

State of Colorado Natural Hazard Mitigation Plan 2004

Prepared by the
Colorado Office of Emergency Management
2001

Updated in 2004 by the Colorado Division of
Emergency Management



State Animal – Rocky Mountain Bighorn Sheep State Bird – Lark Bunting State Fish – Greenback Cutthroat Trout
 State Flower – Columbine State Fossil – Stegosaurus State Gemstone – Aquamarine State Tartan
 State Grass – Blue Grama Grass State Insect - Colorado Hairstreak Butterfly State Tree - Colorado Blue Spruce
 Source of Photos: <http://www.archives.state.co.us/arcembl.html>



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Earthquake Evaluation Report

Photos on the following page: Barr Lake State Park, San Luis Lakes State Park, Navajo State Park, Bonny Lake State Park provided courtesy of the Colorado State Parks website. Maroon Bells photo provided courtesy of the Colorado Geological Survey website. Custer County photo provided by CDEM.

EXECUTIVE SUMMARY

State and local governments must continue to improve their ability to respond to natural, technological, and man-made hazards. To that end, it is imperative that different levels of government be able to cooperate with one another in developing approaches and responses that mitigate hazards. In Colorado, various state agencies are responsible for mitigating the effects of hazards.

Many federal agencies provide funding for mitigation projects. The U.S. Forest Service (USFS), through the National Fire Plan and other sources, provides funding for fire mitigation. The Bureau of Land Management also provides funding for projects. The U.S. Department of Agriculture (USDA) provides assistance after disaster declarations. The Small Business Administration (SBA) provides grants and loans after disaster and drought declarations. In addition, the Federal Emergency Management Agency (FEMA) within the Department of Homeland Security (DHS) provides financial and technical assistance to state and local governments following presidential disaster and emergency declarations. Local governments are also involved in mitigation planning and project implementation because the majority of natural hazard mitigation occurs at the local government level.

In October 2000, the United States Congress passed the Disaster Mitigation Act of 2000, now referred to as DMA 2000. The Act amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1989 (Public Law 93-288, as amended) which serves as the mechanism through which the federal government delivers financial and technical assistance to state and local governments following presidential disaster and emergency declarations. DMA2000 addresses our country's continuing need to reduce or eliminate the effects of natural, technological, and man-made hazards. Section 322 of DMA 2000 requires that all state hazard mitigation plans be updated to reflect the changes set forth in the Act.

Every effort has been made to ensure the Plan meets Federal Emergency Management Agency planning requirements of 44 CFR 201.4 and 201.5. The Plan keeps the state qualified to obtain all disaster assistance, including hazard mitigation grants, available through the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended.

With the submission of the 2004 State of Colorado Natural Hazards Mitigation Plan, the Plan is hereby approved and adopted by the State of Colorado-Department of Local Affairs, Office of the Governor.

The State of Colorado assures it will comply with all applicable federal statutes and regulations in effect with respect to the periods for which it receives grant funding in compliance with 44 CFR part 13.11(c). The State will amend its Plan whenever necessary to reflect changes in state or federal laws and statutes, as required in 44 CFR 13.11(d). The adoption of this Plan demonstrates the State of Colorado's commitment to fulfilling the mitigation objectives in the Plan and authorizes the agencies identified in the Plan to execute their responsibilities.

The Plan is the result of a collaborative process by several state agencies, staff of the Division of Emergency Management, local emergency managers, state and federal hazard experts, and others.

The Plan provides the framework for reducing the state's vulnerability to natural hazards. Separate mitigation plans are not required from state agencies that participated in the process because they are subgrantees to CDEM.

In addition, local mitigation planning efforts were integrated into the state plan. The results of the plan were based on best available data from the state agencies and local governments that participated in the planning process. In some cases, information from state and federal agencies did not exist in a usable format. Nonetheless, all available and current data was utilized to meet the requirements.

Overall, protecting lives and new and existing development from the effects of hazards is a priority because it can be achieved on an individual community-by-community basis but at the same time can be integrated into an overarching plan goal.

Each city and county in Colorado can use the results of its data collection efforts to develop goals and prioritize actions. The priorities will differ from jurisdiction to jurisdiction.



The following goals and objectives were identified through the process. Actions are listed in Appendix G, under Goals, Objectives, and Actions.

Goal: Reduce the loss of life and personal injuries from natural hazard events.

Obj: Strengthen early notification and warning systems at the federal, state, regional, and local levels of government.

Obj: Strengthen communications systems at the state, regional, and local level of governments.

Obj: Ensure people have safe places to remain during a natural hazard event.

Obj: Assist communities interested in adopting or revising building codes, design standards, and land development regulations.

Obj: Accurately identify dangerous locations for natural hazards.

Obj: Continue to develop and expand public awareness and information programs.

Obj: Develop projects with safety components aimed at preventing loss of life and injuries from natural hazards.

Goal: Reduce damage to state critical, essential, and necessary assets.

Obj: Identify state critical assets and create a digital risk layer.

Obj: Do projects to protect state critical assets in natural hazard risk areas.

Obj: Identify state essential and necessary assets and create a digital risk layer.

Obj: Do projects to protect state essential and necessary assets in natural hazard risk areas.

Obj: Improve state and local government monitoring and decision-making tools.

Goal: Reduce damage to local government assets.

Obj: Assist local government officials with nonconstruction activities.

Obj: Assist local government officials with construction activities.

Goal: Reduce state and local costs of disaster response and recovery.

Obj: Improve monitoring and decisionmaking tools.

Obj: Support multihazard mitigation projects and initiatives to reduce costs for separate projects.

Goal: Minimize economic losses.

Obj: Reduce economic losses to the state.

Obj: Reduce economic losses to local governments.

Obj: Reduce economic losses to residents.

Goal: Reduce damage to personal property.

Obj: Distribute information on and promote involvement in existing programs.

Obj: Continue to work with local governments on developing projects.

Throughout this planning effort, other planning activities were reviewed for consistency. Another very dynamic planning effort going on concurrent to this one includes a strategy for developing Community Wildfire Protection Plans (CWPPs). Colorado State Forest Service is the lead agency for the state and has set up a very inclusive process with representatives with public, nonprofit and private interests. DEM will encourage communities to use the excellent CWPP guide when developing their multihazard plans for FEMA. DEM also encouraged communities to develop plans that would serve as flood mitigation plans for the National Flood Insurance Program and the Flood Mitigation Assistance Program. The state flood annex and this umbrella document were completed concurrently to provide for consistency. It was found that the inclusion of U.S. Department of Homeland Security planning efforts, including identification of critical facilities, while concurrent, were not practical to include at this time. The State Emergency Operations Plan and this plan are always coordinated for program consistency. Other planning efforts will continue to be identified and coordinated as appropriate. Annex plan development is a coordinated effort among agencies.

Outstanding progress continues to be made by federal land management agencies, state agencies and local governments. Many private property owners and business owners are proactive and take prevention actions very seriously. Comparable to the rest of the states and territories, very few deaths or damages occur each year from natural hazards in Colorado, despite the severe weather and distinct topography. Many state and local governments aggressively pursue funding options, especially in these difficult financial times. Many agencies continue to do more or maintain existing preparedness and prevention programs with less or more competitive funding. This document applauds those efforts and identifies opportunities to continue or break new ground.

DISASTERS IN COLORADO

Colorado has received six presidential disaster declarations and one emergency declaration from 1980 through 2003. These are:

- DR-665-CO Estes Park Dam Break Flood 1982
- DR-719-CO Western Slope Flooding 1984
- DR-1186-CO Flood Disaster in Colorado 1997
- DR-1276-CO Severe Storms, Flooding, Landslides and Mudslides 1999
- DR-1374-CO Severe Winter Storms 2001
- DR-1421-CO Wildfires 2002
- EM-3185-CO Snow Emergency 2003

For the four recent presidential disasters and one emergency declaration, Colorado was awarded the following dollar amounts for Public Assistance (PA), Individual Assistance (IA), and the Hazard Mitigation Grant Program (HMGP):

PUBLIC & INDIVIDUAL ASSISTANCE & HAZARD MITIGATION GRANT PROGRAM \$ FOR THE 1997-2003 PRESIDENTIAL DISASTER DECLARATIONS		
DISASTER	PROGRAM	\$ FEDERAL
DR-1186	Public Assistance	5,323,580
DR-1186	Individual Assistance	2,161,056
DR-1186	Hazard Mitigation	2,000,000
DR-1276	Public Assistance	4,855,886
DR-1276	Individual Assistance	698,455
DR-1276	Hazard Mitigation	1,000,000
DR-1374	Public Assistance	Unknown
DR-1374	Hazard Mitigation	556,932
DR-1421	Individual Assistance	Unknown
DR-1421	Hazard Mitigation	351,144
EM-3185	Public Assistance	unknown

Source: Colorado Division of Emergency Management

The table below is a summary of hazardous weather information for Colorado, as reported by the National Weather Service. It should be noted that costs do not reflect all of the costs associated with hazard events.

SUMMARY OF HAZARDOUS WEATHER DEATHS, INJURIES, AND DAMAGE COSTS FOR COLORADO: 1995-2003					
YEAR	DEATHS	INJURIES	PROPERTY DAMAGE (\$MIL)	CROP DAMAGE (\$MIL)	TOTAL DAMAGE (\$MIL)
1995	5	28	-	-	7.6
1996	11	62	143.6	20.8	164.4
1997	30	67	371.3	9.2	380.5
1998	10	45	95.5	1.1	96.6
1999	9	44	129.2	12.4	141.6
2000	6	34	25.6	15.2	40.8
2001	5	57	108.6	4.4	113.0
2002	7	42	92.8	0.0	92.8
2003	8	21	103.4	9.2	112.6

Sources: www.nws.noaa.gov/om/95state.htm, www.nws.noaa.gov/om/severe_weather/



Blizzard of October 1997
Landslide Damage in Colorado Springs in 1999
Hi Meadow Fire in 2001
Photos provided by CDEM

Colorado received Fire Suppression Assistance/Fire Management Assistance from 1994 through 2003 for the following fires:

- Wake Complex Fires 1994
- South Canyon Fire 1994
- Roxborough Complex 1994
- Buffalo Creek 1996
- Bobcat Fire 2000
- Hi Meadow Fire 2000
- Eldorado Fire 2000
- Armageddon Fire-Carter Lake 2001
- Snaking Fire 2002
- Cuerno Verde Fire 2002
- Black Mountain Fire 2002
- Schoonover Fire 2002
- Iron Mountain Fire 2002
- Spring Fire 2002-Trinidad Complex
- Fisher Fire 2002-Trinidad Complex
- Ute Pass 2002
- Coal Seam Fire 2002
- Hayman Fire 2002
- Dierich Creek Fire 2002
- Missionary Ridge Fire 2002
- Million Fire 2002
- Wiley Ridge 2002
- Valley Fire 2002
- Burn Canyon Fire 2002
- Big Elk Fire 2002
- Panorama Fire 2002
- Cherokee Fire 2003

The table below is an incomplete list of state disasters but it gives an idea of how vulnerable the residents of the state are to natural and technological

hazards. It also demonstrates that all regions of the state have natural hazards risks. Hazards include grasshopper infestation, floods, drought, and fires.

