drought.html](http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html)  
U.S. Seasonal Drought Outlook

[http://www.colorado.edu/Law/centers/nrlc/publications/water\\_and\\_growth\\_summary\\_report.pdf](http://www.colorado.edu/Law/centers/nrlc/publications/water_and_growth_summary_report.pdf)  
*Water and Growth in Colorado*