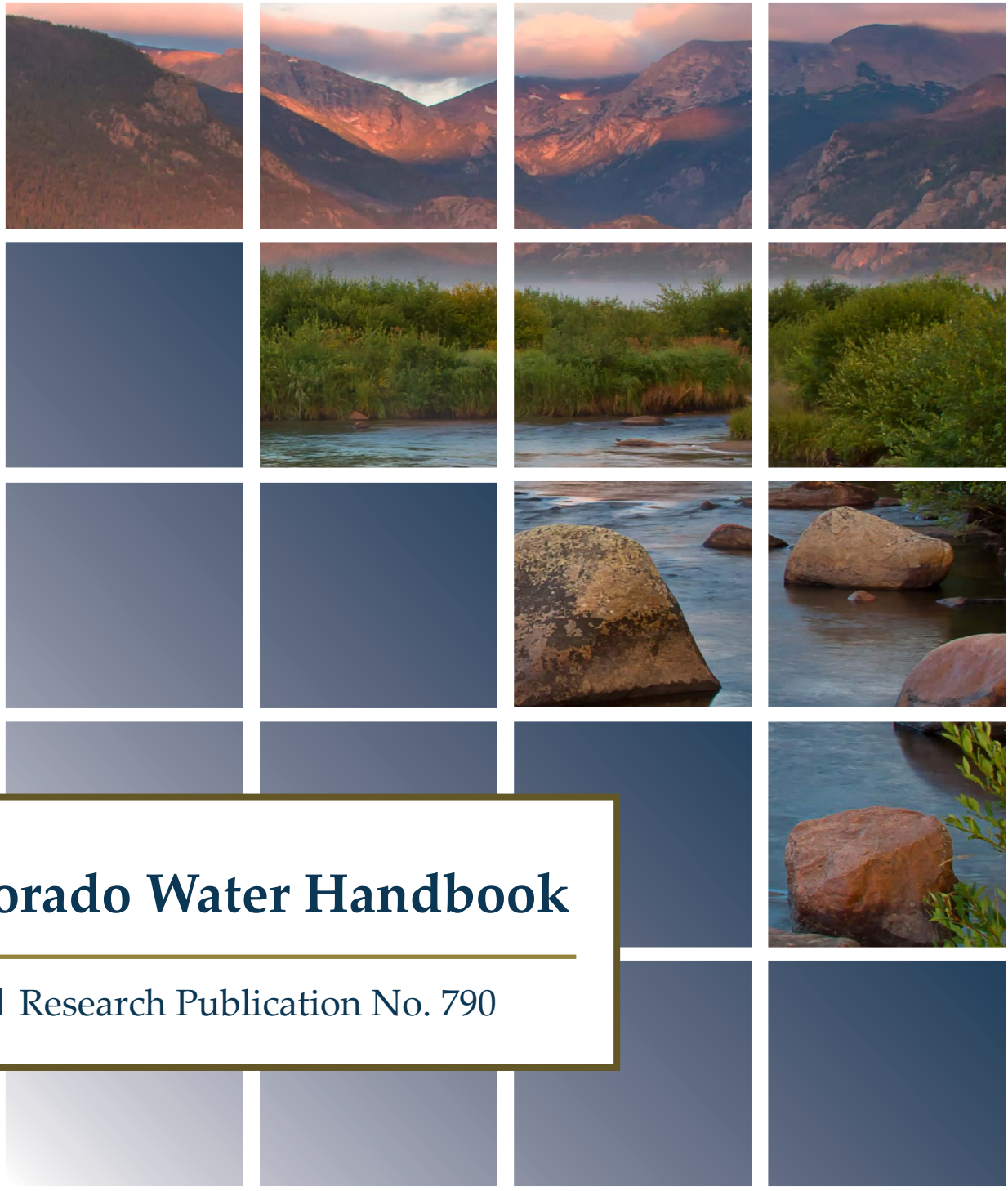

Colorado Water Handbook

2023 | Research Publication No. 790

Legislative Council Staff
Nonpartisan Services for Colorado's Legislature

A COLORADO LEGISLATIVE COUNCIL STAFF PUBLICATION

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Thank you to the former staff who contributed to previous versions of this report: David Beaujon, Meghan MacKillop, and Matt Becker.