DISASTERS IN COLORADO: 1980-2004		
YEAR	HAZARD	LOCATION
2004	Tornados	Logan County
2003	Sinkhole	Interstate 70, Eagle County
2003	Wildfire	Cherokee Fire
2003	Snow Emergency	22 counties
2002	Wildfires	59 counties and 2 Indian reservations
2002	Drought	All counties
2000	Flood	Elbert County
2000	Wildfires	Jefferson, Park, Boulder, Larimer, statewide impacts
1999	Flood	Sedgwick County
1999	Flood	Washington County
1999	Flooding, Landslides, Mudslides	Bent, Crowley, Custer, El Paso, Elbert, Fremont, Kiowa, Larimer, Otero, Las Animas, Pueblo, Weld
1998	Landslides, Rockfalls	Archuleta, Garfield, Mesa, Gunnison, Rio Blanco
1997	Blizzard	South Central Colorado, Front Range East
1997	Landslides	Jefferson County
1997	Flooding	Fort Collins, Weld, Morgan, Logan, Phillips, ClearCreek, Elbert, Kiowa, Baca, Otero, Lincoln, Crowley, Prowers, Sedgwick County, Holyoke
1996	Tornados	Morgan and Washington Counties
1996	Fire	Buffalo Creek, Jefferson County
1996	Flood	Buffalo Creek, Jefferson County
1996	Wildfire, Drought, Severe Weather	Several Locations
1995	Flood	Weld, Morgan Counties
1994	Flood	Pueblo County, Lyons-Boulder County
1994	Wildfires	Garfield, Delta, Douglas, Jefferson, statewide
1992	Flood	Fort Collins
1990	Hailstorm	Denver, Boulder
1990	Wildfire	Olde Stage Fire, Boulder County
1990	Severe Thunderstorm	El Paso
1990	Tornado	Limon
1990	Blizzard	Several Locations
1989	Wildfire	Black Tiger Fire, Boulder County
1989	Flooding	Town of Rico
1988	Wildfire	Lefthand Canyon, Boulder County
1988	Wildfire	Larimer
1988	Wildfire	Fremont
1988	Tornado	Denver
1987	Wildfire	Garfield
1987	Flood Mitigation	Alamosa
1987	Wildfire	Cheyenne, Lincoln, Elbert
1987	Flooding	Park
1986	Earth Slide	Delta
1986	Earthflow	SH 133, N of Paonia Res.
1986	Winter Storm	Weld
1984	Severe Winter Storm	Conejos County
1984	Water System	Oak Creek, Routt County
1984	Flooding	Delta, Dolores, Hinsdale, Saguache, Mesa, Montrose, Moffat, Rio Blanco, Pitkin, San Miguel, Ouray, Eagle, Gunnison, and Silt
1982	Severe Winter Storm	Denver, Arapahoe, Adams, Jefferson, Boulder, El Paso, Weld
1982	Dam Failure	Lawn Lake Dam, Larimer
1982	Flooding	Ouray County
1981	Water System	City of Trinidad and Vicinity
1981	Grasshopper Infestation	Eastern Colorado Counties
1981	Dam Safety	Adams, Weld
1981	Tornados	Adams, Denver, Jefferson, Weld
1980	Grasshopper Infestation	Logan, Morgan, Sedgwick, Phillips, Washington, Weld
1980	Flooding	Weld, Logan, Washington, Morgan, Larimer, Sedgwick
1980	Severe Winter Storm	Cheyenne, Kit Carson

Source: Colorado Division of Emergency Management

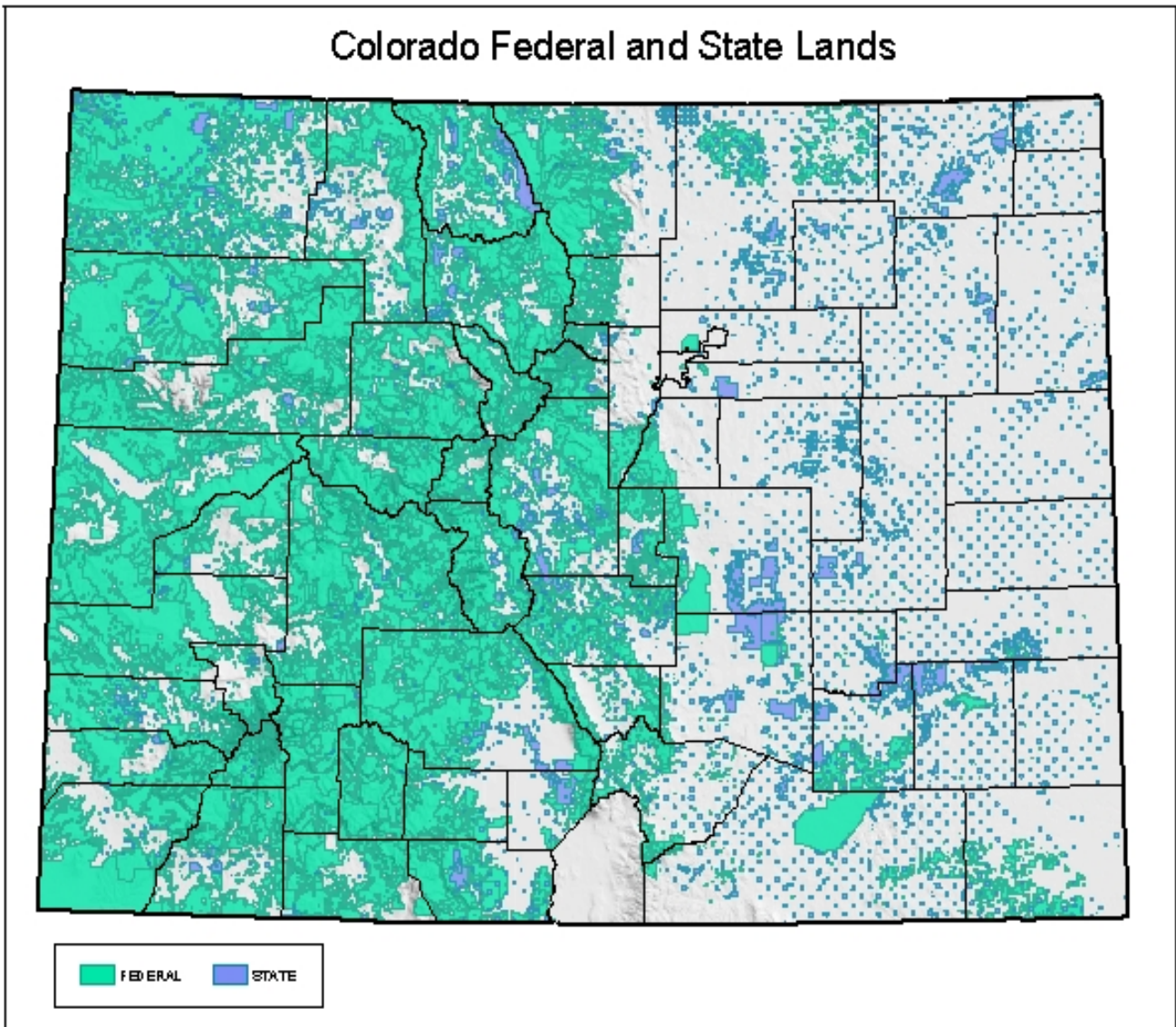
LAND OWNERSHIP

The table to the right depicts land ownership in Colorado. The data was prepared for the Colorado Gap Analysis Project by the U.S. Fish and Wildlife Service National Ecology Research Center from the Bureau of Land Management 1:100,000 map series. The Colorado Division of Wildlife and the University of Wyoming were co-principal investigators. The Colorado Office of Emergency Management Cartography/GIS section performed the analysis in 1996.

The map below depicts federal and state lands in the state.

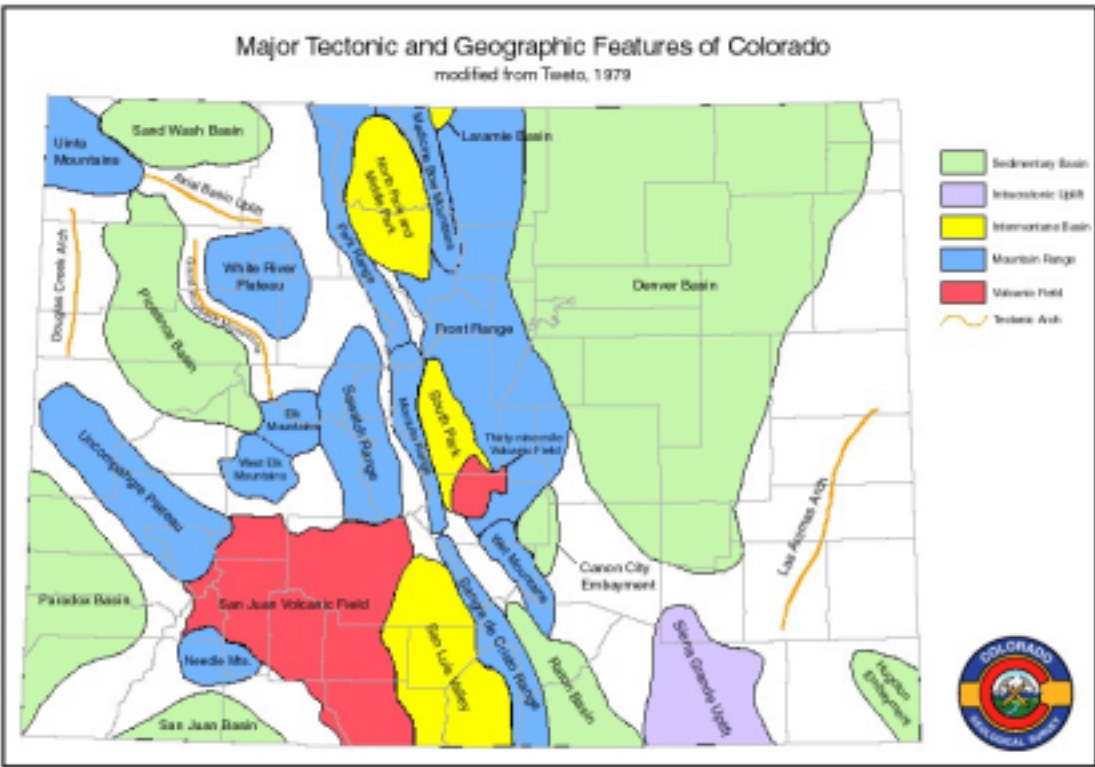
COLORADO LAND OWNERSHIP: 1995		
OWNER	SQUARE MILES	PERCENT
Private (includes county and municipally owned properties)	60,439.6	58.07
U.S. Forest Service	22,469.4	21.59
Bureau of Land Mgmt	13,020.0	12.51
State of Colorado	5,185.0	4.98
Bureau of Indian Affairs	1,196.5	1.15
National Park Service	862.7	0.83
Other (Dept. of Defense, Dept. of Energy, U.S. Fish & Wildlife, National Oceanic & Atmospheric Administration)	905.6	0.87

Source: Colorado Office of Emergency Management 1996



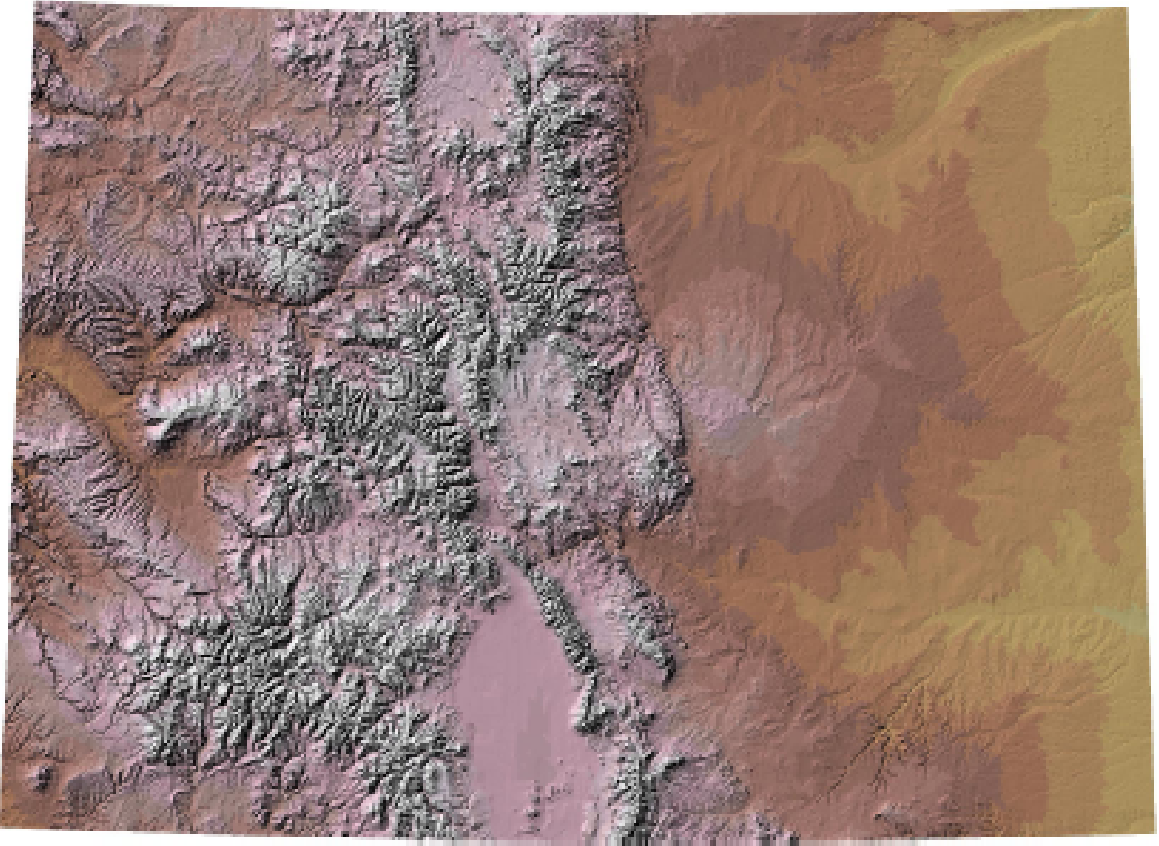
LANDFORMS

The two maps on this page depict geographic and geologic features of Colorado. Both maps were reprinted from the Colorado Geological Survey website. Note the features as named on the top map. The lower map shows a shaded relief image.



