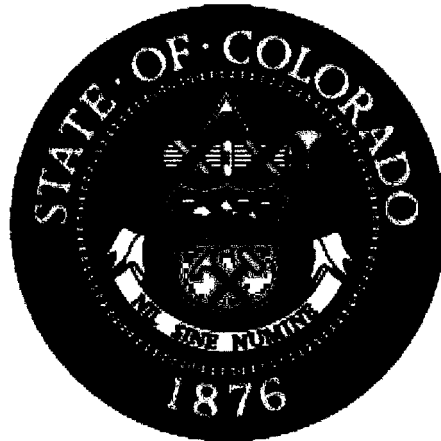


# **2003 Drought Impact and Mitigation Report**



**Prepared by:  
The Colorado Water Availability Task Force; Impact Task Forces**

**Presented by:  
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Task Force**

**April 14, 2003**

# 2003 Drought Impact and Mitigation Report

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## **THE PURPOSE OF THIS REPORT:**

This report, based on the impacts witnessed in 2002, was prepared to assist state leaders, planners, and managers in the identification of 2003 drought impacts and related actions or mitigation measure to address drought impacts. Additionally the report identifies state and federal agencies and associations that are associated with actions and mitigation measures and the implementation status and related costs if available.

Like many western states, Colorado is currently experiencing continued and extreme drought conditions. The drought conditions that Colorado experienced in 2002 impacted the State and its residents in many different ways. Some of the impacts are typical of any drought and some were unique to this region.

At this point in time, based on current record low reservoir levels, streamflow levels, and soil moisture levels, it is likely that Colorado will again see moderate to severe drought conditions this Spring and Summer. Were it not for the water storage Colorado now utilizes, the impacts of the drought would have been catastrophic.

## **BACKGROUND:**

### ***Defining Drought***

Drought has been an all too familiar part of Colorado's history. It is one of the most destructive, but least understood of all natural hazards. Its onset is slow and silent and its effects can last for years. Geographically, drought can occur locally, regionally, or statewide. The impacts from drought are non-structural and generally affect the economy and environment of the host area. A drought event can be short-term or it can be a multi-year event much like the current drought affecting Colorado. From a historical perspective, scientific studies have shown that Colorado has experienced drought periods lasting ten years and longer.

Due to diverse geographic and regional differences, defining drought is often difficult. A drought definition that is suitable to New England, for example, may not be applicable to the arid Southwest. The Colorado Climate Center at Colorado State University has developed a drought definition that applies specifically to the Rocky Mountain region and defines drought as, "a period of insufficient snowpack and reservoir storage to provide adequate water to urban and rural areas."

### ***The 1977 Drought***

The last severe drought event to impact Colorado occurred during the years of 1976 and 1977. During that period, the state experienced record-low stream flows at two-thirds of the major stream gages-- most of which have been exceeded by the current drought. In addition, the Colorado ski industry estimated revenue losses at \$78.6 million, agriculture producers had to incur higher crop production costs due to short water supplies, and numerous municipalities were forced to impose water use restrictions on their customers.

The state's agriculture producers and municipalities received over \$110 million in federal drought aid as a result of the 1976/1977 drought.

***Role of the Colorado Drought Mitigation and Response Plan***

In response to the 1977 drought, the Colorado Drought Mitigation and Response Plan (Plan) was developed and is believed to be the first comprehensive plan of its type in the nation. The Plan, which has since been revised, was created to provide an effective and systematic means for the State of Colorado to recognize and reduce the impacts of water shortages over the short-term and long-term.

The Plan consists of four components: monitoring, assessment, mitigation, and response. The Water Availability Task Force is responsible for implementing these components.

***The Water Availability Task Force***

The Water Availability Task Force (Task Force), commonly called the Drought Task Force, is a group of water supply specialists, emergency management professionals, federal land managers, scientists, and climatological experts who meet regularly to monitor Colorado's drought conditions. At a minimum, the Task Force monitors snowpack, precipitation, reservoir storage, stream flows, and weather forecasts and provides this information to other task forces and regularly organizes and conducts a forum to discuss evolving drought conditions. If the Task Force members believe conditions appear to be in a steady or rapid state of decline, the Task Force is required to notify the Governor and request either partial or full activation of relevant Impact Task Forces.

***Impact Task Force Responsibilities***

Once the Impact Task Forces are activated, they are instructed to convene and determine impacts within specific sectors of the economy and environment. Colorado's Impact Task Forces are: Municipal Water, Wildfire Protection, Agriculture, Tourism, Wildlife, Economic Impacts, Energy Loss, and Health. Coordination of the impact assessment information is assigned to the Review and Reporting Task Force, which is comprised of the Impact Task Force chairs, as well as the Executive Director of the Department of Natural Resources and the Executive Director of the Department of Local Affairs.

***2002 Drought Chronology***

At the start of 2002, Colorado was beginning its fourth consecutive year of below normal precipitation. On January 1, the statewide snowpack levels were 65 percent of average, with the South Platte, Dolores, and Rio Grande basins well below 50 percent of average. However, reservoir levels were 87 percent of average statewide. Most municipal water suppliers were reporting that their supplies were still in good shape and could withstand another dry year if necessary.

Based largely on the anticipated El Nino, and the fact that Colorado typically receives a majority of its annual snowfall during the months of March and April, there was still general belief among Task Force participants that a wet spring could stabilize most of the declining conditions.

Research suggests that multi-year droughts typically have one peak year that is more dramatic and more devastating than all of the others. A look at recorded information suggested that 2002 was the peak year of the current drought event. This information further clarified the dramatic decline in conditions between January 1 and April 1. By April 1, the statewide snowpack totals had quickly declined to 52 percent of average. Not only had this time period been dry, above-normal temperatures accelerated snowpack evaporative losses and increased demand on available water supplies.

Persistently warm temperatures characterized 2002 in all months except February, March and September. This contributed to high evaporation rates and low relative humidities -- not uncommon for a widespread long-duration drought event.

The highly anticipated spring precipitation never materialized. The meager snowpack disappeared rapidly and many key streams and rivers never experienced typical spring runoff conditions.

After being informed that conditions were rapidly declining, on April 22, 2002, Governor Owens requested the Water Availability Task Force to immediately activate the Plan and convene all Impact Task Forces to identify and recommend measures to minimize drought impacts. Governor Owens requested the Task Force prepare a report of anticipated drought impacts and recommend legislative action to help offset the affects of the drought.

On the same day, Governor Owens made a request to the Secretary Ann Veneman, U.S. Department of Agriculture, that the entire state of Colorado receive an emergency drought designation to allow farmers and ranchers to receive federal emergency assistance.

On May 1, the Impact Task Force reported to the Governor several recommendations for legislation and measures to address drought impacts. One of the recommendations was later the basis for House Bill 02S-1001, which increased the liability to those individuals who negligently cause wildfires during a drought emergency. The legislation also asked the Colorado Water Availability Task Force to report to the General Assembly by December 1, 2002, regarding any recommendations for legislation addressing drought emergencies.

In addition, Governor Owens and the Colorado General Assembly passed Senate Bill 02S-001 which created a \$1 million "Agricultural Emergency Drought Response Fund" to be used by farmers and ranchers for emergency drought related water augmentation purposes.

## **HIGHLIGHTED IMPACTS FROM 2002**

- Snowpack on April 1 was 52% of average. April 1 is typically the date used to measure peak snowpack levels.
- On April 22, Governor Owens requested an emergency drought designation from U.S.D.A. Secretary Ann Veneman. 63 Colorado counties received a federal drought disaster designation.
- On April 22, Colorado's Drought Mitigation and Response Plan was fully activated for the first time ever since its creation in 1981.
- Statewide precipitation for the 2002 water year was close to 60 percent of average -- well below the 70 percent value that is commonly used to define severe drought.
- Persistently warm temperatures characterized 2002 in all months except February, March, and September. This contributed to high evaporation rates and low relative humidities -- not uncommon for a widespread long-duration drought event.
- There were 4,612 wildfires in Colorado during 2002 that burned over 619,000 acres. Based on a ten-year average, Colorado typically experiences 3119 wildfires with a loss of 70,000 acres per year. There were approximately \$152 million in wildfire suppression costs. 81,435 people were evacuated. There were approximately 1000 structures burned. There were ten lives lost.
- Several communities experienced water supply emergencies requiring special actions. Those communities included: Alma, Rocky Ford, Red Rock Valley Estates Water District, Beulah, Kremmling, Victor, Cripple Creek, and Penrose.
- Many municipalities implemented restrictions on outdoor water use.
- 20 public water systems reached critical or near-critical water level designations from the Colorado Department of Public Health and Environment.
- Dry land wheat production was only 45 percent of the ten-year average.
- Irrigated corn production was 50 to 85 percent of average. Dry land corn was almost a total loss.
- Sunflower crop yields were down 71 percent.
- Cattle breeding stock was reduced by 45 to 50 percent statewide. Southern Colorado ranchers sold almost 80 percent of their herds. Losses to ranchers neared \$460 million.