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INTRODUCTION

The Legislative Council Staff's Water Policy Handbook is intended to serve as a reference guide to Colorado's water policies and programs. The book is divided into three parts. Each part covers a different aspect of Colorado water law and policy.

Part I discusses Colorado's hydrology and river basins. It is divided into three sections: where water exists in Colorado; ongoing drought issues; and a description of the different entities and districts that manage the river basins.

Part II discusses how Colorado water is funded, managed, and administered. The sections in this part describe the prior appropriation system, state and federal roles in water management, and how water is distributed amongst states that share a portion of the state's rivers.

Part III discusses current water issues in Colorado. These include water supply on the Colorado River, alternative transfer methods, and water speculation.

The handbook concludes with a glossary.

PART I: COLORADO HYDROLOGY AND RIVER BASINS

Section 1: Colorado's Rivers and Groundwater

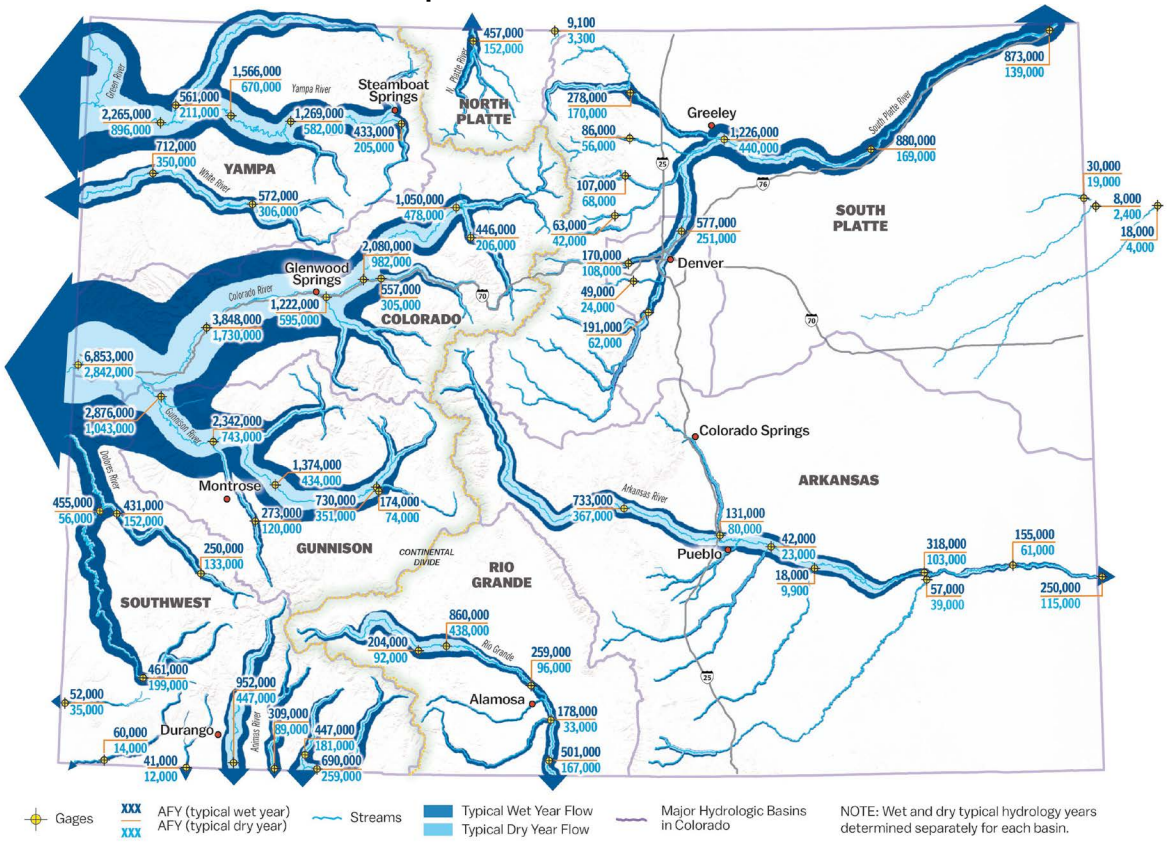
Headwaters State

Colorado is a headwaters state. The rivers that begin in the Rocky Mountains serve not just Colorado, but 18 other states and Mexico. The four rivers that originate in Colorado are the Arkansas, Colorado, Platte, and Rio Grande. Rivers are the primary water source for Coloradans. Of all the water in the state, 91 percent goes towards agriculture, 7 percent towards municipalities, and 2 percent towards large industry.[1] While approximately 80 percent of the combined surface and ground water exists west of the Continental Divide, nearly 90 percent of the state's population resides east of the Continental Divide. This creates a variety of water supply and management challenges for Colorado. Figure 1 shows the flows of the major rivers in Colorado.