Reprinted from Colorado Geological Survey site at <http://geosurvey.state.co.us/>

Shaded Relief Map of Colorado



Reprinted from Colorado Geological Survey site at <http://geosurvey.state.co.us/>

TRANSPORTATION

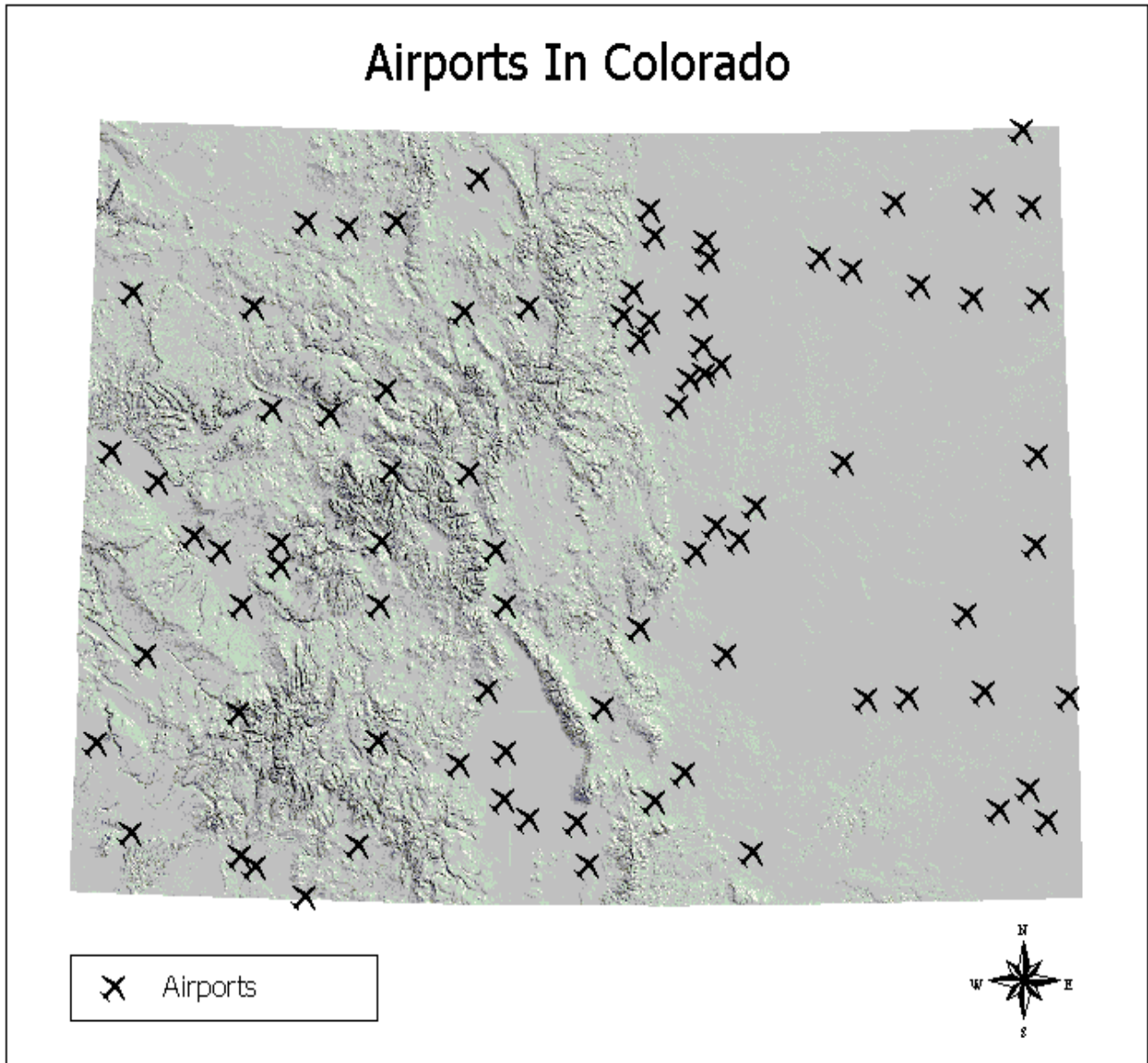
AIRPORTS

There are 79 airports in Colorado that are open for public use. These airports are divided into three categories—those which offer both scheduled and general aviation services, those designated as reliever airports, and those which offer general aviation services.

In Colorado, 17 airports hold an FAA Part 139 Certificate that enables them to provide scheduled passenger service. Through direct or connecting flights these airports link Colorado with the nation and the world. While the number of airports with scheduled airline service continues to fluctuate since deregulation, passenger enplanements statewide have risen 82 percent since 1980. With increasing passenger and cargo volumes comes increasing economic impact.

The four reliever service airports alleviate airspace congestion and operations levels in the metropolitan areas around Denver and Colorado Springs. This helps to enable safe and efficient services at the two major commercial service airports.

In addition to the 17 commercial service airports, 62 airports in the State are devoted to general aviation use. Four of these provide reliever service to Denver International Airport and Colorado Springs. These 62 airports harbor the majority of based aircraft, and dominate in terms of total aircraft operations. The magnitude of such use illustrates the importance of these transportation facilities to the local communities that they serve (<http://dot.state.co.us/Aeronautics/airports.asp>).



HIGHWAYS

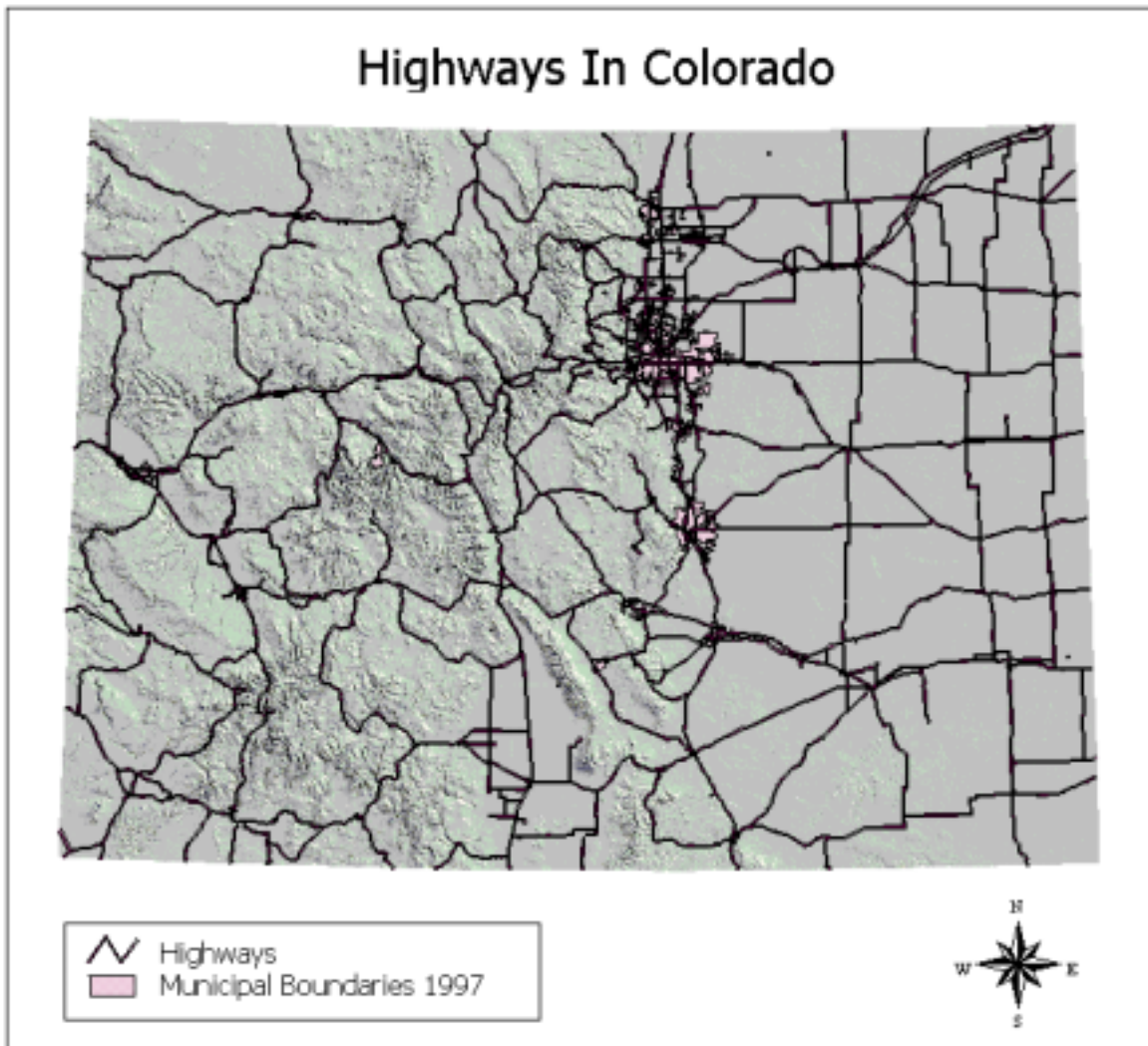
The Colorado Department of Transportation dataset on state highway centerline miles states that there are 9,129 total centerline miles of highway. The statistics include the following categories: interstate-rural, other principal arterial-rural, minor arterial-rural, major collector-rural, minor collector-rural, local-rural, interstate-urban, freeway-urban, other principal arterial-urban, minor arterial-urban, collector-urban, and local-urban (http://www.dot.state.co.us/TransData/Statistics/1998_sh_centerline_miles.htm).

For more information on highways in Colorado, refer to the Colorado Department of Transportation website at <http://www.dot.state.co.us/>. Datasets on geographic information, statistics, maps, and traffic volumes are all available. Maps are available by county or city.

The map below illustrates the highway system in Colorado. Twenty-two counties have an interstate passing through (I-70, I-25, and/or I-76).