- Dairies (500 head size) lost approximately \$15,000 to \$20,000 per month.
- Outfitters estimated that visitation was down 40 percent with an expected \$200 million impact.
- Fishing license sales were down by 93,000 with a \$1.8 million impact to the Division of Wildlife.
- River calls were placed early in April and continued throughout the summer. The Farmers Independent 1865 call in District 2 was the most senior call in that particular reach of the South Platte in the last 35 years.
- The plains irrigation reservoirs east of Denver were drained by the end of August.
- According to tree ring studies, 2002 was the driest year since 1703 in the South Platte Basin and along the Colorado River since 1579.
- Well augmentation entities had to continuously acquire additional augmentation water to accommodate the extended call period, which resulted in a reduction of allowable pumping by 25 percent. Some well pumping was curtailed to prevent a violation of compact delivery requirements.
- A call on the City of Pueblo's 1874 direct flow right was the most senior call ever on that reach.
- Rural economies were severely impacted by the drought, although totals are not yet known.
- Landscaping and nursery industries estimate a loss of 15,000 jobs and \$75 million in sales.

## **List of Acronyms**

AROA	Arkansas River Outfitter Association
BLM	Bureau of Land Management
CCLOA	Colorado Campground and Lodging Owners Association
CDPHE	Colorado Department of Public Health and Environment
CGA	Colorado Golfing Association
CH&LA	Colorado Hotel and Lodging Association
CPGA	Colorado Professional Golfers Association
CPRA	Colorado Parks and Recreation Association
CRA	Colorado Restaurant Association
CROA	Colorado River Outfitters Association
CSCUSA	Colorado Ski Country USA
CSFS	Colorado State Forest Service
CSU	Colorado State University
CTO	Colorado Tourism Office
CVB	Colorado Visitors Bureau
CWF	Colorado Wildlife Federation
CWCB	Colorado Water Conservation Board
CWQCD	Colorado Water Quality Control Division
CWRPDA	Colorado Water Resources and Power Development Authority
CRWA	Colorado Rural Water Association
DOI	United States Department of Interior
DOLA	Colorado Department of Local Affairs
DOW	Colorado Division of Wildlife
DPOR	Colorado Division of Parks and Outdoor Recreation
DNR	Colorado Department of Natural Resources
DWR	Colorado Division of Water Resources, State Engineers Office
ITF	Impact Task Force
NPS	National Park Service
NRCS	Natural Resources Conservation Service
OEMC	Office of Energy Management and Conservation
PWS	Public Water Suppliers
R&RTF	Review and Reporting Task Force
RMGCSA	Rocky Mountain Golf Course Superintendents Association
TNC	The Nature Conservancy
USDA	United States Department of Agriculture
USFS	United States Forest Service
USF&WS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WATF	Water Availability Task Force

# AGRICULTURE IMPACT TASK FORCE REPORT

## AGRICULTURE IMPACT TASK FORCE 2003 IMPACTS AND MITIGATION ACTIONS

IMPACT	PLANNED ACTIONS	AGENCY	STATUS	COSTS
<b>Crop and livestock losses due to drought</b>	1. USDA Secretarial Disaster Declaration (Short Term) a. Counties request declaration b. Governor requests declaration from USDA c. USDA determines which counties are included for Secretarial Emergency Disaster Declaration. d. Notify Congressional Delegation about the Governor's disaster request. e. Low interest emergency loans will be available to qualified applicants for declared disaster counties.	Colorado Department of Agriculture, Governor's Office, USDA		<b>Impact Cost:</b> Estimated direct cost to crop producers during 2002 is in excess of \$300 million. <b>Implementation Cost:</b> Cost to implement USDA Disaster Designation is negligible.
<b>Reduced forage and water for livestock</b>	1. Implement the emergency grazing of Conservation Reserve Program (CRP) lands.	USDA -NRCS	Ongoing and as approved	<b>Impact Cost:</b> Estimated direct cost to livestock producers during 2002 is in excess of \$150 million.
	2. Prepare and provide list of water haulers to livestock producers.	Colorado Department of Agriculture, Governor's Office, CSU	Will be provided as needed	<b>Cost to implement:</b> Unknown at this time.
	3. Implement Hay Hotline. Provide supply information to agricultural producers needing supplemental feed	CSU Extension	Ongoing	<b>Cost to implement:</b> expected to be low cost and can be absorbed under current budgets.
<b>Tax implications due to herd liquidation</b>	1. Develop workshop to inform agricultural producers about tax implications due to herd liquidation/culling. Use workshop to inform producers about available assistance/programs available due to drought	Colorado Department of Agriculture and CSU Extension	Ongoing	<b>Cost to implement:</b> Unknown at this time but is not expected to require any additional funds than what is currently budgeted.

<b>Water Supply reduction and watershed restoration</b>	1. Thin or remove moisture competitive trees and brush in watersheds to increase yields for streams and aquifers <b>(Long-Term)</b>	USFS, Colorado State Forest Service, DNR	Ongoing as funding permits	<b>Implementation Cost:</b> Cost to implement is unknown at this time.
<b>State and Federal Aid, monitor legislation (non-impact)</b>	1. Monitor all proposed state and federal drought-related legislation for benefits and impacts to agriculture. 2. Communicate with state legislators and congressional delegation on impacts from drought.	Colorado Department of Agriculture, Governor's Office	Ongoing	<b>Cost to implement:</b> negligible to agency.
<b>Lack of water storage.</b>	1. Assess legislation that would provide more stored water for agricultural purposes <b>(Long Term)</b> 2. Assess legislation which supports temporary transfers of agricultural water to cities in times of drought.	Colorado Department of Agriculture, Governor's Office, State Legislature, DNR, CWCB, DWR	Ongoing	<b>Cost to implement:</b> Unknown at this time.

## **ENERGY IMPACT TASK FORCE REPORT**

ENERGY IMPACT TASK FORCE 2003 IMPACTS AND MITIGATION ACTIONS				
IMPACT	PLANNED ACTIONS	AGENCY	STATUS	COSTS
<b>Potential loss of energy production due to drought and wildfire conditions.</b>	1. A review with major energy suppliers showed that the continuity of Colorado's energy supply seems assured for 2003. Many of the concerns of 2002 remain.	OEMC, utilities	Completed	<b>Cost to implement:</b> No cost to state government.
	2. Monitor Spring snowpack and runoff amounts to determine the extent, if any, of hydroelectric generation reductions.	OEMC, DWR/SEO, CWCB, utilities	Although hydroelectric generation may be reduced by low runoff, this does not affect pumped storage plants. One of the 100MW unit's and the Mt. Elbert pumped storage plant will be offline in April for necessary scheduled repairs.	<b>Cost to implement:</b> Energy industries are largely responsible for monitoring functions. Any state costs are absorbable under current funding levels.
	3. Improve communication links between appropriate agencies and utilities and update contingency plans.	OEMC, utilities	Extensive efforts on the part of the utilities and appropriate agencies have improved communication since 2002. Contingency plans have been updated.	<b>Cost to implement:</b> costs to state to participate with planning efforts has been absorbed under current budgets.

	4. Ensure adequate cooling water for energy plants.	OEMC, DWR/SEO, utilities	Cooling water for conventional plants appears to be adequate, providing that all rights and contracts are honored. Water conservation and closed cycling measures have been taken to reduce cooling requirements.	<b>Cost to implement:</b> costs to state to participate with planning efforts and to monitor water rights compliance can be absorbed under current budgets.
<b>Potential loss of energy transmission lines due to wildfires.</b>	Identify transmission areas of potential risk in the event of wildfires	OEMC, utilities	High-risk transmission areas have been identified and mitigation efforts are currently being undertaken to reduce risk from wildfire.	<b>Cost to implement:</b> None to state
	Maintenance programs to perform fire mitigation work along transmission line rights-of-ways.		Maintenance programs underway. All of the state's transmission lines are rated "minus 1" which assures power continuity if any single transmission line is lost.	<b>Cost to implement:</b> None to state
	Improve communication links between appropriate agencies and utilities and update contingency plans.		Extensive efforts on the part of the utilities and appropriate agencies have improved communication since 2002. Contingency plans have been updated	<b>Cost to implement:</b> costs to state to participate with planning efforts have been absorbed under current budgets.