The rivers are fed through a seasonal cycle. Snow arrives in the fall and accumulates throughout the high-country through late fall, winter, and early spring. By late spring, the snow begins to melt and create runoff, which is followed by rain in the summer. The water from snowmelt and rainfall flows into streams, lakes, and reservoirs. It also infiltrates soil and rock, recharging underground aquifers. The amount of water that follows this pattern varies year to year and from region to region.

Water that remains in Colorado has a variety of uses. Municipalities use it for drinking water and park irrigation. The agricultural industry uses it for irrigation and livestock watering. Large industry, like mining and oil, use it for their operations. Coloradans also enjoy water for recreation.

Figure 1
Map of the Rivers of Colorado



Source: Colorado Water Conservation Board.

1 Colorado Water Conservation Board data.

Management and Geography of Colorado's River Basins

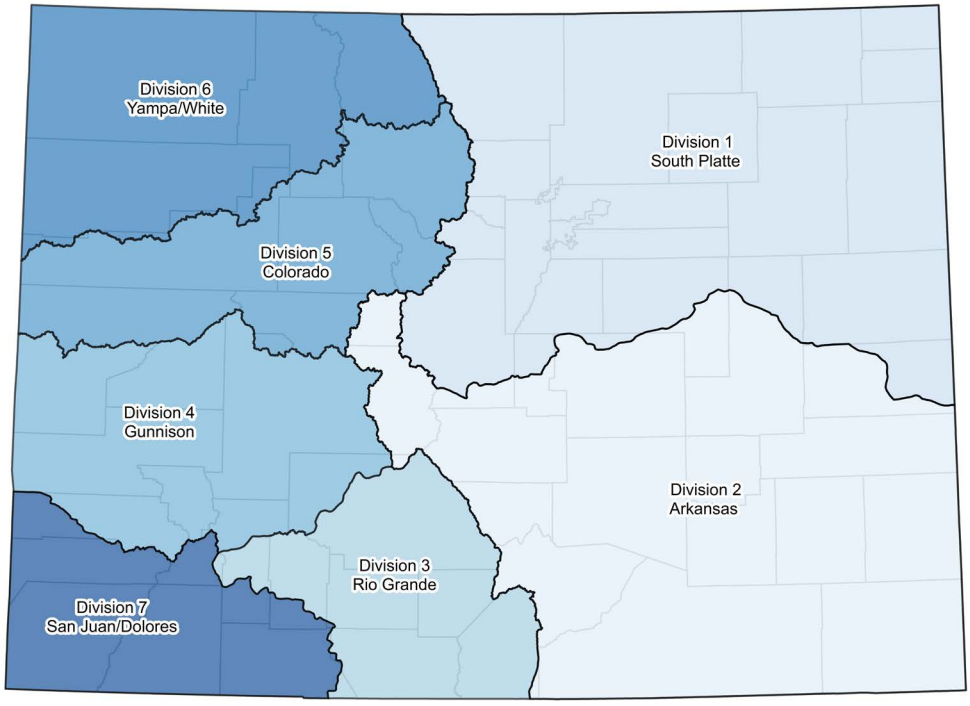
A river basin is a drainage basin, which is an area of land from which all the surface water drains to a specific point, in this case, the river. A river basin includes the tributaries (smaller rivers and streams) that flow into the river, and the watersheds from which those tributaries collect water.

Water Divisions

State law divides Colorado into seven water divisions as seen in Figure 2.[2] Each division office employs local water commissioners that implement the water rights priority system, enforce the decrees and water laws of Colorado, and report to the Office of the State Engineer. The divisions ensure compliance with interstate and interbasin agreements and monitor streamflows and reservoir levels. The divisions roughly correspond to the state's major river basins.