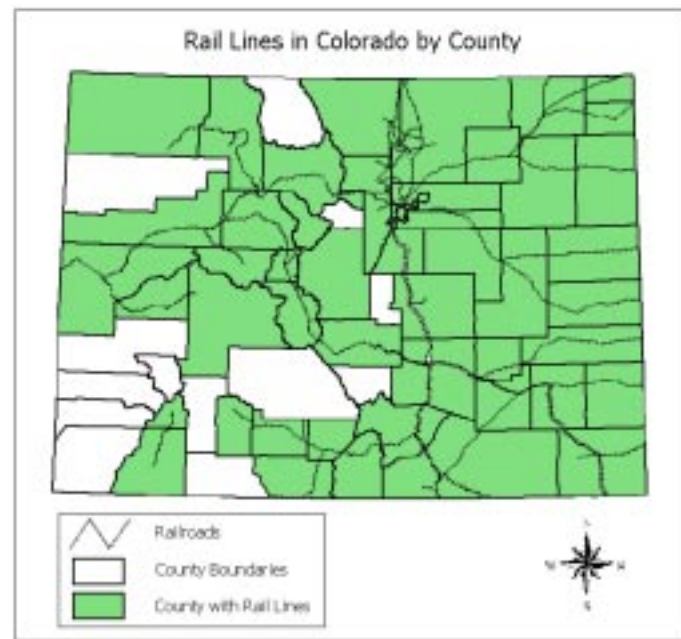
Diversity of highways and conditions in Colorado
Avalanche photo by Don Bachman
Other Photos by CDEM



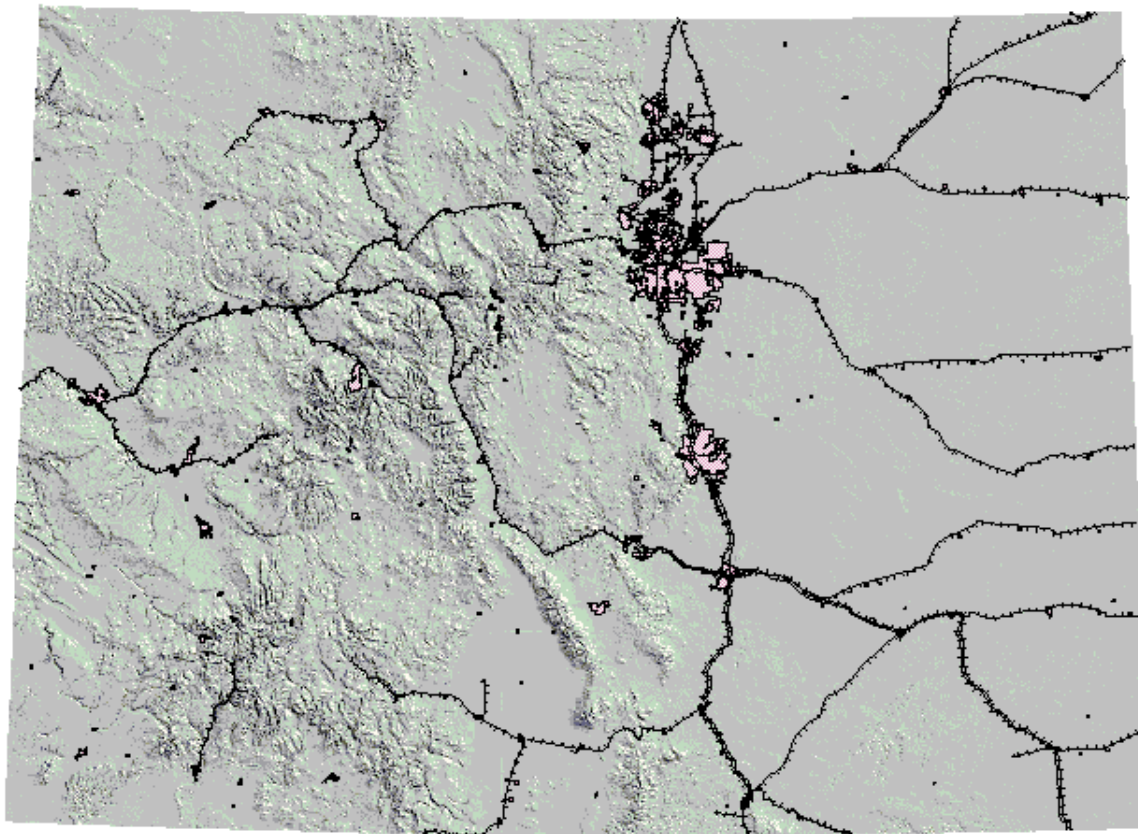
RAILROADS

The following two maps depict the rail lines in Colorado. The first map on the right highlights counties with rail lines (in green). Fifty counties are reported to have rail lines, as reported in the Colorado Division of Emergency Management database. The second map (below) illustrates the rail lines in relation to the terrain. Municipal areas are highlighted in pink and are from 1997.

For information on rail transportation refer to the Colorado State Patrol site at <http://www.hazmatrans.state.co.us>. Colorado statewide rail system maps are provided in a portable document file (*.pdf) format and include central Colorado, northwest Colorado, northeast Colorado, southwest Colorado, and southeast Colorado.

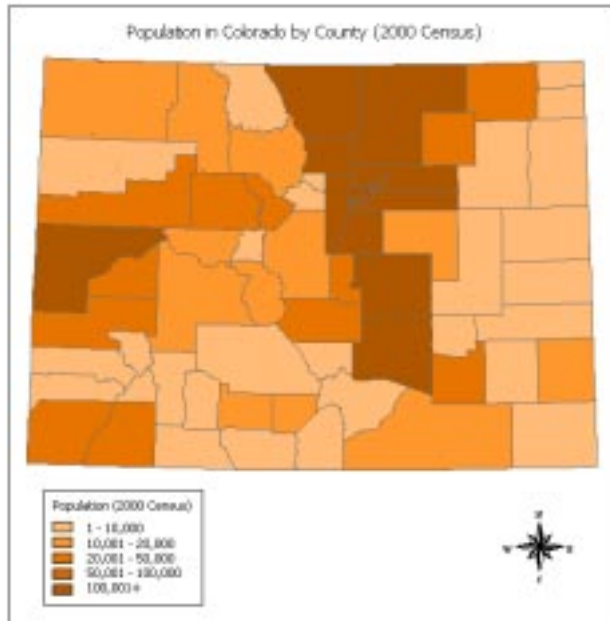


Rail Lines In Colorado

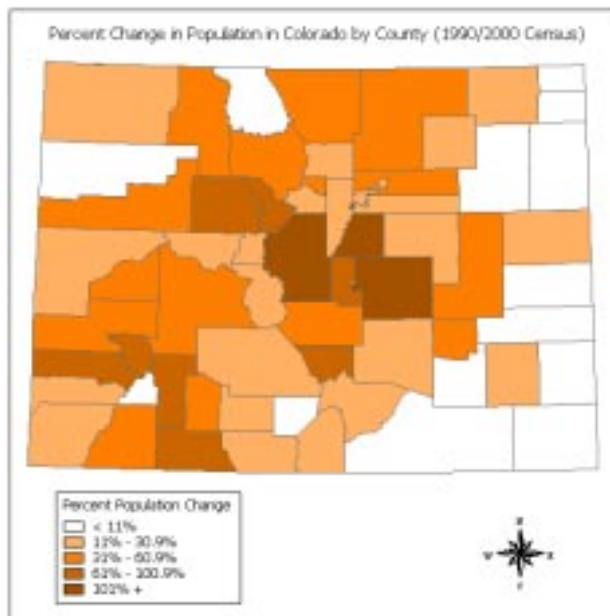


POPULATION

Population in Colorado has increased dramatically over the past decade. Census figures show that the state overall experienced 30.6% growth from 1990 to 2000. The 2000 census estimates Colorado population at 4.3 million.



The following map demonstrates the percent change in population by county as determined with figures from the 1990 and 2000 censuses. Douglas County had the greatest growth (191%), followed by El Paso County (106%) and Park County (102%).



COUNTY	APRIL 1990	APRIL 2000	CHANGE 1990-2000	PERCENT CHANGE
Adams	265,038	363,857	98,819	37.3
Alamosa	13,617	14,966	1,349	9.9
Arapahoe	391,511	487,967	96,456	24.6
Archuleta	5,345	9,898	4,553	85.2
Baca	4,556	4,517	-39	-0.9
Bent	5,048	5,998	950	18.8
Boulder	225,339	291,288	65,949	29.3
Chaffee	12,684	16,242	3,558	28.1
Cheyenne	2,397	2,231	-166	-6.9
Clear Creek	7,619	9,322	1,703	22.4
Conejos	7,453	8,400	947	12.7
Costilla	3,190	3,663	473	14.8
Crowley	3,946	5,518	1,572	39.8
Custer	1,926	3,503	1,577	81.9
Delta	20,980	27,834	6,854	32.7
Denver	467,610	554,636	87,026	18.6
Dolores	1,504	1,844	340	22.6
Douglas	60,391	175,766	115,375	191.0
Eagle	21,928	41,659	19,731	90.0
El Paso	397,014	516,929	10,226	106.0
Elbert	9,646	19,872	119,915	30.2
Fremont	32,273	46,145	13,872	43.0
Garfield	29,974	43,791	13,817	46.1
Gilpin	3,070	4,757	1,687	55.0
Grand	7,966	12,442	4,476	56.2
Gunnison	10,273	13,956	3,683	35.9
Hinsdale	467	790	323	69.2
Huerfano	6,009	7,862	1,853	30.8
Jackson	1,605	1,577	-28	-1.7
Jefferson	438,430	527,056	88,626	20.2
Kiowa	1,688	1,622	-66	-3.9
Kit Carson	7,140	8,011	871	12.2
La Plata	32,284	43,941	11,657	36.1
Lake	6,007	7,812	1,805	30.0
Larimer	186,136	251,494	65,358	35.1
Las Animas	13,765	15,207	1,442	10.5
Lincoln	4,529	6,087	1,558	34.4
Logan	17,567	20,504	2,937	16.7
Mesa	93,145	116,255	23,110	24.8
Mineral	558	831	273	48.9
Moffat	11,357	13,184	1,827	16.1
Montezuma	18,672	23,830	5,158	27.6
Montrose	24,423	33,432	9,009	36.9
Morgan	21,939	27,171	5,232	23.8
Otero	20,185	20,311	126	0.6
Ouray	2,295	3,742	1,447	63.1
Park	7,174	14,523	7,349	102.4
Phillips	4,189	4,480	291	6.9
Pitkin	12,661	14,872	2,211	17.5
Prowers	13,347	14,483	1,136	8.5
Pueblo	123,051	141,472	18,421	15.0
Rio Blanco	6,051	5,986	-65	-1.1
Rio Grande	10,770	12,413	1,643	15.3
Routt	14,088	19,690	5,602	39.8
Saguache	4,619	5,917	1,298	28.1
San Juan	745	558	-187	-25.1
San Miguel	3,653	6,594	2,941	80.5
Sedgwick	2,690	2,747	57	2.1
Summit	12,881	23,548	10,667	82.8
Teller	12,468	20,555	8,087	64.9
Washington	4,812	4,926	114	2.4
Weld	131,821	180,936	49,115	37.3
Yuma	8,954	9,841	887	9.9
Total	3,294,473	4,301,211	1,006,788	*30.6

Source: U.S. Bureau of the Census 2001 *Overall average percent change.