## **HEALTH IMPACT TASK FORCE REPORT**

### ***Background:***

Many public water systems (PWS) throughout the state were stressed by the 2002 drought. 20 systems (mostly in southeast Colorado) contacted the Colorado Water Quality Control Division (WQCD) for technical or financial assistance. Cost categories for drinking water-related public health concerns fall into the following general categories (*and do not include the multi-million dollar costs associated with the closely related fire impacts*):

- Water supply augmentation or replacement costs due to water quality concerns, e.g.: 1) Beulah, which hauled water and accrued costs for cleaning and sanitizing water trucks, and 2) Morrison, which issued a bottled water advisory (these costs were borne by their customers);
- Water treatment facility operational costs due to increased treatment requirements because of lower quality source water, e.g., Morrison, where the costs were accrued by the PWS.

Based on the limited number of drought-related technical and financial assistance requests to the WQCD, the cost estimate for the small to medium-size PWS's to provide safe drinking water (over and above normal costs) is less than \$1M. The larger systems were by-and-large not required to augment or replace supplies because of drought-related water quality concerns making their costs minimal.

HEALTH IMPACT TASK FORCE 2003 IMPACTS AND MITIGATION ACTIONS				
IMPACT	PLANNED ACTIONS	AGENCIES	STATUS	COSTS
<b>Public Water System (PWS) Operational Problems</b>	1. Update and build on the list of public water systems which experienced operational problems and provide updated WQCD contact information for technical and financial assistance on drought problems.	CDPHE DOLA	Impact list with 2002 "Inactive" systems and 2003 "Active" systems has been developed.	<b>Cost to implement:</b> accomplished under current funding.
	2. Update information on available funding sources for drought mitigation.	CDPHE DOLA	Funding list has been updated; funding processes have been streamlined.	<b>Cost to implement:</b> accomplished under current funding.

	3. Develop a technical or financial assistance plan for each system with problems based on prioritized needs.	CDPHE DOLA	As impacted systems are identified, technical assistance will be provided immediately; financial needs will be evaluated and funded on a priority basis.	<b>Cost to implement:</b> accomplished under current funding.
<b>Risks Associated with Operational Problems</b>	1. Work with impacted systems to develop "bottled water" advisories, as appropriate.	CDPHE Local PWS	Procedures developed during 2002 season will be utilized in 2003.	<b>Cost to implement:</b> costs to state for outreach and advisories can be absorbed under current budgets. <b>Cost of impact:</b> costs for bottled water and water hauling are borne by the utility and their customers. Actual costs from 2002 are not known at this time.
	2. Approve new sources of water supply to ensure public safety.	CDPHE	WQCD approval of new sources is required.	<b>Cost to implement:</b> already accounted for in existing budget, anticipated increases in the number of applications can be absorbed.
<b>Instream Water Quality Problems</b>	1. Identify potential problems in key stream segments and lakes based on flow/water quality information.	CDPHE DNR USGS	Working to develop a technology-based early warning system.	<b>Cost to implement:</b> already accounted for in existing budget, anticipated increases in the number of applications can be absorbed.
	2. Assess low flow-related fish kills regarding potential broader impacts.	CDPHE DOW	Standard fish kill procedures will be utilized to isolate drought-related impacts from potential spill/release impacts.	<b>Cost to implement:</b> unknown. Can work with DOW to evaluate costs.

<b>Risks Associated with Water Body Contact Uses.</b>	Increase public awareness of potential public health and environmental issues associated with extreme low flows, while avoiding panic.	CDPHE Local PWS	WQCD will work with local PWS to develop appropriate signage or other form of public information.	<b>Cost to implement:</b> accomplished under current funding.
<b>Interrelated Wastewater/ Drinking Water Treatment Concerns</b>	Identify potential problems caused by upstream wastewater treatment plants impacting downstream drinking water treatment plants due to drought-related low flows.	CDPHE Local PWS	Procedures developed during 2002 season will be utilized in 2003.	<b>Cost to implement:</b> procedure already developed and in place. No additional costs anticipated.
<b>Risks Associated with Intersystem Impacts</b>	Work with impacted systems to develop "bottled water" advisories, as appropriate.	CDPHE Local PWS	Procedures developed during 2002 season will be utilized in 2003.	<b>Cost to implement:</b> procedure already developed and in place. No additional costs anticipated.

# MUNICIPAL WATER IMPACT TASK FORCE REPORT

## MUNICIPAL WATER IMPACT TASK FORCE 2003 IMPACTS AND MITIGATION ACTIONS

IMPACT	PLANNED ACTIONS	AGENCIES	STATUS	COSTS
<b>Insufficient water supply for system</b>	1. Identify systems with current water and potential supply problems.	Local, CRWA, DOLA, WQCD, CWCB, CWRPDA, USDA	Ongoing	<b>Cost to implement:</b> This is an ongoing program and has already been absorbed into current budgets.
	2. Identify potential funding sources for emergency and long-term drought mitigation.	DOLA, WQCD, CWCB, USDA, CWRPDA, CRWA	Completed in 2002, updates to continue	<b>Cost to implement:</b> completed in 2002, updates can be absorbed under current budgets.
	3. Encourage continued water conservation planning and education so that measures are understood and implemented.	CRWA, CWCB, DOLA	Ongoing	<b>Cost to implement:</b> Costs are unknown at this point, but are expected to be negligible.
	4. Create incentives for public water systems with less reliable supplies to connect to or consolidate with those that have more reliable supplies.	DOLA, WQCD, CWCB, USDA, CWRPDA	Ongoing	<b>Cost to implement:</b> Costs are unknown at this point; there are a variety of identified funding sources for use by public water systems.
	5. Support for additional storage reservoirs as appropriate (long term)	CWCB	Ongoing	<b>Cost to implement:</b> There are no immediate costs to support storage proposals.
<b>Insufficient water system revenue due to reduced water sales</b>	1. Identify ways to generate additional revenue from current and alternative sources to offset losses from drought.	Local	Ongoing	<b>Cost to implement:</b> costs unknown at this time.
	2. Provide technical assistance to systems in generating additional revenue to offset losses from drought.	DOLA, CRWA	Ongoing	<b>Cost to implement:</b> This is an ongoing program and has already been absorbed into current budgets.

<b>Wildfire damage to critical watersheds that supply drinking water</b>	1. Pre-position water supply, transportation, and fire fighting resources for quick response.	Local, CSFS, BLM, USDA	Ongoing	<b>Cost to implement:</b> Unknown at this time.
	2. Limit fire ignition potential by considering restricting fireworks on local, state, and federal lands when applicable.	Local, USFS, BLM, NPS,	Ongoing	<b>Cost to implement:</b> no cost to implement but may have economic impact to suppliers and tourism.
<b>Mechanical and process failures related to reduced water supplies, higher contaminant levels and high temperatures</b>	1. Conduct outreach efforts to identify and assist needy systems.	CRWA, WQCD, DOLA	Ongoing	<b>Cost to implement:</b> This is an ongoing program and has already been absorbed into current budgets.
	2. Support continued funding of emergency and long-term mitigation and infrastructure projects.	DOLA, WQCD, CWCB, USDA, CWRPDA	Ongoing	<b>Cost to implement:</b> This is an ongoing program and has already been absorbed into current budgets.
	3. Assess the President's Healthy Forests Initiative as a means to mitigate the impacts of wildfire to water quality and water supplies.	DOLA, WQCD, CWCB, USDA, CWRPDA, DNR, CSFS	Ongoing	<b>Cost to implement:</b> No cost to make an assessment.

## **TOURISM IMPACT TASK FORCE REPORT**

### ***Background:***

The significance of tourism to Colorado's economy is striking. Tourism is one of the state's leading industries, with more than 200,000 Colorado workers employed by the industry. Each year, visitors spend approximately \$7 billion in the state, which equates to \$19 million per day. Even a minimum decline of 10% in tourism spending would mean a decrease of approximately \$700 million. Moreover, the economies of a number of regions in the state are extremely dependent upon tourism.