Colorado Water Divisions	
Division 1	South Platte
Division 2	Arkansas
Division 3	Rio Grande
Division 4	Gunnison/San Miguel/Lower Dolores
Division 5	Colorado
Division 6	Yampa/White/North Platte
Division 7	San Juan/Animas/Upper Dolores

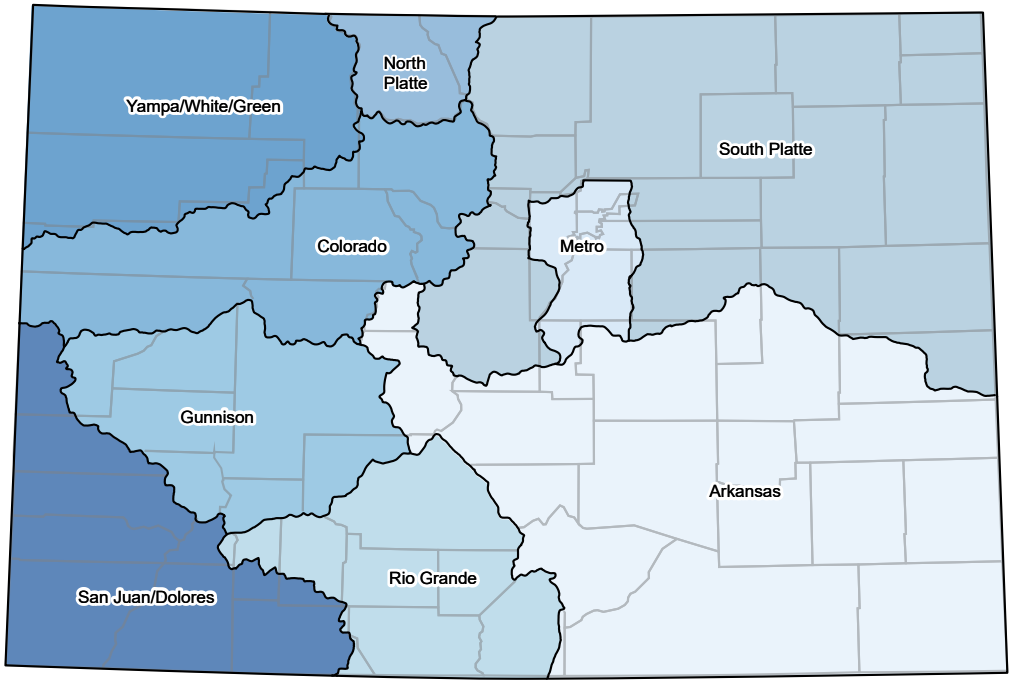
Figure 2
Map of Colorado Water Divisions



Map prepared by Legislative Council Staff, data sourced from Colorado Division of Water Resources.

2 Section 37-92-201, C.R.S.

Figure 3
Map of Colorado's Nine Basin Roundtables



Map prepared by Legislative Council Staff, data sourced from Colorado Water Conservation Board.

Basin Roundtables

Nine basin roundtables were established by the Colorado Water for the 21st Century Act in 2005.[3] The roundtables help assess the needs of each river basin and work with other roundtables to address interbasin water issues. Each of the major river basins, plus the Denver Metropolitan Area, are represented.