STATEWIDE EXPOSURE

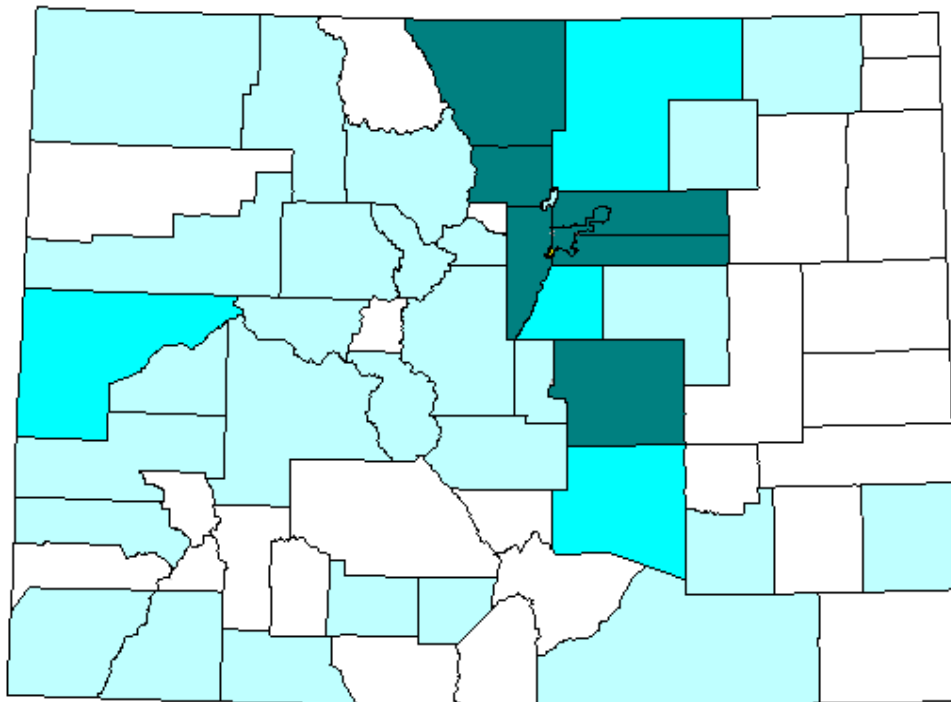
A detailed explanation of the calculation of the statewide exposure data is in the appendices. The original data was obtained from the FEMA HAZUS-MH software and aggregated to the county level. Datasets were created for Broomfield (a new city/county). The total value includes both building and contents values for all of the categories (residential, agricultural, commercial, industrial, religious, government, education, and public). Two maps were created based on the data: "Total Exposure By County" and "Exposure Per Capita By County". The county with the highest total value for property is Denver with close to \$61

billion. The county with the highest total value per capita is Hinsdale with over \$243 million in building and contents value and 790 in population, resulting in \$308,000 per capita.

STATEWIDE EXPOSURE: NUMBER OF BUILDINGS AND TOTAL VALUE (\$) BY COUNTY					
COUNTY	TOTAL VALUE (\$000)	TOTAL VALUE (\$000) PER CAPITA	COUNTY	TOTAL VALUE (\$000)	TOTAL VALUE (\$000) PER CAPITA
Adams	26,957,947	77.48	Kit Carson	685,810	85.61
Alamosa	1,593,887	106.50	Lake	693,012	88.71
Arapahoe	52,145,533	106.86	La Plata	4,704,083	107.05
Archuleta	1,205,694	121.81	Larimer	25,471,255	101.28
Baca	426,724	94.47	Las Animas	1,480,429	97.35
Bent	448,289	74.74	Lincoln	495,725	81.44
Boulder	28,164,724	104.39	Logan	1,715,459	83.66
Broomfield	9,218,599	235.23	Mesa	10,624,708	91.39
Chaffee	1,753,257	107.95	Mineral	211,822	254.90
Cheyenne	230,551	103.34	Moffat	1,086,477	82.41
Clear Creek	1,217,193	130.57	Montezuma	1,988,484	83.44
Conejos	585,723	69.73	Montrose	2,864,236	85.67
Costilla	295,238	80.60	Morgan	1,939,750	71.39
Crowley	305,140	55.30	Otero	1,728,701	85.11
Custer	542,552	154.88	Ouray	506,211	135.28
Delta	2,324,836	83.53	Park	2,067,415	142.35
Denver	60,919,226	109.84	Phillips	416,784	93.03
Dolores	202,905	110.04	Pitkin	2,654,759	178.51
Douglas	19,983,909	113.70	Prowers	1,153,088	79.62
Eagle	5,308,591	127.43	Pueblo	12,014,590	84.93
Elbert	1,733,992	87.26	Rio Blanco	660,684	110.37
El Paso	47,680,640	92.24	Rio Grande	1,136,736	91.58
Fremont	3,311,746	71.77	Routt	2,665,330	135.36
Garfield	3,943,420	90.05	Saguache	444,587	75.14
Gilpin	718,140	150.96	San Juan	143,351	256.90
Grand	2,345,731	188.53	San Miguel	1,125,863	170.74
Gunnison	1,944,087	139.30	Sedgwick	276,330	100.59
Hinsdale	243,318	308.00	Summit	4,828,260	205.04
Huerfano	849,517	108.05	Teller	2,310,086	112.39
Jackson	211,618	134.19	Washington	408,560	82.94
Jefferson	52,309,682	99.57	Weld	13,365,165	73.89
Kiowa	140,262	86.47	Yuma	853,040	86.68

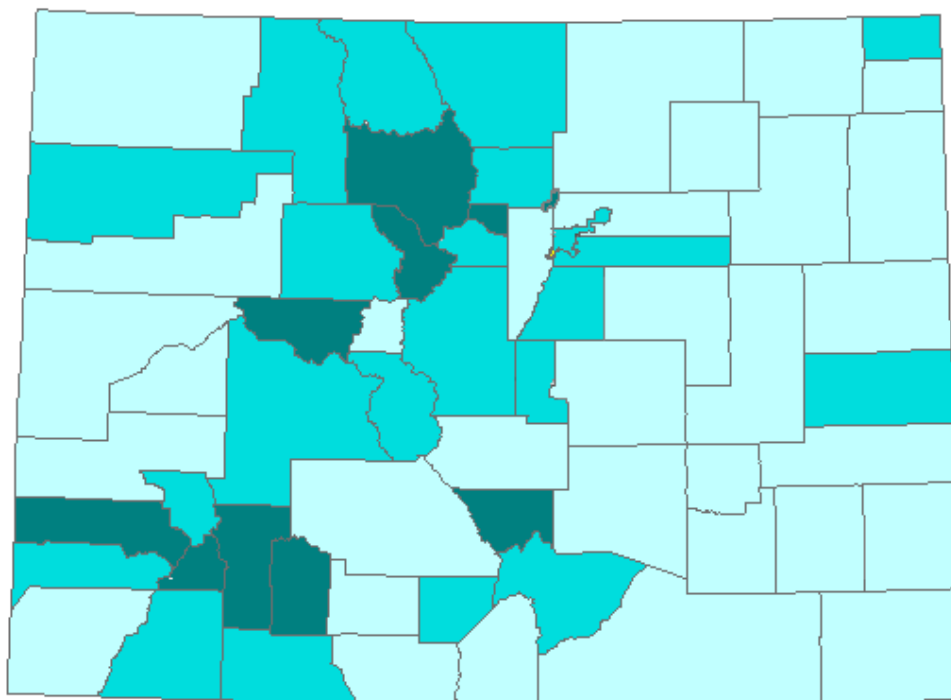
Based on datasets from FEMA Hazards U.S. software.

Total Exposure By County (\$Billions - Buildings and Contents)



Exposure (\$billions) >\$25B \$24-10B \$10B-1B <\$1B

Exposure (\$ Buildings and Contents) Per Capita By County



Exposure (\$000) Per Capita >\$150.00 149.99-100.00 99.99-50.00

STATE LAWS, REGULATIONS, AUTHORITIES, POLICIES

1984 – “Senate Bill 13, C.R.S. 6-6.5-101, 1984, relates to geologic hazards in requiring all residential developers to analyze and disclose any potentially hazardous conditions to prospective home buyers. ...” (Colorado Landslide Hazard Mitigation Plan 1988)

1984 – “House Bill 1045, C.R.S. 22-32-124 (1), 1984, requires that, prior to the acquisition of land for school buildings sites or construction of any buildings thereon, the board of education must consult with the Colorado Geological Survey regarding potentially swelling soils, mine subsidence, and other geologic hazards and determine the geologic suitability of the site for its proposed use.” (Colorado Landslide Hazard Mitigation Plan 1988).

State Engineer’s Reports on High Hazard Dams, C.R.S. 37-87-123. As directed by the preceding statute, the State Engineer developed and distributed reports on each high hazard dam. These contained the State Engineer’s evaluation of the structural integrity and state of repair as of October 1983. (Division of Disaster Emergency Services)

1977 - Executive Order 8504: Requirements and Criteria for State Participation in the National Flood Insurance Program (Colorado Flood Hazard Mitigation Plan 1999)

1977 - Executive Order 8491: Evaluation of Flood Hazard in Locating State Buildings, Roads, and Other Facilities, and in Reviewing and Approving Sewage and Water Facilities, and Subdivisions (Colorado Flood Hazard Mitigation Plan 1999)

1977 – Senate Bill 126 - C.R.S. § 24-65.1-403 (1), 1973, as amended. An Act Authorizing the Colorado Water Conservation Board to Coordinate All Activities Relating to the Designation of Floodplains in the State in Connection with Land Use Planning.

1974 – House Bill 1041, Chapter 106, C.R.S. 1963, as amended. Areas and Activities of State Interest – An Act Concerning Land Use, and Providing for Identification, Designation, and Administration of Areas and Activities of State Interest, and Assigning Additional Duties to the Colorado Land Use Commission and the Department of Local Affairs, and Making Appropriations Therefor. This Act involved comprehensive treatment of hazards and charged local governments with legal responsibility for designation and administration of hazardous areas of state interest.
106-7-201. Areas of State Interest – as determined by local governments. Natural hazard areas and mineral

resource areas are two of the four areas of state interest.

106-7-202. Criteria for administration of areas of state interest. “Floodplains shall be administered so as to minimize significant hazards to public health and safety or to property... Wildfire hazard areas in which residential activity is to take place shall be administered so as to minimize significant hazards to public health and safety or to property... In geologic hazard areas all developments shall be engineered and administered in a manner that will minimize significant hazards to public health and safety or to property due to a geologic hazard...”

The Colorado water conservation board, the Colorado state forest service, and the Colorado geological survey were to develop model hazard area control regulations.

106-7-302. Functions of other state agencies. (1) Pursuant to this article, it is the function of other state agencies to: (a) Send recommendations to local governments and the Colorado land use commission relating to designation of matters of state interest on the basis of current and developing information; and (b) Provide technical assistance to local governments concerning designation of and guidelines for matters of state interest. 2) Primary responsibility for the recommendation and provision of technical assistance functions described in subsection (1) of this section is upon: (a) The Colorado water conservation board, acting in cooperation with the Colorado soil conservation board, with regard to floodplains; (b) The Colorado state forest service, with regard to wildfire hazard areas; (c) The Colorado geological survey, with regard to geologic hazard areas, geologic reports, and the identification of mineral resource areas (d) The Colorado division of mines, with regard to mineral extraction and the reclamation of land disturbed thereby; (e) The Colorado soil conservation board and soil conservation districts, with regard to resource data inventories, soils, soil suitability, erosion and sedimentation, floodwater problems, and watershed protection; and (f) The division of wildlife of the department of natural resources, with regard to significant wildlife habitats. ...

1974 – “House Bill 1034, C.R.S. 29-20-101, et seq., 1974, is the “Local Government Land Use Control Enabling Act.” The act gives authority to local governments to plan and regulate the use of land within their jurisdictions, including regulating development and activities in hazardous areas. The act then allows geologic hazards to be used as a basis for land-use decisions. ... (Colorado Landslide Hazard Mitigation Plan 1988).

1973 - House Bill 1574, C.R.S. 34-1-201, et seq., requires that all geologic reports required by law be prepared by a "professional geologist..." (Colorado Landslide Hazard Mitigation Plan 1988).