<b>TOURISM IMPACT TASK FORCE 2003 IMPACTS AND MITIGATION ACTIONS</b>				
<b>NOTE: The information outlined in this document includes the recommendations of various tourism industry sectors and is not necessarily endorsed by the Colorado Tourism Office.</b>				
<b>IMPACT</b>	<b>PLANNED ACTIONS</b>	<b>AGENCIES</b>	<b>STATUS</b>	<b>COSTS</b>
<b>Economic loss to recreation and tourism industries.</b>	1. Develop "Local Community Mitigation and Response Plans." Local communities that are dependent on state or national parks for tourism should be asked to plan for potential economic impacts.	CTO, CPGA, CROA, CH&LA, CRA, CPRA, CCLOA, DOW, DPOR, CSCUSA, RMGCSA, BLM, CVB's	The Colorado Tourism Office (CTO) is drafting crisis communication plans for both drought and wildfire, and has begun sending informative e-mails to the tourism industry. The first e-mail contained information on "10 Rules of Crisis Communications."	
	2. Enhance <b>Public Outreach and Education</b> to provide accurate and informative information about Colorado's drought, the fact that Colorado is a world-class vacation destination and that it is open for business. Keep the public optimistic about tourism's viability during drought and heightened fire danger.	CTO, CPGA, CROA, CH&LA, CRA, CPRA, CCLOA, DOW, DPOR, CSCUSA, RMGCSA, BLM, CVB's	The Colorado Tourism Office (CTO) is drafting crisis communication plans for both drought and wildfire, and has begun sending informative e-mails to the tourism industry. The first e-mail contained information on "10 Rules of Crisis Communications."	

<b>RAFTING:</b>				
<b>Rafting:</b> Below average snowpack and depleted reservoirs may result in a shortened season, cutting into peak revenue time (late June to med August) when 2/3s of business takes place. Misinformation and regulation challenges have also impacted the rafting industry.	<b>1. Public Outreach/Education:</b> A) Direct visitors to those rivers that are raftable, B) Remind public that they can still have FUN even though rivers are lower than normal, C) Emphasize the positive side-- good year for kids trips, for trying tougher sections of a river, or learning a new activity such as kayaking or float fishing, D) Tag rafting into current reports about snowfall/great skiing reports ( <i>While snowpack may not completely translate directly to river flows in a year like this, making the connection between rivers and snowpack can help river outfitting ride the positive press association with skiing</i> )	CROA, AROA, CTO, CVBs, CSCUSA	Ongoing	Unknown at this time.
	<b>2. Maintain River Flows Wherever Possible:</b> Continue to support the Arkansas River Voluntary Flow Program.	DNR	Ongoing	Unknown at this time.
	<b>3. Keep River Corridors Open For Commercial Outfitters:</b> Find ways to keep rivers open to outfitted trips even if fire potential is heightened.	DNR, BLM, NPS, USFS, CROA	Ongoing	Unknown at this time.

<b>GOLF</b>				
<b>Golf:</b> <b>Loss of golf course related revenues on state and local levels due to decreased Colorado resident and non-resident participation. Revenue losses would likely continue beyond the drought until adversely impacted golf courses respond and reseed drought-impacted areas. Drought impacts all levels of Colorado's golf course industry, including resort, private, daily fee, and government-operated courses. Some golf courses closed in 2002 and the potential for golf course closures in 2003 increases as the drought continues.</b>	<b>1. Water Conservation:</b> The Golf Industry recommends using best management practices to conserve water resources and work with water providers to establish defined annual irrigation water allocations during the drought. Water providers should allow golf superintendents to manage water allocations and irrigation schedules in a manner that permits flexibility within an established set of water conservation guidelines. (According to the Golf Industry, mandatory water schedules inhibit the efficient utilization of golf course water allocations. Within the golf course industry, superintendents have the experience and expertise required to efficiently manage and conserve water resources)	RMGCSA, CGA, CPGA	Golf courses are currently using best management practices, computerized irrigation control systems, and weather stations to conserve water resources during drought and periods of normal precipitation.	Two economic impact studies are currently underway that will quantify 2002 drought impacts to the golf industry. (The golf associations of Colorado are currently completing an economic impact study and CUS is completing the other.
	<b>2. Public Outreach/Education:</b> Remind all golfers that Colorado's golf courses provide quality playing conditions during the drought. Provide information to the public about the use of recycled wastewater and non-potable water to irrigate golf courses, as well as best management practices and water conservation measures utilized by Colorado golf courses.	CGA, CPGA, RMGCSA, CTO	Colorado golf associations are currently funding and developing an educational campaign that informs the public about the water conservation measures used by golf courses and the environmental, ecological, recreational, and social benefits of Colorado's golf course industry.	Two economic impact studies are currently underway that will quantify 2002 drought impacts to the golf industry. (The golf associations of Colorado are currently completing an economic impact study and CUS is completing the other.

<b>SKI INDUSTRY</b>				
<b>Fires and national television exposure could discourage summer visitation to mountain resorts, even though location of fires does not necessarily cause physical impact at resorts.</b>	<b>Public Outreach/Education:</b> Educate the public on what actions are being taken to conserve water, and what activities are available at Colorado's resorts. Clarify that a dry summer is not indicative that the upcoming winter will be anything less than spectacular from a snowfall standpoint (emphasize snowmaking ability)	CSCUSA, CTO	CSCUSA has drafted key message points for the ski industry to utilize.	Unknown at this time.
<b>The inaccurate perception that drought and fires during the summer somehow mean that the upcoming ski season could be in trouble.</b>	Educate local tourism businesses/community so that they are able to provide accurate information to potential visitors.	CSCUSA, CTO	Ongoing	Unknown at this time.
<b>STATE PARKS</b>				
<b>Reduced visitation, reservations, pass-purchasing and boat registrations in 2003, resulting in further decline in parks revenues.</b>	<b>Public Outreach/Education:</b> Remind the public that they can enjoy Colorado parks even if water is low or fire restrictions are in place. Encourage spring boating at reservoirs and early reservations. Get message out that there is a lot to do at parks in addition to water recreation including hiking, biking, camping, wildlife viewing, picnicking, fishing, and horseback riding.	CTO, DPOR	CSPOR has drafted message points.	Reservations were down 23 percent from June 1 through September 30, with a three percent decline in visitation
<b>Drought and fire have the potential to have a tremendous impact on park revenue, particularly in areas that have lakes or rivers.</b>	Lengthen boat ramps to accommodate lower water levels. Institute a 7-10 day notification program before boat ramps are out of the water in order to assist informing the public.	DPOR	CSPOR has lengthened boat ramps at some parks to accommodate low water levels. They are hoping to have a 7-10 day notification process before boat ramps are out the water.	Four ramps at State Parks were out of water by mid-July. Ramps at 14 State Parks were closed by mid-September.

Fire ban regulations affecting visitation at parks.	Colorado State Parks Fire Policy: As appropriate, enforce local and state fire restrictions. Most campfires in Colorado State Parks must be kept in a fire grill, which is considered an enclosed fire for the purposes of fire restriction. Colorado State Parks would support a multi-tiered fire ban or the use of propane campfires if necessary.	DPOR	Many parks located in the Denver metro area and eastern region of the state pose a low fire danger. ( <i>Colorado State Parks has welcomed almost 100 million visitors in the past decade and a campfire has never escaped a fire grate and caused damage in a developed campground</i> )	
<b>LOCAL PARKS &amp; RECREATION AREAS</b>				
Delayed start and shorter playing seasons for sports leagues and programmed sports activities due to drought and water restrictions. Temporary closures of athletic fields and golf courses. Damage to sites and facilities from severe or extended drought conditions.	1. Limit field access in the Spring and reduce the number of on-site practice hours. Limit area availability for practices and close fields under extreme duress or fields that pose liability issues.	CPRA, RMGCSA	CPRA proactive adopted the following mission statement to guide future actions: <b><i>Promote and share current water conservation and best management practices and trends for parks and public lands with park and recreation professionals, the public, water providers, and policy makers at the local, regional, and state levels of government.</i></b>	
	2. <b>Public Outreach/Education:</b> Remind the public that they can enjoy Colorado parks even if water is low or fire restrictions are in place.			