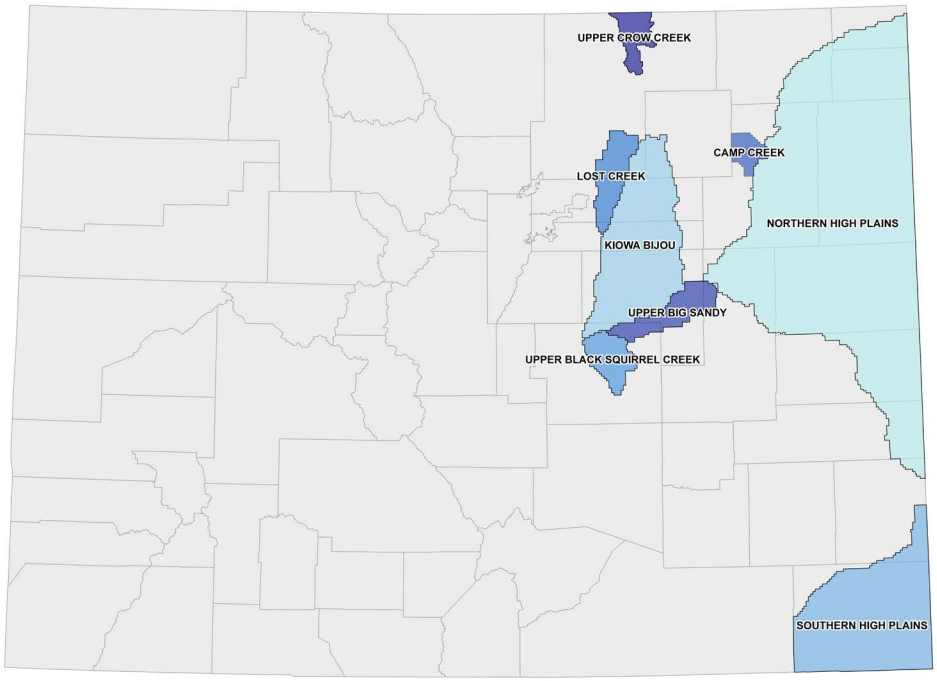
Roundtable members are appointed to five-year terms and represent counties, cities, and water districts within the basin. In addition to the other appointed members, the chairs of the House Agriculture, Livestock, and Water Committee and the Senate Agriculture and Natural Resources Committee appoint by mutual agreement one member to each basin roundtable. [4]

State law requires each roundtable to develop a basin-wide consumptive and nonconsumptive water supply needs assessment, analyze available unappropriated waters within the basin, and propose projects or methods for meeting those needs and utilizing the unappropriated waters where appropriate. Representatives from each roundtable also participate in the Interbasin Compact Committee,[5] which works with the Colorado Water Conservation Board (CWCB) on water planning and project funding and reports annually to the General Assembly.

> **"Nearly 80 percent of Colorado's combined surface and ground water exists on the West Slope, while about 90 percent of the state's population lives on the East Slope.**

3 Section 37, Article 75, C.R.S.
4 Section 37-75-104, C.R.S.
5 Section 37-75-105, C.R.S.

Figure 4
Map of Colorado's Designated Groundwater Basins



Map prepared by Legislative Council Staff, data sourced from Colorado Division of Water Resources.

Transbasin Diversions

Nearly 80 percent of Colorado's combined surface and ground water exists on the West Slope, while about 90 percent of the state's population lives on the East Slope. To meet the growing water demands, the entire state has had to rely heavily on the Colorado River Basin through transbasin diversions. These transbasin, or transmountain, diversions divert water from one river basin to another. These types of diversions date back to the 1880s with Ewing Ditch, which still operates in its original form, moving water from the Colorado River Basin to the Arkansas River Basin. Today, 44 transbasin diversions move more than 1.6 million acre feet (MAF) from one basin to another. Most of these diversions move water from the West Slope to the East Slope.

Colorado Groundwater

According to Water Education Colorado, roughly 11 percent of Colorado's population relies on groundwater for its water supply. Groundwater exists in empty spaces in the soil, sand, and rocks underground. Colorado currently has more than 284,000 groundwater wells, which are primarily used for household or domestic use. Approximately 86 percent of Colorado's total groundwater is used for agriculture. While groundwater can be found almost everywhere, the quality and the depth vary greatly across the state.[6]