1973 - House Bill 1529, "...Colorado passed legislation that prohibits local governments from approving land uses that would interfere with the extraction of a commercial mineral deposit (C.R.S. 34-1-305). Local governments are also required to conduct a study of commercial mineral deposits located within their jurisdictions and develop a master plan (C.R.S. 34-1-304) for the extraction of mineral deposits." (<http://www.dnr.state.co.us/geosurvey/pubs/geohazards/docs/mining.html>)

Rules and Regulations for Dam Safety and Dam Construction, Office of the State Engineer, 2 CCR 402-1, promulgated pursuant to authority granted the State Engineer in Sections 37-87-102 and 37-87-105, C.R.S. (1973) (1987 Supp.) and Section 37-80-102(11K), C.R.S. (1973), pursuant to section 24-4-103, C.R.S. (1973). Contains, among other items, the following: requirements for construction or enlargement of jurisdictional dams or reservoirs; requirements for alteration, modification, or repair of an existing dam which will affect the safety of the structure; general maintenance, ordinary repairs and emergency action which do not require prior approval of the state engineer; safety inspections; owner's responsibilities; safety inspections; restriction of recreational facilities within reservoirs; and emergency preparedness plans (EPPs). (<http://water.state.co.us/pubs.htm>)

"Senate Bill 35, C.R.S. 30-28-101, et seq., 1972, concerns the division of land into sites, tracts, or lots, and is often referred to as the "Subdivision Law." The bill requires that subdivision proposals be evaluated for wildfire safety and geologic conditions prior to approval by a county and applies to the division of land into parcels of less than 35 acres within a county. ..." (Colorado Landslide Hazard Mitigation Plan 1988, Wildfire Hazard Mitigation Plan 1995)

1970 - Colorado Land Use Act – C.R.S. § 24-65-101 24-65-102. ... (2) In order to provide the leadership necessary...the general assembly authorizes the Colorado land use commission to develop and hold hearings upon state land use plans and maps and related implementation techniques. It is the intent of the general assembly that land use, land use planning and quality of development are matters in which the state has responsibility for the health, welfare, and safety of the people of the state.
24-65-104. Duties of the commission – temporary emergency power. The commission was authorized

and directed to develop, ... a final land use planning program ... Whenever ...the commission determines that there is in progress or proposed a land development activity which constitutes a danger of injury, loss, or damage of serious and major proportions to the public health, welfare, or safety, the commission shall immediately give written notice to the Board of County Commissioners (BCC) of each county involved of the pertinent facts and dangers with respect to such activity. If said BCC does not remedy the situation within a reasonable time, the commission may request the governor to review... If... the governor determines that such activity does constitute such a danger, the governor may direct the commission to issue its written cease and desist order to the person in control ... If such activity ... is continued, the commission may apply to the district court for the county in which such activity is located for a temporary restraining order, preliminary injunction, or permanent injunction, as provided for in the Colorado rules of civil procedure. ... (b) In the event the commission issues such cease and desist order or a district court issues such a temporary restraining order, preliminary injunction, or permanent injunction, the commission shall proceed immediately to establish the planning criteria necessary to eliminate or avoid such danger. The appropriate local governmental agency shall then take immediate action to implement the aforementioned planning criteria. ...

25-65-105. Model resolutions – subdivisions – improvement notices. (2)(a) The commission shall, after consultation with its advisory committee, develop model resolutions to serve as guidelines for boards of county commissioners, city councils, town boards, and special districts and authorities in developing land uses and construction controls within designated floodways. (b) The commission shall, in its progress report, due February 1, 1972, designate critical areas in the state where a one hundred-year (storm return frequency) floodway should be identified and shall aid the state agencies and local governments having jurisdiction over such critical areas in adopting a program for such identification. The purpose of identifying a floodway is to insure that life and property are protected, that the expenditure of public funds to clean up flood damage is kept to a minimum, that a high volume of water runoff can be accommodated, and that impediments to this flow are held to a minimum. The commission shall designate critical conservation and recreation areas and recommend state involvement in land use in such areas. (c) The commission shall include a report on land uses and construction within floodways in its interim and final land use planning programs.

1969 – C.R.S. 34-1-101, et seq. Legislation that established the Colorado Geological Survey. "The agency was created in part to address the serious geologic problems associated with rapid development in mountainous regions in the late 1960s." (Colorado Landslide Hazard Mitigation Plan 1988)

C.R.S. 34-1-103. Legislation outlines the Colorado Geological Survey's responsibilities and general statutory authority. "The Colorado Geological Survey shall function to provide assistance to and cooperate with the general public, industries, and agencies of state government...in pursuit of the following objectives...a) To assist, consult with, and advise existing state and local government agencies on geologic problems...c) To conduct studies to develop geological information...g) To evaluate the physical features of Colorado with reference to present and potential human and animal use..., and I) To determine areas of natural geologic hazards that could affect the safety of or economic loss to the citizens of Colorado (Colorado Landslide Hazard Mitigation Plan 1988).

1966 – House Bill 1007 – Flood Control – Planning and Zoning. State approval and designation of storm runoff channels and basins." (Colorado Flood Hazard Mitigation Plan 1999)

1963 – C.R.S. § 139-59-7. "The plan shall be made with the general purpose of guiding and accomplishing a coordinated, adjusted, and harmonious development of the municipality and its environs, which will, in accordance with present and future needs, best promote health, safety, ..., and general welfare, as well as efficiency and economy in the process of development, including among other things, ..., the promotion of safety from fire, and other dangers, ..."

1937 – The Colorado Water Conservation Board is created.

CS 23-30-308 Authorization by Governor of bans on open burning in designated areas.

Senate Bill 90-4; Concerning creation of the fire suppression program under the Director of the Division of Fire Safety in the Department of Public Safety, ... This Act, ... established minimum standards of performance to ensure that fire suppression systems are installed in accordance with nationally recognized standards. ... Enacted May 18, 1990.

Colorado Statutes : Title 30 Government - County: County Powers and Functions: General : Article 11 County Powers and Functions: Part 1 General Provisions: 30-11-124. Fire planning authority

Colorado Statutes : Title 30 Government - County: County Planning and Building Codes: Article 28 County Planning and Building Codes: Part 1 County Planning: 30-28-106. Adoption of master plan - contents.

Colorado Statutes : Title 30 Government - County: County Planning and Building Codes: Article 28 County Planning and Building Codes: Part 1 County Planning: 30-28-136. Referral and review requirements.

STATE ASSESSMENT

State departments are responsible, within their statutory authorities, to provide assistance and support to local jurisdictions when they are unable to cope with a disaster emergency situation. Upon implementation of the State Emergency Operations Plan (SEOP), they are responsible for the implementation of assigned state emergency functions (SEFs). The operational roles, responsibilities, and intra-organizational relationships of state departments are described in detail in the assigned state emergency function annexes to the plan.

GOVERNOR'S OFFICE

136 State Capitol
Denver, CO 80203
303.866.2471

governorowens@state.co.us

Governor's Office – "Colorado Disaster Emergency Act of 1992" (Part 21 of Article 32, Title 24, Colorado Revised Statute, 1988 as amended) states the Governor, as the executive head of state, has the inherent responsibility, constitutional and statutory authority, to commit state and local resources (personnel, equipment, and finances) for the purpose of ... meeting the dangers to the state and its people presented by disasters. This responsibility is exercised through the Director of the Division of Emergency Management (CDEM), Department of Local Affairs (DoLA). The Governor's Disaster Emergency Council serves as an advisory council to the Governor and the director on all matters pertaining to declarations of state disaster emergencies, and on the response and recovery activities of state government. The Governor's Office is responsible for making state disaster declarations, usually at the recommendation of the Division of Emergency Management, and for the request to the president for a major disaster declaration, if necessary.

Over the years, governors have sponsored various conferences on hazard issues. In 1999, Governor Owens and the Department of Natural Resources held the [Governor's Conference on Flood and Drought](#). This conference afforded private citizens, business people, and local, state, and federal government people an opportunity to discuss the issues surrounding flood and drought in Colorado. A copy of the proceedings has been made available on CD-rom. The [Colorado Governor's Conference on Emergency Management](#) is an annual event. Hazard mitigation is one track at this event.

The Governor's Office works with state agencies on [hazard awareness weeks](#) by preparing official proclamations promoting hazard awareness and mitigation activities.

DEPARTMENT OF AGRICULTURE

700 Kipling St., Suite 4000
Lakewood, CO 80215-8000

<http://www.ag.state.co.us/commissioner/staff.html>

The Colorado Department of Agriculture is committed to strengthening agriculture's future, providing consumer protection; promoting environmental quality and animal health; and ensuring equity and integrity in business and government

Colorado Soil Conservation Board

1313 Sherman St., Rm 219
Denver, CO 80203

<http://www.ag.state.co.us/soils/soils.html>

The SCB acts as a state board of appeals for the 77 soil conservation districts, administers and disburses funds for the purpose of assisting the districts, acts in an advisory capacity with the districts, coordinates the programs of all districts, undertakes studies of watershed planning, develops, implements and administers watershed flood prevention and underground water storage projects, and accepts grants, services and materials for conservation purposes. The SCB also oversees the state's living snow fence program.

[Soil surveys](#) provide critical information for agriculture, local planners, developers, and anyone else. Seven counties in Colorado have never had soil surveys completed: Montrose, Costilla, Gilpin, Teller, Park, Archuleta, and Las Animas. The NRCS, which is responsible for conducting soil surveys, estimates that with existing federal funds it would take 10 years to complete surveys for these counties. The State of Colorado has contributed \$75,000 per year since 1999 through the Soil Conservation Board for soil surveys. This will enable these counties to have critical soil survey information available to the public within six years. The Soil Conservation Board makes funds available through local soil conservation districts to complete natural resource inventories that will be used by local governments for planning purposes. These funds are provided under HB 1041 and are used for such purposes as floodplain identification, noxious weed inventories, and other studies.

Division of Animal Industry

State Veterinarian's Office

The Division of Animal Industry is responsible for animal health and disease control activities in Colorado. The division works in close cooperation with the livestock industry and veterinary medical organizations, as well as other state and federal agencies, to protect the health, welfare, and marketability of Colorado livestock. The Division is composed of five sections: Livestock Disease, Bureau of Animal Protection, Rocky Mountain Regional Animal Health Lab, Pet Care and Rodent Control.

DEPARTMENT OF HIGHER EDUCATION

1380 Lawrence St., Suite 1200
Denver, CO 80204
http://www.state.co.us/cche_dir/heccche.html

Colorado Historical Society Office of Archaeology and Historic Preservation

1300 Broadway
Denver, CO 80203
303.866.3395
<http://www.coloradohistory-oahp.org/index.html>

The OAHP helps individuals, communities, and organizations identify, protect, and preserve the state's cultural resources and foster widespread appreciation of and respect for Colorado's cultural heritage. The State Historic Preservation Officer (SHPO) is responsible for administering the program as defined in the National Historic Preservation Act of 1966. The SHPO also administers state historic preservation laws.

Colorado State Forest Service

Colorado State University
Fort Collins, CO 80523
970.491.6303
<http://www.colostate.edu/Depts/CSFS/>

CSFS's **Forest Management Division** has programs that encourage sound stewardship to prevent accelerated resource loss to fire, disease and abuse. In addition to offering this protection, stewardship improves wood resources, watershed conditions, wildlife habitat, recreation resources, aesthetics and many other benefits derived from forested lands. The division administers several programs providing direct assistance to Colorado landowners.

The **Fire Division's** program activities have two goals: 1) protection of people and the environment from damaging wildfires, and 2) the safe use of fire to help meet the needs of the resources and society. The program covers over 25 million acres of private and state watershed lands. Service is provided through outreach, technical assistance, and support. The program operates on a highly coordinated, cooperative basis with local, private, state, federal, and tribal partners. Specific program areas include Wildland/Urban Interface, Prescribed Fire, Fire Training, Suppression Coordination, Fire Information and Education, and Wildfire Equipment.

The **Conservation Education Division** approaches environmental education from a holistic perspective that stresses the interconnectedness of all living and non-living things. This emphasis is underscored by

CSFS presence at forums such as windbreak and seedling tree workshops. These efforts serve to strengthen relationships among CSFS, cooperating agencies, and the citizens of Colorado.

Upper South Platte Watershed Protection and Restoration Project. A recent "Red Zone" assessment identified extensive areas along Colorado's Front Range that are at high risk of significant catastrophic losses from fire, insects or disease. Poor forest health, fuel accumulations, and housing density have joined with a high historic disturbance frequency to create this condition. The ponderosa pine and Douglas-fir forests in this area are more dense, younger, and homogeneous than they were prior to European settlement. Additionally, they contain an ever increasing component of residential and commercial development fueled by population growth rates that are among the highest in the nation. The US Forest Service, Denver Water Board, Colorado State Forest Service, and Rocky Mountain Forest and Range Experiment Station have formed a partnership to begin addressing this concern within the Upper South Platte Watershed.