Drought mandates and water surcharges will place an extreme burden on professionals to maintain athletic fields for public recreational use. Water restrictions and drought mandates could result in the loss of turf, shrubs, trees, and athletic fields.	Promote water conservation consistent with state water laws.	CPRA, RMGCSA	Ongoing	
Damaged or destroyed recreation assets. Such deterioration or damage could affect agency's ability to repay tax revenue bonds on facilities such as golf courses.	CPRA recommends using best management practices and employing conservation efforts that will achieve resource sustainability and will keep golf courses open for play. In turn, such action will allow agencies to meet bond payments.	CPRA, RMGCSA	Ongoing	<b>CPRA 2003 Estimate:</b> Closure of facilities would have a negative impact on parks and recreation, local communities and economies in the state.
High water costs and drought surcharge rates could result in public swimming pool closures.	Promote water conservation consistent with state water laws.	CPRA	Ongoing	
Loss of jobs especially in the youth sector. <b>NOTE: Recreation agencies hire thousands of youth for seasonal positions across the state each year. Highland Hills Water World employs one thousand young people for the summer season alone.</b>	Promote water conservation consistent with state water laws.	CPRA	Ongoing	

Reduced visitation due to fire bans on charcoal grills in irrigated parks and swimming pool areas.	CPRA recommends allowing flexibility, when appropriate, for municipalities and local fire departments to assess the fire danger of charcoal grills in irrigated urban parks and low risk areas, and to develop fire ban restrictions accordingly.	CPRA	Ongoing	
<b>CAMPGROUND INDUSTRY</b>				
Reduced visitation and reservations due to fire bans.	1. <b><u>Public Outreach and Education:</u></b> Remind the public that they can still enjoy camping and the out-of-doors experience with or without a campfire. Direct consumers to where they can enjoy camping.	CCLOA, CTO	Public outreach to be implemented in the event of fire restrictions or bans.	Under the fire bans of 2002, private campground operators recorded losses of revenues due to lack of visitation, as well as the loss in retail sales since they could not sell firewood. Decline in visitation to privately owned parks was reported as 15% - 30%, especially among visitors who tent camp.
	2. CCLOA recommends consideration of another level of fire-ban that takes into account that many private, commercial campgrounds have water spigots at their campsites, have full time on site management to oversee their guests and have cleared the terrain in many cases, to prevent fire danger.	CCLOA	➤ Ongoing	According to CCLOA, while the drought did not directly affect most campground businesses, it did create a negative perception in the mind of the traveling public about spending time in the out of doors which also contributed to a decline in visitation.

				<b>Estimate for 2003:</b> National Association of RV Parks and Campgrounds reports the annual income of 65% of campgrounds in U.S. as \$150,000. A loss of between 15% and 30% is devastating for these small businesses.
<b>FISHING/HUNTING:</b>				
<b>Reduced fishing licenses would result in negative economic impact.</b>	<b>Public Outreach/Education:</b> Remind the public that they can enjoy fishing in Colorado even if water is low and that fishing opportunities are often available in a variety of areas, such as tailwater areas, in times of drought.	CTO, DOW	Ongoing	Fishing license sales decreased approx. 15% from 2001 levels. Numerically, the largest decreases occurred in the resident annual license sales and resident and non-resident short-term license sales. Based on old recreation-day information (1997) for each license type, it is estimated that approximately one million statewide recreation days may have been lost in 2002. The loss of license sales resulted in \$1.8 million in decreased income to DOW. The loss of recreation days meant a loss of economic output in the state's economy. A recent analysis of the economic value of fishing in Colorado showed that for 2001, the economic

				output resulting from anglers fishing 9.3 million recreation days was estimated to be \$646 million. (Source: 2001 National Hunting and Fishing Survey, U.S. Fish and Wildlife Service)
<b>Hatcheries/Fisheries could potentially be unable to stock specific waters.</b>	Hatcheries/Fisheries should offset locations that can't be stocked by stocking other areas and informing the public of the alternate locations	DOW	Ongoing	Throughout 2002, DOW had to alter planned aquatic wildlife management activities as a result of the drought. Certain routine planned fish population surveys were delayed or not completed as the priorities changed to assessment of fire impacts, loss of water in reservoirs and high mountain cutthroat trout management waters.
<b>Low water levels in reservoirs could lead to fish kill.</b>	Co-operate with CWCB and maintain contact with groups to monitor instream flows.	DOW	Ongoing	
<b>LODGING INDUSTRY</b>				
<b>Persistent and widespread fires in the mountains could discourage tourism to Colorado's resort towns</b>	1. Ask member properties to hold planning sessions with their staff to determine how best to address the situation particularly during the busy summer season.	CH&LA, CRA	Ongoing	

	2. Solicit ideas for conserving water from lodging members. Compile these ideas into a joint "white paper" with CRA for dissemination back to CH&LA and CRA members. Would include recommendations such as asking guests to reuse towels and bed linens instead of request a daily change and only serving ice water in restaurants and conference rooms upon request.	CH&LA, CRA	Provided resorts with conservation recommendations.	The lodging industry is unable at this time to estimate cost impacts for 2003. However, saving on usage will keep penalty fees down. If more stringent fees are imposed without saving on consumption, hotel room rates will reflect the increase.
	3. Communicate with water providers on current conservation actions to prevent new regulations on both the lodging and food service industries.	CH&LA, CRA	Held brainstorming meeting. Compiling a joint "white paper" to take to water providers. May need recommendations from other agencies on ways to relax certain water regulations that would interfere with water savings. (i.e. ability to use antibacterial soap/gels instead of hand washing.)	
	4. <b>Public Outreach/Education:</b> Educate the public on what actions are being taken to conserve water and the importance of water storage.	CH&LA, CTO, CSCUSA	Ongoing	
<b>FOOD SERVICE INDUSTRY</b>				
<b>Persistent and widespread fires in the mountains could discourage tourism to Colorado's resort towns, reducing restaurant sales for the summer travel season.</b>	<b>Public Outreach/Education:</b> Remind the public that they can enjoy Colorado restaurants even if water is low. Educate the public on the actions to take to conserve water.	CTO, CRA	Working on developing a conservation awareness campaign for 2003.	Restaurants in resort areas reported a 10-30% decline in sales during the summer of 2002.

<p><b>Any potential restrictions limiting water use for dishwashing or beverage preparation (e.g. fountain drinks) would increase costs if disposable plates, glasses, utensils, etc., were required and reduce beverage sales. Any potential mandate requiring installation of water-conserving appliances (e.g. dishwashers or ice machines) would be an economic hardship for operators. Restaurants with private well systems could run out of water if their water source dries up.</b></p>	<p>Provide foodservice operators and customers with recommendations to reduce water usage as part of the state's drought response plan, including asking customers if they would like water instead of automatically serving it.</p>	<p>CRA</p>	<p>Provided resorts with conservation recommendations. Helping operators deal with proposed water rate increases.</p>	
<p><b>Restaurants with private well systems could run out of water if their water source dries up.</b></p>	<p>Provide foodservice operators and customers with recommendations to reduce water usage as part of the state's drought response plan, including asking customers if they would like water instead of automatically serving it.</p>	<p>CRA</p>	<p>Provided resorts with conservation recommendations. Helping operators deal with proposed water rate increases.</p>	

# **WILDFIRE IMPACT TASK FORCE REPORT**

***Background:***

The 2002 fire season was impacted by drought that resulted in well below average fuel moistures in wildland fuels. The impact experienced was increased potential for fire starts and more intense fire behavior (greater intensity and spread rates). 4,612 wildland fires were reported that burned 619,030 acres (all ownerships). 142 subdivisions and 12 communities were evacuated displacing 81,435 people. Ten lives were lost in Colorado due to the wildfires.

Total suppression costs are estimated to be in the area of \$152 million dollars. Colorado's share, based on the percentage of non-federal land to federal land burned, is estimated to be in the area of \$30 to \$40 million. Some of this will be offset by the county supported Emergency Fire Fund and reimbursement from FEMA.

Governor Owens supported suppression funding in the amount of \$15 million through executive order. If the same level of fire activity is experienced in 2003 as occurred in 2002 it is expected that costs to the state will be similar to 2002 levels. Governor Owens also provided through executive order funding that provided 2 additional Single Engine Air Tankers used for initial attack on wildfires and funding to acquire 10 Wildland Urban Interface wildland fire engines to complement local and federal resources.