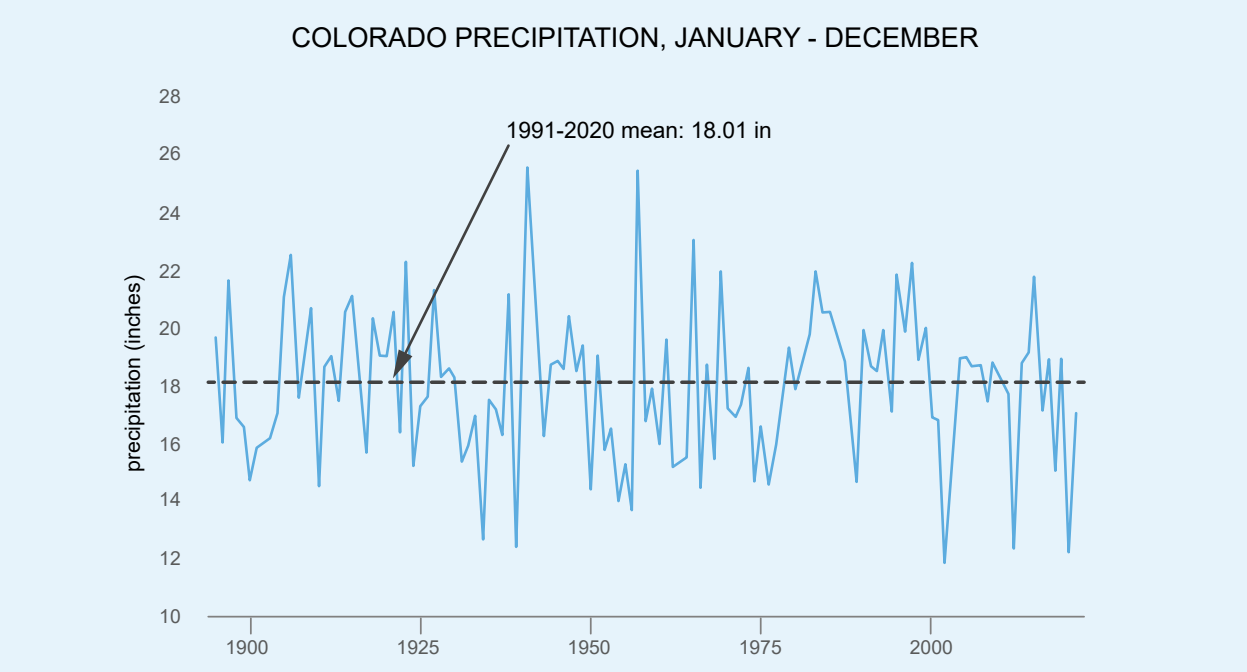
Administration of Groundwater

Colorado law has four statutory groundwater definitions:

- tributary – groundwater that is connected to a natural stream system;
- nontributary – groundwater that is disconnected from surface water, which when pumped, will not deplete the flow of a natural stream within 100 continuous years of withdrawal;
- not-nontributary – groundwater specific to the Denver Basin, which when pumped, will deplete the flow of a natural stream within 100 continuous years of withdrawal; and
- designated – groundwater that is required for the fulfillment of decreed surface rights.[7]

6 Citizen's Guide to Colorado Groundwater. Water Education Colorado.
7 Section 37-90-103, C.R.S.

Figure 5
Annual Precipitation in Colorado: 1991-2020



Source: Colorado Climate Center, Colorado State University.

All groundwater in Colorado is assumed to be tributary until determined otherwise by water court, a well permit is issued, or as determined by rule. State law creates eight designated groundwater basins to regulate nontributary groundwater. The Colorado Ground Water Commission determines whether the groundwater in each basin is required for the fulfillment of decreed surface rights or is in an area not adjacent to a stream.[8]

> **One acre foot is the amount of water needed to flood an acre of land to a depth of one foot.**

Section 2: Water in a Semi-Arid Climate

Precipitation and Water Supply Challenges

Colorado's geography poses a number of challenges to a consistent water supply, including a lack of precipitation, a reliance on snowmelt, and a population largely separated from its water sources by the Continental Divide. Statewide, precipitation averages 18.0 inches per year according to the National Oceanic and Atmospheric Administration (NOAA), but the state experiences extended droughts, and annual averages have ranged from a low of 11.9 inches in 2002 to a high of 25.5 inches in 1941. Annual precipitation also varies widely throughout the state, with large areas receiving less than 10 inches per year.

In an average year, approximately 16 MAF of water flows in Colorado's rivers. One acre foot is the amount of water needed to flood an acre of land to a depth of one foot. It is the equivalent of 325,851 gallons. Because most of the state's river water comes from snow in the mountains, most of the annual stream flow occurs during the three-month spring run-off, from May through July.