In 1995, the CSFS began a strategic effort of wildfire mitigation. The Colorado Wildfire Mitigation Project of 1995 incorporated the major elements of the National Mitigation Strategy including hazard identification and risk assessment, applied research and technology transfer, public awareness, training and education, incentives and resources, and leadership and coordination. The project had three components: a Wildfire Mitigation Academy to achieve coordinated leadership, a wildfire mitigation model to help all counties avoid disaster fires, and local fuel hazard reduction to lower hazard and lessen fire fighter exposure to risk.

CSFS provides publications online to assist property owners in wildfire prevention: Creating wildfire defensible zones, Fire-resistant landscaping, Forest home fire safety, FireWise Plant Materials, and Grass Seed Mixes to Reduce Wildfire Hazard.

Governor Owens, recognizing the urgent need to more effectively address the wildland/urban interface (WUI) situation in Colorado, appointed a diverse working group of local, state, and federal leaders to explore the current situation, identify opportunities for improvement, and make recommendations for change. Over a six-month period, the Governor's Interagency Wildland Urban Interface Working Group identified several areas of concern. The result was the Report to the Governor: *Colorado's Wildland Urban Interface May 2001*. The report is located online at <http://www.colostate.edu/Depts/CSFS/govpage.html>. The Governor's working group identified a total of 15 recommendations within the categories of prepared

ness and suppression, hazard mitigation, and public awareness. The recommendations are summarized in the wildfire section.

The Colorado State Forest Service administers the Colorado [FireWise](#) Program. County links are at <http://lamar.colostate.edu/~firewise/county.html>. FireWise Communities is a program developed by the National Wildland/Urban Interface Fire Program. The last local FireWise Communities workshop was May 2001 in Denver, Colorado.

The Colorado General Assembly has authorized CSFS funding to assist counties that are willing to address wildfire hazard mitigation concerns within their county. Projects funded in previous years through these Wildfire Hazard Mitigation Grants have included the following: development of fire department newsletters; fuel reduction on greenbelts and private lots; creating an interpretive trail through burn areas; developing community-based defensible space and fuel break plans; making educational videos; training firefighters; making a fire safety cartoon book/brochure; mapping wildfire hazards; and establishing disposal locations for fuels.

Natural Hazards Center

University of Colorado
482 UCB
Boulder, CO 80309
303.492.6818
<http://www.colorado.edu/hazards/>

Since 1976, the NHRAIC has served as a national clearinghouse for research dealing with the economic loss, human suffering, and social disruption caused by earthquakes, floods, and other natural disasters. The Center maintains a large library and annotated database in order to respond to requests for information. The Center also publishes monographs, working papers, and bibliographies related to natural hazards and mitigation programs. The Center hosts symposia and workshops on natural hazards and publishes the bimonthly newsletter, *Natural Hazards Observer*. A member of the NHRAIC serves on the CNHMC.

Colorado Climate Center

Atmospheric Science Department
Colorado State University
Fort Collins, CO 80523-1371
970.491.8545
<http://ccc.atmos.colostate.edu/>

The CCC was established by the state in 1974, through the Colorado State University Agricultural Experiment Station, to provide information and expertise on Colorado's complex climate. Through its threefold program of Climate Monitoring (data

acquisition, analysis, and archiving), Climate Research, and Climate Services, the Center is responding to many climate related questions and problems affecting the state today. The CCC publishes an informative quarterly magazine called "Colorado Climate."

The CCC works on many projects, including the [Colorado Collaborative Rain and Hail Study](#). Through the CoCoRaHS program, the CCC trains volunteers to collect rain and hail data. This information will eventually help improve radar estimates of rainfall and radar detection. Training and education opportunities for students and community members are provided to improve local awareness of severe weather and other natural hazards to help make the area more resistant to the impacts from natural disasters. A CCC representative is a member of both the Water Availability Task Force and the Flood Task Force.

DEPARTMENT OF LOCAL AFFAIRS

1313 Sherman St.
Denver, CO 80203
303.866.3311
<http://www.dola.state.co.us/>

DoLA offers a wide range of services to communities and local governments to help build their capacity. These services include specialized training, technical and financial assistance, and emergency management. The following funds are administered by DoLA: Community Development Block Grants, Community Service Block Grants, Conservation Trust Fund, Energy/Mineral Impact Fund, Gaming Impact Fund, Search and Rescue Fund, Smart Growth/ Heritage Planning Grants, and the Waste Tire Fund.

Office of Field and Local Government Services

1313 Sherman St.
Denver, CO 80203
303.866.2771
<http://www.dola.state.co.us/LGS/index.htm>

The Local Government Services unit was formed in 1999 to better integrate the delivery of technical, financial, and information services to local governments. The unit includes five organizational or functional areas. [Field Services](#) consists of eight regional managers/field representatives and supporting field-based staff. [Financial Assistance](#) deals with a variety of community and infrastructure development needs. [Technical Assistance](#) assists municipalities, counties, and special districts with budgeting, financial management, special district elections, drinking water and wastewater systems, and other matters. [Demography](#) provides population and socio-economic data analyses and forecasts to local governments and the general public. [The Office of Smart Growth](#) provides

land use planning technical assistance and alternative dispute resolution services to local governments.

Colorado Heritage Reports includes reports on [Best Practices in Land Use Planning and Growth Management](#) and [Best Practices in Hazard Mitigation](#).

Colorado Division Of Emergency Management

15075 S. Golden Road

Golden, CO 80401

303.273.1622

<http://www.dola.state.co.us/oem/oemindex.htm>

CDEM is responsible for the state's comprehensive emergency management program that supports local and state agencies. Activities and services cover the four phases of emergency management: prevention, preparedness, response, and recovery for disasters like flooding, tornadoes, wildfire, and hazardous materials incidents.

[Planning and training services](#) to local governments include financial and technical assistance as well as training and exercise support. Services are made available through local emergency managers supported by CDEM staff assigned to areas of the state. CDEM sponsors workshops for local elected officials. Both new and established elected officials are invited to attend. The workshops are held at various locations around the state. Mitigation and domestic preparedness are topics covered.

The [Mitigation Staff](#) manage the mitigation grant programs and the mitigation public awareness and education projects. The state hazard mitigation program uses federal funds to promote local and state mitigation projects. Examples of projects supported in the past four years have included, but are not limited to, mapping and digitizing hazard areas, preparedness newspaper inserts, safety brochures, safety kits, mitigation education activities, hazardous waste collections, safety fairs, studies, and mitigation plans.

During an actual emergency or disaster, CDEM coordinates the state response and recovery program in support of local governments. CDEM maintains the state's Emergency Operations Center (SEOC) where representatives from other state departments and agencies and federal agencies come together to coordinate the state response to an emergency situation.

Division of Housing

1313 Sherman St.

Denver, CO 80203

303.866.2033

<http://www.dola.state.co.us/Doh/Index.htm>

The mission of the division is to "...ensure that Coloradans live in safe, decent and affordable housing..." The DoH assists communities in providing safe, decent, and affordable housing. Services include providing federal and state funds to finance the construction of new housing, rehabilitation of existing housing, and down payment and rental assistance. Factory built (modular) housing, commercial structure, manufactured homes, and recreational vehicles sold in this state must meet Colorado safety standards. DoH inspects these buildings and vehicles to ensure the health and safety of Colorado residents who purchase these units. DoH also inspects hotels, motels, and multifamily homes built in the 13 counties without building departments. These are required to be inspected by DoH to ensure they meet the building standards adopted by the State Housing Board. After a disaster, the DoH works with the American Red Cross, Federal Emergency Management Agency, CDEM, housing authorities, rehabilitation agencies, and the local county building department to provide assistance and funds to families whose homes have been destroyed or are in need of major repair. DoH building inspectors have provided various levels of damage assessment for homes and buildings affected by a disaster. These assessments concern the level of damage on a building and can range from extensive to minor. Results are made available to occupants and to local government officials. DoH has assisted local officials in determining feasibility of repair of the units and enabled the local jurisdiction to make informed decisions.

Additional DoH disaster assistance includes assisting in the set-up of a community disaster response center, assistance in locating suitable housing for victims, rehabilitation, repair, and replacement of single family, owner-occupied properties, temporary rental assistance for displaced families, and temporary rental expenses for renters whose incomes are less than 80% of the area median income.

DEPARTMENT OF NATURAL RESOURCES (DNR)

1313 Sherman St.

Denver, CO 80203

303.866.3311

<http://www.dnr.state.co.us/>

The department has the mandate to conserve, protect, promote the development, and regulate the use and enjoyment of the state's natural resources.

The duties of the agencies in DNR are related to water, minerals, mineral fuels, soil conservation, reclamation of mined land, management of state lands, wildlife, parks, outdoor recreation, geological features, and mine safety.

Colorado Water Conservation Board

1313 Sherman St.
Denver, CO 80203
303.866.3441
<http://cwcb.state.co.us/>

The Colorado State Legislature created the CWCB in 1937 for the expressed purpose "... to promote the conservation of the waters of the State of Colorado in order to secure the greatest utilization of such waters and the utmost prevention of floods..." The [Flood Protection Program](#) is directed in Section 37-60-106(1) C.R.S. (1990) to prevent flood damages, review and approve floodplain designations prior to adoption by local government entities, and provide local jurisdictions with technical assistance and floodplain information. In addition, an August 1, 1977 Executive Order requires the CWCB and Land Use Commission to provide assistance to entities in meeting the requirements of the National Flood Insurance Program. The water conservation board has recently approved funding for the [Floodplain Designation & Technical Assistance Program](#), designed to fund mapping efforts. The CWCB chairs the [Flood Task Force](#). The Flood Task Force is a multi-agency group that meets in the spring and as needed. The group monitors the state for possible flood conditions. A representative is also on the Water Availability Task Force. The CWCB is the lead agency for maintaining the [Colorado Flood Hazard Mitigation Plan](#). The plan was updated in 2004. New information was incorporated. Recommendations are part of the state plan.

The CWCB is the lead agency in administering the [Flood Mitigation Assistance Program](#), the [Community Assistance Program](#), the [Hazard Mitigation Grant Program](#) for the 1997 and 1999 presidential disaster declarations, and the [Unmet Needs Program](#) for the 1999 presidential disaster declaration.

Colorado Geological Survey

1313 Sherman St.
Denver, CO 80203
303.866.2611
<http://geosurvey.state.co.us>

The CGS responds within existing programs to geologic hazard management goals. The following are section descriptions in the CGS. The [Engineering Geology](#) section is responsible for increasing awareness and understanding of geologic hazards on citizens and property. This responsibility is undertaken through geological-suitability reviews of schools and subdivision sites for local governments; statewide research on a variety of geologic hazards; and assistance to state agencies, such as the Colorado Department of Transportation (CDOT), for geological

issues including rockfall areas, road alignments, and construction planning and support. The [Environmental Geology](#) section identifies, investigates, and assists in solving environmental issues related to geology in Colorado. The section applies geology to environmental issues in Colorado such as water quality, abandoned mines, and radioactive mill tailings. It advises and serves other state and federal agencies to avoid or solve environmental geology problems and provides water quality information for the citizens of Colorado. The [Geologic Mapping](#) program provides mapping in areas of geologic hazards, mineral resources, and growing populations on 7.5-minute quadrangles at the scale of 1:24,000.

The [Colorado Avalanche Information Center's](#) (CAIC) (existing through a partnership between CGS and CDOT) goal is to minimize the impact of avalanches on the people and property of Colorado through a dual mission of forecasting and education. Ten forecasters monitor snowpack, weather, and avalanche conditions. Information from a network of over 30 mountain observers helps forecasters in preparing their daily danger evaluations.

Representatives of the CGS chair the following: the Geologic Hazards Committee, and the Landslide and the Earthquake Subcommittees. The groups meet to discuss issues and recommend solutions.

The CGS is the lead agency for maintaining the Colorado Landslide Hazard Mitigation Plan. The original 1988 version has been updated for 2000. Recommendations are part of the state plan. The CGS also maintains the Earthquake Reference Collection.

The CGS is a lead state agency in studying landslide areas, including areas in Colorado Springs. The CGS is also the lead state agency for conducting debris flow studies. Studies were completed for two burn areas in 2000: Bobcat Gulch and Hi Meadows. CGS sponsors annual Earth Science weeks and conferences on important topics. These activities include field trips.