## **WILDFIRE IMPACT TASK FORCE 2003 IMPACTS AND MITIGATION ACTIONS**

<b>IMPACT</b>	<b>PLANNED ACTIONS</b>	<b>AGENCIES</b>	<b>STATUS</b>	<b>COSTS</b>
<b>Increased potential for wildfires in wildland interface areas.</b>	1. Provide state-supported technical and cost-sharing assistance to counties for the development and implementation of expanded county Fire Management Plans.	Colorado State Forest Service	Ongoing	<b>Cost to implement:</b> Provided through existing budgets and federal funding
	2. Provide for wildland-urban interface management needs and for a fuels mitigation cost-sharing program.	Colorado State Forest Service,	Ongoing	<b>Cost to implement:</b> \$1million provided through Competitive Federal Grant Funds

3. Establish a mechanism for the state to contribute to the Emergency Fire Fund (EFF).	Colorado State Forest Service, DNR, Governors Office	Governor's Emergency Fund through Executive Order supplemented the EFF in 2002.	<b>Cost to implement:</b> Provided on an as needed basis through request when the County EFF funds are depleted.
4. Coordinate and fund the development and implementation of a statewide, county-by-county wildfire risk assessment.	Colorado State Forest Service	Ongoing	<b>Cost to implement:</b> Provided through existing budgets and federal funding
5. Clarify in the Colorado Interagency Cooperative Fire Protection Agreement (Master Agreement) interagency roles and responsibilities for fire protection in the wildland urban interface.	Colorado State Forest Service, USDA, DOI agencies	Ongoing	<b>Cost to implement:</b> Provided through existing budgets and federal funding
6. Provide state-level support for expanded state participation in zone dispatch center and in the extended attack phase of wildfire suppression.	Colorado State Forest Service	Ongoing	<b>Cost to implement:</b> Provided through existing budgets and federal funding
7. Identify statewide protocols for radio communication across local, state, and federal jurisdictions.	Colorado State Forest Service, State Telecommunications, Federal Agencies	Ongoing	<b>Cost to implement:</b> Provided through existing budgets and federal funding
8. Coordinate interagency implementation and allocation of funds related to the National Fire Plan, the Ten Year Comprehensive Strategy, and similar efforts, such as the President's Healthy Forest Initiative.	Colorado State Forest Service, Federal Land Management Agencies	Ongoing	<b>Cost to implement:</b> \$21 million of federal funding for coordinated fuels reduction projects on Federal Lands, \$3.5 million of federal dollars matched by local and state existing budget for fuels reduction projects on non federal land.

10. Provide state leadership in developing and delivering coordinated interagency wildland fire messages to homeowners, landowners, land management agencies, the general public and others.	Colorado State Forest Service, BLM, USFS	FireWise Implemented, Wildfire Hazard Mitigation Teams implemented, National Fire Prevention Teams available	<b>Cost to implement:</b> Provided through existing budgets and federal funding
11. Encourage the development of a professional outreach and information campaign to targeted audiences within the state. Educate the public about the causes and severity of wildfires and what role forest management plays in mitigating against them.	Colorado State Forest Service, BLM, USFS	Ongoing	<b>Cost to implement:</b> Provided through existing budgets and federal funding

# **WILDLIFE IMPACT TASK FORCE REPORT**

## **BACKGROUND**

The Wildlife Task Force (WTF) has been meeting on a monthly basis since spring of 2002 and will continue these regular meetings throughout the drought. The following agencies or organizations comprise the WTF:

CDOW	Colorado Water Conservation Board
Bureau of Land Management	National Resources Conservation Service
U.S. Fish and Wildlife Service	U.S. Forest Service
Colorado Wildlife Federation	The Nature Conservancy
Trout Unlimited	

The WTF set the following priorities to protect and conserve: 1) threatened or endangered wildlife populations such as greenback cutthroat trout or Colorado River native fishes; 2) wildlife populations that are at risk of being listed as threatened or endangered such as Rio Grande cutthroat trout, eastern plains minnows; and 3) recreationally significant wildlife populations such as tail-water trout fisheries.

## **2002 WILDLIFE DROUGHT IMPACTS**

In 2002 the State of Colorado saw some significant impacts primarily to the aquatic environment. The major wildlife impacts experienced in 2002 are listed below:

1. **Antero Reservoir** - Loss of crown jewel fishery due to draining of reservoir. The loss of Antero adds to the losses in the South Park area, which include the draining of Tarryall Reservoir for dam repairs, draining of almost one-half of Spinney Mountain Reservoir and loss of 40,000 acre-feet of water from Elevenmile Reservoir.
2. **Lower South Platte River Reservoirs** - Loss of fishery resources due to draining of most of the major reservoirs in the lower South Platte system.
3. **San Luis Valley Reservoirs** (Home, Smith, Mountain Home, Million and La Jara) – Reservoirs drained dry with a total loss of fish.
4. **Dolores River:** Dolores River fishery below McPhee reservoir to the state line has suffered significant losses. Data from 1992 and 1993 documented all life cycles present for three species of trout (rainbow, brown and cutthroat trout) at various sampling locations. Sampling this fall produced, few if any, rainbow and cutthroat, mostly small brown trout. All the large brown trout are gone. Native species have suffered as well.
5. **Florida River** – This river is sterile from Lemon Dam downstream because of wildfire-related mudflows.
6. **Bear Creek** – A significant fish kill occurred on Bear Creek and smaller tributaries below Evergreen due to low flows and water quality issues in this heavily recreated creek.

7. **South Platte, Animas, La Plata, Los Pinos, and Mitchell Creek Watersheds –** Wildfires, and their aftermath, have resulted in serious loss of quality habitat in these watersheds. The probability of continued erosion and sedimentation create ongoing concerns for these areas even should the drought subside.

## **WILDLIFE DROUGHT IMPACT MITIGATION**

The attached Table provides a summary of WTF planned mitigation actions for 2003. The foundation of this list was based on the actions developed and implemented throughout 2002 by the WTF. The major actions undertaken to lessen drought impact on wildlife in 2002 can be grouped in three main categories:

**Cooperative Actions between Water Users, Community Groups and State Agencies:** Probably the most successful strategies implemented in the 2002 drought were cooperative actions where stakeholders worked together to improve wildlife habitat. Some of the major joint actions taken are listed below:

**Yampa River** – Water users, power providers, and state agencies worked together in providing additional flows to benefit the seriously strained fishery in the Yampa River through Steamboat Springs. In addition, anglers worked together to encourage fishing early or late reducing stress on the heat-strained fishery.

**White River** – Community leaders and water users came together to provide relief to the distressed fishery in the White River. Stream flows were augmented by release of CDOW water from Lake Avery.

**Conejos River**– Extremely low stream flows were augmented by release of water from Platoro Reservoir. The CDOW agreed to reimburse the Conejos Water Conservancy District for the released water.

**Rio Grande River** – Stream flows were augmented by reduced diversions. The CDOW curtailed an approximate 10-cfs diversion to San Luis Lakes to keep water in the mainstem of the Rio Grande.

**Roaring Fork River** – Cities, state agencies, and community organizations worked to try and provide additional water to the strained trout fishery. Senator Andy McElhany and Representative Gregg Rippey have proposed legislation to allow temporary loans or donations of water rights for instream flows.

**Fisheries Management Actions:** State agencies, along with private organizations and community volunteers worked throughout the summer to improve aquatic habitat and to manage drought impacts. Genetically important native trout species were salvaged and either transferred to isolation units or barren lakes (i.e. native greenbacks were salvaged from Como Creek and Apache Creek and native Rio Grande cutthroat were salvaged from Placer Creek, Indian Creek and Forbes-Trinchera Ranch). Fishing restrictions and regulations were imposed on several stream sections as needed to protect fisheries. Fish salvage operations were also conducted where appropriate (i.e. Antero Reservoir, Jackson Reservoir, Kiser Slough Reservoir, and Roaring Judy kokonee salmon spawning

operation). In addition, the CDOW redistributed and reduced stocking of fish throughout the state.

**Administrative Actions:** The major administrative actions undertaken in 2002 to mitigate drought impacts to wildlife include:

1. The CWCB initiated a statewide review of decrees and called for enforcement of decrees which include terms to protect the State's instream flow water rights.
2. The CWCB placed formal, written calls for water on several streams to ensure instream flow water rights were receiving water to which they were legally entitled.
3. The Colorado Wildlife Commission approved more than 14,000 new antlerless rifle elk licenses and 2,500 new antlerless archery elk licenses for the 2002 big game season in an effort to reduce herd size in anticipation of the lack of winter forage due to the ongoing drought.
4. The CDOW's Habitat Partnership Program increased the use of distribution management hunts on private land. These hunts are designed to redistribute concentration of big game to reduce or eliminate damage to private landowners.

These aggressive administrative actions to increase elk licenses resulted in a new state record elk harvest in 2002 of just over 61,000 elk harvested.

### **ECONOMIC DROUGHT IMPACTS FOR THE CDOW**

The CDOW estimates it lost a total of approximately \$1.0 million of revenue in 2002 due to a combination of several factors including drought, wildfires and a downturn in the economy. A decline in fishing license revenue of \$1.8 million was offset by \$0.8 million income from the sale of drought mitigation hunting licenses resulting in a combined drought loss of \$1.0 million. Due to a strong fall hunting season, this \$1.0 million drought loss was more than made up by an overall increase in total CDOW hunting and fishing revenue of \$1.8 million in 2002.