8 Section 37-90-106, C.R.S.

Drought and Aridification

Colorado frequently experiences droughts, where precipitation is low over short or long periods. As depicted in Figures 6 and 7, different areas of the state can be impacted by drought at different times. According to NOAA's U.S. Drought Monitor, three of Colorado's worst droughts occurred in 2002, 2012, and 2018. Research has found that the Colorado River Basin since 2000 has experienced its driest period in 1,200 years.[9]

While drought focuses on the lack of precipitation, temperatures in Colorado have also warmed in recent years, which drives a more permanent aridification of the state. Overall, the state has warmed about 2°F in the last 30 years. The Colorado Water Plan notes the impacts of these temperature trends, including greater evapotranspiration, earlier snowmelt and peak runoff, increased heat waves, more intense droughts, drier soils, and more frequent and severe wildfires.

The Need to Store Water

To manage Colorado's inconsistent water supply, the state is home to over 2,000 dams and reservoirs. Combined, these reservoirs can hold over 7.5 MAF of water, allowing water users to store water from the spring run-off and distribute it throughout the year.[10] Most of the dams creating reservoirs were built and are still operated by the federal Bureau of Reclamation. Some reservoirs can generate electricity and are used to regulate river flows. Water in reservoirs is used for municipal, industrial, and agricultural irrigation purposes. In addition, the water helps to maintain wildlife and fish habitats and meet interstate water delivery obligations. Figure 8 shows the storage capacity of the ten largest reservoirs in the state.

Figure 6
Drought in Colorado
January 25, 2000

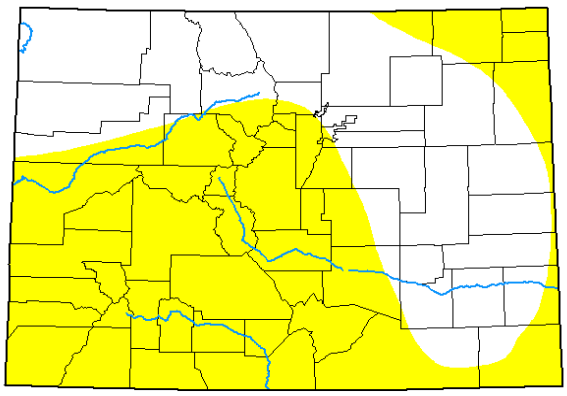
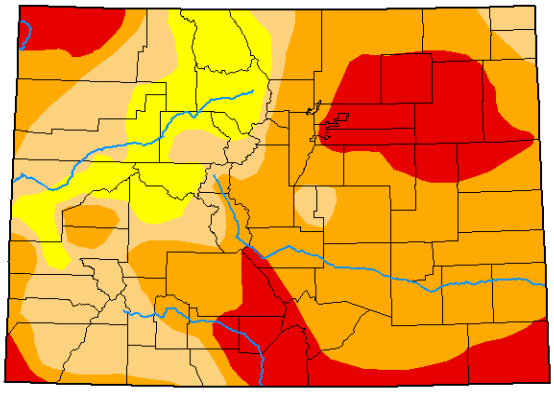
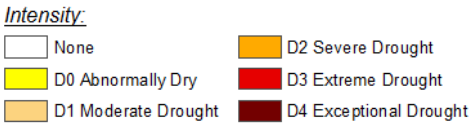