Division of Water Resources

1313 Sherman St.
Denver, CO 80203
303.866.2611
<http://water.state.co.us/>

The Office of the State Engineer (DWR) was created in 1881. The Dam Safety Branch (DSB) administers the [Dam Safety Program](#). The State Engineer implements the program through the branch and the Division Engineer's Offices.

The goals and objectives are stated as follows:

1. In order to protect the public safety, the DSB shall determine the amount of water which is safe to impound in the several reservoirs in the state.
2. In order to protect the public from the failure of dams, the DSB shall review and recommend approval of plans and specifications for the construction, modification, and repairs of dams, in accordance with the Regulations for Dam Safety and Dam Construction, Sept. 30, 1988.
3. In order to improve the public safety from the failure of dams, the DSB shall implement the Rules and Regulations for Dam Safety and Dam Construction in a reasonable time.
4. To improve the communications of the DSB, the Principal Engineer of the branch and the Division Engineers shall coordinate their activities closely.
5. In order to improve the functions of the DSB, and to meet the public information needs, the DSB shall maintain a data information system.
6. In order to improve the technical proficiency of the DSB, the DWR shall provide training and professional development of the personnel.
7. In order to improve our dam safety program, and to participate in the development of national policies on dam safety, and to take advantage of the continuing education and information available, the State shall be a full voting member of the Association of State Dam Safety Officials.

Class 1 (high hazard) dams are inspected annually, Class II (significant hazard) dams are inspected every two years, Class III (low hazard) dams are inspected at least every six years, and Class IV dams are observed periodically for changes in hazard class. This fiscal year, 562 safety inspections, 134 construction inspections, and 164 follow-up inspections were conducted. Refer to the *State Engineer's Sixteenth Annual Report to the Colorado General Assembly on Dam Safety for FY 99-00* for details and specific accomplishments for the fiscal year. The list of restricted dams is in this publication.

The Division of Water Resources chairs the [Dam Safety and Warning Committee](#). The group meets as needed to discuss issues and recommend solutions.

Dam owners submit [Dam Safety Local Emergency Preparedness Plans](#) to the DWR. Copies are also maintained at the CDEM. [Dams Databases](#) are also maintained at the DWR and CDEM. Information is updated as necessary.

The DWR developed [Guidelines for Preparing a Dam Safety Emergency Preparedness Plan 1996](#) in accordance with the Rules and Regulations for Dam Safety and Dam Construction, September 1988.

Division of Wildlife

6060 Broadway
Denver, CO 80216
303.297.1192
<http://www.dow.state.co.us>

The division manages more than 230 areas for public recreation, conducts research to improve wildlife management activities, provides technical assistance to private and other public landowners concerning wildlife and habitat management, and develops programs to protect and recover threatened and endangered species. The division has an ongoing inspection and maintenance program for 74 lakes, 215 wildlife areas, and 14 fish hatcheries. They have prepared an emergency action plan to be used in case of dam failure, which considers four potential flooding scenarios. The division has been working on issues concerning safety, security, and crime prevention. The division also has law enforcement capabilities.

Division of Minerals and Geology

1313 Sherman St.
Denver, CO 80202
303.866.3437
<http://mining.state.co.us/>

The DMG is responsible for mineral and energy development, policy, regulation, and planning including mines and mined land reclamation.

The [Mine Subsidence Protection Program](#) was established to pay for damage to Colorado homes resulting from coal mine subsidence. There are nearly 50,000 acres undermined along the Front Range corridor, in Boulder, El Paso, Jefferson, and Weld Counties, as well as Fremont, Huerfano and Las Animas Counties. Coal mining took place from the late 1860s until the 1930s, and in some cases into the 1950s. More than 7,500 homes have been built over mined lands and 25,000 residents could be affected. The federal government, which shares reclamation fees levied on current coal production with the states, has given Colorado a \$3 million grant to establish the Program. The money, invested in a trust fund, is designed to provide a self-sustaining fund to cover claims and help offset administrative costs. A private company is contracted to handle enrollment and program details. Over 1,000 participants are currently enrolled in the program. The division is also concerned with flooding as it relates to successful operation and reclamation of mining operations. The interaction of the mining and reclamation operations with surface drainage is considered during the review of mine permit applications, inspections of ongoing operations, and evaluation of final reclamation.

Colorado State Land Board

1313 Sherman St.
Denver, CO 80203
303.866.3454
<http://trustlands.state.co.us/>

The Colorado Board of Land Commissioners manages three million acres of surface land and four million acres of mineral rights that were given to Colorado at statehood by the federal government. State trust lands are leased for a variety of activities, including grazing, crop production, oil and gas production, mining, and recreation, such as hunting. The land board also leases some land in urban and urbanizing areas.

DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

4300 Cherry Creek Drive South
Denver, CO 80246
303.692.1000
<http://www.cdphe.state.co.us/cdphehom.asp>

Water Quality Control Division

4300 Cherry Creek Drive South
Denver, CO 80222-1530
303.692.3500
<http://www.cdphe.state.co.us/wq/wqhom.asp>

The Colorado Water Quality Control Division regulates the discharge of pollutants into the state's surface and ground waters and enforces the Primary Drinking Water Regulations. Protection and maintenance of water quality is achieved by issuing permits specifying the types and amounts of pollutants that may be discharged without violating the state water quality standards, providing grants and loans for wastewater treatment facility construction, certifying operators of water and wastewater facilities; and maintaining field surveillance monitoring efforts.

Hazardous Materials and Waste Management Division

4300 Cherry Creek Drive South
Denver, CO 80222-1530
303.692.3300
<http://www.cdphe.state.co.us/hm/hmhom.asp>

This division regulates solid waste management, treatment, and disposal facilities and hazardous waste generation, storage, transportation, treatment, and disposal. The Division assists in the cleanup of hazardous waste sites under the Superfund Program, and encourages "Brownfields" redevelopment through implementation of the Voluntary Cleanup and Redevelopment Act. The Division also provides technical assistance to the regulated community and to local agencies that must handle waste management issues and releases.

DEPARTMENT OF TRANSPORTATION

4201 E. Arkansas Avenue
Denver, CO 80222
303.757.9011
<http://www.dot.state.co.us/>

CDOT is very involved in hazard mitigation programs and projects. With regard to rockfall mitigation, CDOT was instrumental in the development of the [Colorado Rockfall Simulation Program-Version 4.0](#) with the School of Mines. Crews work to remove dangerous rocks along the state and federal highways. Control devices are put on rock walls to keep rocks from falling onto the highways. Falling rock signs are posted on highways. [Variable message signs](#) and [highway radio advisories](#) are used to warn motorists of dangerous road and weather conditions including blizzard conditions, rockfall potential, and road closures. CDOT uses different road closure devices including road closed signs, gates, and flashing lights to warn motorists that roads are closed due to adverse conditions.

The [avalanche management program](#) in CDOT involves three phases. The first phase involves training staff in awareness, survival and rescue techniques. Highway maintenance workers are the persons most exposed to the hazards of avalanches as they spend the most time underneath avalanche paths. They must be adequately trained to be aware of how and where avalanches occur. They must know how to survive an avalanche should they become involved in one and how to rescue others that may be buried in an avalanche. The second phase is in the "forecasting" of avalanche potential. Avalanches are not as simple as snow sliding off of a steep slope. Avalanches build up over time and can be seemingly unpredictable to the untrained observer. Snow can be very stable on mountain slopes one day and very unstable the next. Avalanche forecasters are employed to monitor snow conditions, issues hazard assessments, recommend road closures and recommend avalanche control operations when the snow is becoming unstable. It should be noted that you cannot make stable snow slide. It must become somewhat unstable for avalanche control operations to work. This is the job of the avalanche forecaster.

The third phase involves the active avalanche control operations. This phase involves the use of helicopters, avalanchers, artillery, and snowshoe routes for hand delivery to deliver explosives into the avalanche starting zones. With a proper avalanche forecasting program, it is possible to determine when the snow is becoming unstable, close the highways, ensure the backcountry is clear of people and animals and

delivers explosive charges designed to release the avalanche in a controlled fashion. Diversion structures are used to divert avalanches.

CDOT is also involved in the design and construction of highways throughout the state. For interstate highways, U.S. highways, and Colorado highways in urban areas, the 100-year flood is the design standard. For interstate highways outside of urban areas, the 50-year flood is the standard. For rural areas, design is based on the 25-year flood or less. What discharge is used depends on a benefit/cost analysis, which considers two major factors: interruption of highway service and safety to users during a flood event. In addition, the consequences of the 100-year flood are analyzed. All of the above enter into the design of bridges, culverts, and highways. When floods occur, photographs are taken and reports are filled out. The Hydraulic Unit signs off on all projects. They review any existing work by other agencies and perform any additional work necessary to design structures in the floodplain.

PERSONNEL & GENERAL SUPPORT SERVICES

Colorado State Bank Building
1600 Broadway, Suite #1030
Denver CO, 80202
303.866.6566
http://www.state.co.us/gov_dir/gss/gsscont.html

Office of Risk Management

1313 Sherman Street
Denver, CO 80203
303.866.3848
www.state.co.us/gov_dir/gss/hr/risk/riskindex.htm

The State Office of Risk Management provides insurance coverage for the state's buildings and contents, for boilers and machinery, for aircraft and employee fidelity. The state is self-insured for liability claims and workers' compensation. Risk Management loss control staff members work directly with state departments by providing numerous training and technical services. Other staff members provide insurance consulting services, supervise liability claim handling and related litigation, and issue certificates of insurance.

DEPARTMENT OF PUBLIC SAFETY

700 Kipling Street #1000
Denver CO 80215 USA
303.239.4400
<http://cdpsweb.state.co.us/>

Included within the DPS are the following: the Office of Preparedness and Security, the Colorado State Patrol, the Division of Fire Safety, and the Colorado

Bureau of Investigation. The [Colorado State Patrol](#) (CSP) is the Designated Emergency Response Authority (DERA) for federal, state, and county roads, outside of a municipal city limits. As a DERA, the CSP is responsible for providing the emergency response to a hazardous materials incident that occurs within a highway right-of-way. The CSP also provides assistance to other DERAs who are responsible for hazardous materials incidents elsewhere in the state, based on established mutual aid agreements. To fulfill its statutory obligation as DERA, the CSP has established 12 Hazardous Materials Enforcement and Response Teams in strategic locations throughout the state. The CSP response to incidents is for the purpose of mitigating the incident to reduce and/or prevent the potential negative effects of a hazardous materials incident on the public health and the environment. The CSP response includes the capability for a full "Level A" (fully encapsulated suit and self-contained breathing apparatus) entry into an incident scene that has been contaminated. The CSP is also responsible for "Incident Command" at highway related incidents. The CSP is not responsible for cleanup of a hazardous materials incident, only the supervision of the cleanup. The actual cleanup would normally be accomplished by a private environmental cleanup contractor, who is hired by the person or company responsible for the incident. The CSP's teams are also responsible for the enforcement of the state's hazardous materials laws, rules, and regulations, as they apply to transportation by highway. As such, they enforce the routing, permitting, and safe transportation of hazardous materials, including performing spot driver and vehicle inspections to determine compliance with established safety standards.

The [Office of Preparedness and Security](#) includes the following: the Division of Fire Safety, Anti-Terrorism Planning and Training, and Capitol/Executive Security. The [Division of Fire Safety](#) has several responsibilities, including life safety, occupant protection, and training and exercises. The Colorado Fire Suppression System Program began on January 1, 1991. It was created by Senate Bill 90-4, which was signed into law on May 18, 1990. The purpose of the Colorado Fire Suppression Program is to ensure that life safety systems, installed in commercial and residential occupancies, are installed and maintained properly, according to nationally recognized standards. [Anti-Terrorism Planning and Training](#) is responsible for risk and threat assessment, cyber terrorism, anti-terrorism planning, plan review and analysis, state/local coordination, information dissemination, and grant management. Among other duties, [Capitol/Executive Security](#) is responsible for security, critical infrastructure protection, continuity of government, and emergency response.