The cost to implement drought mitigation strategies was adsorbed within established agency budgets. Project priorities were re-evaluated and other agency projects were either delayed or deleted to accomplish drought-required actions. These same types of readjustments will be made in 2003 as needed. Provided below is a detailed breakdown of economic drought impacts to the CDOW:

1. **Fish Production Impacts** – The fish production cost impact that has resulted from the drought in 2002 has been minimal. Capability to produce fish has decreased with decreased water availability, but the water available for which to stock fish has also decreased. The CDOW has had no expense of having to replace fish not produced.

This situation is expected to be similar in 2003.

2. **Recreation-Day Loss Impacts** - Fishing license sales in 2002 decreased approximately 15% from 2001 levels. Numerically, the largest decreases occurred in

the resident annual license sales and resident and non-resident short-term license sales. With decreased license sales there is a concurrent decrease in the number of recreation days by anglers. Based on old recreation-day information (1997) for each license type, it is estimated that approximately 1 million statewide recreation days may have been lost in 2002.

There are three main causes, we believe, for these decreases: a) poor state of the economy resulting in reduced tourism and disposable income spending on recreational fishing; b) drought impacts on water resources; and c) reduced outdoor recreational activity because of forest fire danger and closures due to actual fires. There is no attempt to “allocate” the decreases to the various causes.

The loss of license sales resulted in decreased income to the CDOW of \$1.8 million.

Prior to the drought, anglers in Colorado were estimated to account for 9.3 million recreation days, with total expenditures of approximately \$646 million. The impact to Colorado’s economy resulting from a drop of 1 million recreation days can not be precisely estimated however, it could be as much as \$70 million<sup>1</sup>.

3. **Fish Management Impacts** - Throughout 2002, the CDOW had to alter planned aquatic wildlife management activities as a result of the drought. Certain routine planned fish population surveys were delayed or not completed as the priorities changed to assessment of aquatic impacts from wildfires, loss of water in reservoirs and high mountain cutthroat trout waters.

These activities were conducted within our operating budgets and with existing manpower. There were no additional expenses accrued as a result of these drought-related activities.

4. **Big Game License Sales** - At their September 10<sup>th</sup> meeting, The Colorado Wildlife Commission approved more than 14,000 new antlerless rifle elk licenses and 2,500 new antlerless archery elk licenses for the 2002 big game season because of the lack of winter forage due to the ongoing drought. Of the 14,000 new licenses approved 13,255 were sold resulting in additional revenue of \$0.8 million in 2002 to the CDOW. However, the long-term effect of the additional license sale may result in a decline in future revenues. The drought mitigation licenses were intended to reduce game populations which may lead to lower harvest targets in the next few years which in turn may lead to lower revenues in the future.
5. **Big Game Damage** - Due to a mild winter, additional big game damage was not an issue during 2002; therefore, no additional funds were needed to repay private landowners for big game damage. Should drought conditions continue to be as severe in 2003, as was seen in 2002, additional funding for big game damage claims may be needed in 2003.

**WILDLIFE IMPACT TASK FORCE  
2003 IMPACTS AND MITIGATION ACTIONS**

IMPACT	PLANNED ACTIONS	AGENCIES	STATUS	COSTS
<b>AQUATIC SPECIES</b>				
<b>Low streamflow, low reservoir, and sediment impact on fish.</b>	1. Identify critical stream reaches, lakes and reservoirs - Critical stream reaches would be identified based on designated criteria such as species of concern, threatened and endangered species, and recreational or historic importance.	CDOW, CWCB, USF&W, USFS,	Process developed and implemented in 2002. Continued implementation throughout drought.	<b>Cost to Implement:</b> List will be developed by agency and organization staff without increase to existing budgets.
	2. Develop processes to monitor critical stream reaches, lakes and reservoirs - This process would incorporate citizens, schools, environmental/ wildlife groups, state and federal agencies. In addition, criteria would be set for emergency actions.	CDOW, CWCB, CDPOR, CDWR, CDPHE, USF&W, USFS, Citizen Groups	Process developed and implemented in 2002. Continued implementation throughout drought.	<b>Cost to Implement:</b> This action will be implemented within existing agency budgets. Other agency projects may be delayed or eliminated to accomplish drought-required actions.
	3. Based on identification of critical habitat and monitoring, the WTF members will coordinate, develop and/or implement emergency habitat improvements (i.e., construct deep ponds and shallow dams in critical streams and remove invasive species such as salt cedar)	CDOW, CWCB, CDPOR, CDWR, CDPHE, USF&W, USFS, Citizen Groups	To be developed in 2003	<b>Cost to Implement:</b> This action will be implemented within existing agency budgets or with community group assistance. Other agency projects may be delayed or eliminated to accomplish drought-required actions.

4. Develop and implement notification/communication network between local and regional CDOW, CWCB and CDWR. This network would allow agencies to work together to communicate local conditions and identify instream flow opportunities among water commissioners, aquatic biologists and instream flow coordinators.	CDOW, CWCB, CDWR	Initial network implemented in 2002. Expand and formalize in 2003.	<b>Cost to Implement:</b> This action will be implemented within existing agency budgets.
5. Provide emergency instream flow protection - CWCB will work with the DNR, Governor's Office, CDWR SEO, CDOW and the public, under Colorado water law and executive authorities, to provide emergency instream flow protection on streams where water rights may be temporarily made available for such purposes.	CWCB, CDWR, CDOW,	Legislation passed in 2002 and additional legislation pending for 2003.	<b>Cost to Implement:</b> Cost to implement state agency action will be within existing budgets. Costs for water will be incurred by private organization or user. If state-owned water rights are used, these diversions will be reviewed and priority use determined.
6. Develop process for enacting drought emergency closures, fishing restrictions, and fish salvage operations. Education and notification of the public on the process and the status of fisheries is also included under this strategy.	CDOW	Process developed and implemented in 2002. Continued implementation throughout drought.	<b>Cost to Implement:</b> This action will be implemented within existing agency budgets. Other agency projects may be delayed or eliminated to accomplish drought-required actions.

<b>Decrease in recreational angling</b>	1. Continue public information and education activities including phone hotlines, websites and publications. Work with media and public to educate anglers on where to go and what fishing restrictions are in effect. Educate the public about the importance of water storage to maintaining fisheries.	CDOW, USF&W,	Process developed and implemented in 2002. Continued implementation throughout drought.	<b>Cost of Impact:</b> Last year fishing license revenues decreased by \$1.8 million due in part by drought, wildfire, and the downturn in the economy. Should current conditions continue CDOW could see another \$1.8 million loss in 2003. <b>Cost to Implement:</b> This action will be implemented within existing agency budgets
<b>Reduced hatchery production</b>	1. Monitor hatchery water levels and stocking conditions. Based on this monitoring, modify production levels and stocking procedures as needed.	CDOW, USF&W	Process developed and implemented in 2002. Continued implementation throughout drought.	<b>Cost to Implement:</b> This action will be implemented within existing agency budgets. Certain agency projects such as routine planned fish population surveys may be delayed or not completed, as the priorities are re-evaluated due to continued drought.
<b>TERRESTRIAL SPECIES</b>				
<b>Reduction in quality habitat for wildlife species</b>	1. Identify priority areas and monitor drought impacts on threatened and endangered species, and other species of concern. Based on identification of critical habitat and monitoring, the WTF members will coordinate, develop and/or implement emergency habitat improvements.	CDOW, USF&W, USFS, CWF, BLM	Ongoing	<b>Cost to Implement:</b> This action will be implemented within existing agency budgets. Staff time will be reallocated and priorities re-assessed as needed.

<b>Increases in predator/human/livestock interaction</b>	1. Continue to identify and assess how drought may impact predator, human and livestock interactions. This task includes public education and addressing private landowner concerns.	CDOW, USF&W, USFS, CWF, BLM	Ongoing	<b>Cost to Implement:</b> This action will be implemented within existing agency budgets. Staff time will be reallocated and priorities re-assessed as needed.
<b>Increased impacts to big game including game damage and habitat reduction from drought stressed lands.</b>	1. Evaluate process for compensating private landowners for game damage associated with drought issues. This task should include identifying lag effects on game damage.	CDOW	Ongoing CDOW procedures	<b>Cost to Implement:</b> This action will be implemented within existing agency budgets. Staff time will be reallocated and priorities re-assessed as needed.
	2. Reduce herd sizes by issuing drought mitigation hunting licenses and conducting managed hunts.	CDOW	Implemented in 2002. Process ready for implementation in 2003 if needed.	<b>Cost to Implement:</b> Cost to issue licenses is within existing CDOW budget. Licenses sales may generate additional \$0.5 to \$1.0 million.
<b>Changes in migratory bird patterns and waterfowl production rates.</b>	1. Monitor waterfowl production impacts. Identify any local, hunting or migratory impacts to waterfowl from drought. Develop any emergency habitat improvements such as rehabilitating and fencing existing springs.	CDOW, USF&W, USFS, CWF	Ongoing	<b>Cost to Implement:</b> The action will be implemented within existing agency budgets. Certain agency projects such as routine planned population surveys may be delayed or not completed, as priorities are re-evaluated due to continued drought.

## DROUGHT & FIRE RECOVERY FUNDS AVAILABLE IN COLORADO

PROGRAM	LOAN FUNDS AVAILABLE	USES/REQUIREMENTS	AGENCY AND CONTACT
CWCB Emergency Infrastructure Loan Program	<ul style="list-style-type: none"> <li>- Subject to a \$2 million cumulative annual limit in the emergency account</li> <li>- Loans for up to 75% of project costs.</li> <li>- Rates from 2.75% to 6%</li> </ul>	<ul style="list-style-type: none"> <li>- Raw water projects of an emergency nature</li> <li>- Available to any organization (municipalities, agriculture, ditch companies, homeowners assn, special districts, etc)</li> <li>- Must receive CWCB Board approval</li> </ul>	Colorado Water Conservation Board, John Van Sciver 303-866-3449
CWCB Small Project Loan Program	<ul style="list-style-type: none"> <li>- Up to \$1 million loans for small raw water projects</li> <li>- Loans for up to 75% of project costs.</li> <li>- Rates from 2.75% to 6%</li> </ul>	<ul style="list-style-type: none"> <li>- Raw water projects of an emergency nature</li> <li>- Available to any organization (municipalities, agriculture, ditch companies, homeowners assn, special districts, etc)</li> <li>- Must receive CWCB Board approval</li> </ul>	Colorado Water Conservation Board, John Van Sciver 303-866-3449
CWCB Construction Fund	<ul style="list-style-type: none"> <li>- No limit</li> <li>- Loans typically range from \$50,000 to \$2,000,000</li> </ul>	<ul style="list-style-type: none"> <li>- Raw water projects (dams, pipelines, ditches, wells, new projects or restorations)</li> <li>- Available to any organization (municipalities, agriculture, ditch companies, homeowners assn, special districts, etc)</li> <li>- Must receive CWCB Board and Legislative approval</li> </ul>	Colorado Water Conservation Board, John Van Sciver 303-866-3449
Water Pollution Control Revolving Fund (WPCRF)	<ul style="list-style-type: none"> <li>- Fire-related NPS projects can be given priority status.</li> <li>- \$20M of these loan funds can be available immediately for direct loans (under \$1M).</li> <li>- Six \$10K grants available for planning (fire-related OK).</li> </ul>	<ul style="list-style-type: none"> <li>- Low-interest loans for public waste water treatment system needs and watershed nonpoint source (NPS) control projects.</li> <li>- Available to governmental agencies.</li> <li>- Emergency projects can be identified at any time throughout the year.</li> <li>- Loan funds require board review, study grants available immediately.</li> </ul>	Colorado Water Quality Control Division. Debbie Stenson 303-692-3554
Drinking Water Revolving Fund (DWRP)	<ul style="list-style-type: none"> <li>- Fire-related projects can be given priority status.</li> <li>- \$20M of these loan funds can be available immediately for direct loans (under \$1M).</li> <li>- Six \$10K grants available for planning (fire-related OK).</li> </ul>	<ul style="list-style-type: none"> <li>- Low-interest loans for drinking water treatment system needs.</li> <li>- Available to governmental agencies.</li> <li>- Emergency projects can be identified at any time throughout the year.</li> <li>- Loan funds require board review, study grants available immediately.</li> </ul>	Colorado Water Quality Control Division. Debbie Stenson 303-692-3554
USDA Rural Development 502 Direct Housing Loan Program	<ul style="list-style-type: none"> <li>- Loans limited by individual county mortgage limits</li> <li>- Most counties have loan limit of \$108,317</li> </ul>	Available for wells and water connections - Applicants must be very low income, owner/occupant, unable to obtain conventional credit, and in rural communities and areas.	14 Rural Development offices in Colorado Initial contact (720) 544-2920 for referral to local office
Supplemental Environmental Project (SEP) Grants	-Awards range from \$10K to \$25K.	<ul style="list-style-type: none"> <li>- Available to governmental agencies.</li> <li>- Funds available for fire-damaged watersheds and infrastructure.</li> </ul>	Colorado Department of Public Health and Environment. Jill Cooper, 303-692-2007
PPG Grants (EPA funds)	-Awards range from \$10K to \$25K.	<ul style="list-style-type: none"> <li>- Available to governmental agencies.</li> <li>- Funds available for fire-damaged watersheds and infrastructure.</li> </ul>	Colorado Dept. Public Health & Environment. Jill Cooper, 303-692-2007

### DROUGHT & FIRE RECOVERY FUNDS AVAILABLE IN COLORADO

PROGRAM	GRANT FUNDS AVAILABLE	USES/REQUIREMENTS	AGENCY AND CONTACT
Natural Resources Conservations Service - Emergency Watershed Protection Program	- Funding available through the Simplified Acquisition Procedures (SAP) ranges from \$25K to \$100K. - Federal funds may cover 75 percent of the construction cost.	Installing/repairing conservation measures to control flooding and prevent soil erosion. Generally, more than one individual should benefit from the project. Public or private landowners or others who have a legal interest or responsibility for the values threatened by the watershed emergency.	NRCS - Stu Simpson, Assistant State Conservationist, 720-544-2804
Nonpoint Source Pollution (NPS) "319 Program" Grants	- Typical awards range from \$30K to \$150K.	- Applicants can include governmental and non-governmental organizations. - Applications generally evaluated through a stakeholder process, but this can be waived. - 40% non-federal match can be waived by EPA upon request from Governor and Senators Allard and Campbell. - Funds available immediately for fire-damaged watersheds, generally not on federal land.	Colorado Water Quality Control Division. Laurie Fisher, Non-Point Source Coordinator, 303-692-3570
Agricultural Emergency Drought Response Fund	\$1million fund for loans and grants	- For emergency drought-related water augmentation purposes. - Limited to agricultural organizations	Colorado Water Conservation Board & Colorado Division of Water Resources & Colorado Department of Agriculture. John Van Sciver 303-866-3449
EDA Economic Adjustment Program	Grants up to \$100,000 available	- Job losses from natural disasters - State and local governments and non-profit organizations	U.S. Economic Development Administration – John Zender 303-844-4902
Energy Impact Assistance Fund	- Maximum grant \$300,000 (guideline) - Loans available for sewer and treated water projects	- Public facility and infrastructure needs - Eligible recipients include municipalities, counties, and special districts. Loan terms up to 20 years, and interest rates of at least 5%	8 Colorado Department of Local Affairs field offices in Colorado – Initial contact Barry Cress at 303-866-2352 for referral to field office
Community Development Block Grants	Maximum award \$250,000 (guideline)	- Public facility and infrastructure needs - Eligible recipients include CDBG "non-entitlement" municipality or county; districts and private systems are eligible sub-recipients. Applicants must provide local cash participation, qualify with low/moderate incomes, pay Davis-Bacon wages, and comply with NEPA.	8 Colorado Department of Local Affairs field offices in Colorado – Initial contact Barry Cress at 303-866-2352 for referral to field office
USDA Rural Development Home Improvement / Repair Loans & Grants	-\$20,000 maximum loan - \$7,500 maximum grant (must be elderly owner occupant age 62+)	For home rehabilitation, including wells and water connections - Applicants must be very low income, owner/occupant, unable to obtain conventional credit, and in rural communities and areas.	14 Rural Development offices in Colorado Initial contact (720) 544-2920 for referral to local office

Those responsible for this report:

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Bob Brooks, Executive Director, Colorado Department of Local Affairs  
Impact Task Force Chairs

## **Impact Task Force Chairs**

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### **Energy Impact Task Force**

Joe Lambert, Governor's Office of Energy Management and Conservation

### **Economic Impact Task Force**

Kristin Corash, Office of State Planning and Budgeting

### **Health Impact Task Force**

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### **Municipal Water Impact Task Force**

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