Figure 7
Drought in Colorado
January 25, 2022



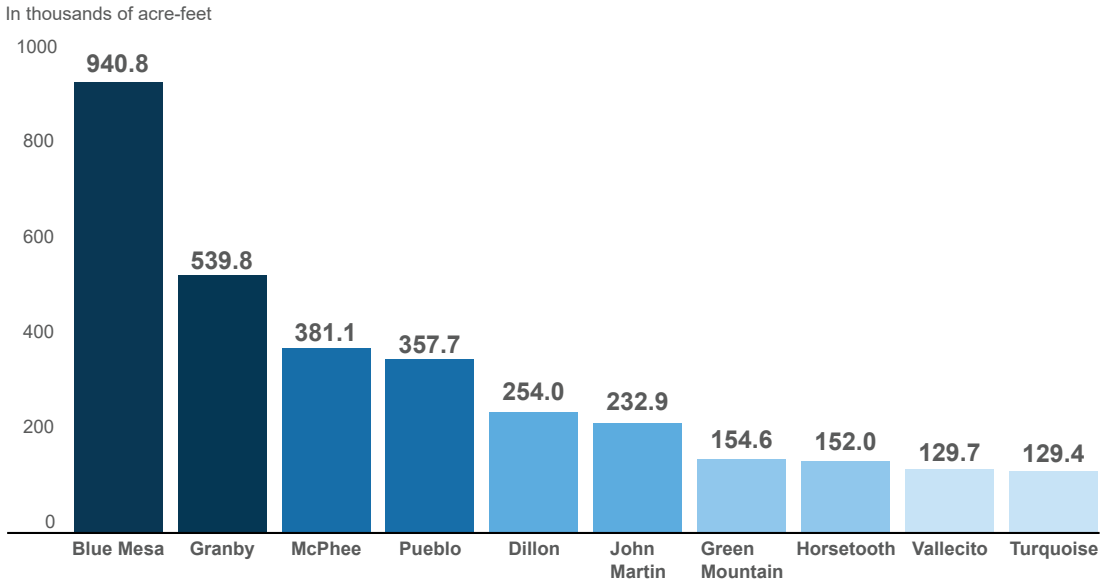


Source: Maps and data from U.S. Drought Monitor, National Drought Mitigation Center

9 Williams, A.P., Cook, B.I. & Smerdon, J.E. Rapid intensification of the emerging southwestern North American megadrought in 2020–2021. Nat. Clim. Chang. 12, 232–234 (2022). https://doi.org/10.1038/s41558-022-01290-z. Cited in the Colorado Water Plan 2023 Draft.

10 Williams, A.P., Cook, B.I. & Smerdon, J.E. Rapid intensification of the emerging southwestern North American megadrought in 2020–2021. Nat. Clim. Chang. 12, 232–234 (2022). https://doi.org/10.1038/s41558-022-01290-z. Cited in the Colorado Water Plan 2023 Draft.

Figure 8
Colorado's Ten Largest Reservoirs



Source: Water Education Colorado.

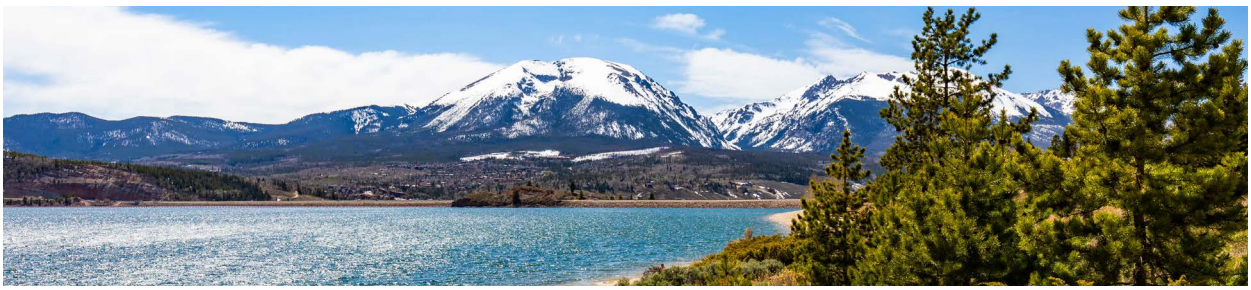
Section 3: Water Providers

Most residents and businesses in Colorado receive water from a local public water provider. Colorado law enables a variety of local governmental entities to acquire water rights and finance water supply projects. These include municipal and county water utilities, as well as conservancy districts, conservation districts, special districts, water authorities, and water activity enterprises.

Conservancy and Conservation Districts

Water Conservancy Districts

The Water Conservancy Act provides a mechanism for local communities to form water conservancy districts to finance dams, tunnels, and other water projects that provide water for irrigation, mining, domestic, and other beneficial uses. Colorado currently has 52 water conservancy districts, including the Northern Colorado Water Conservancy District and the Southeastern Colorado Water Conservancy District, which own and operate some of Colorado's largest projects. Water conservancy districts that transfer water from the Colorado River Basin to another basin in Colorado may not impair or increase the costs of water for users in the Colorado River Basin. Several water storage projects in the Colorado River Basin were constructed to provide water to the basin and offset the impacts of water diversions to eastern Colorado communities. For example, Green Mountain Reservoir in Summit County was built to help offset the impacts to the Colorado River Basin from the Colorado-Big Thompson Project — Colorado's largest transbasin diversion project.



Dillon Lake Reservoir

Water Conservation Districts

Water conservation districts are formed in state statute to address water supply issues in a specific area. The legislature has created four water conservation districts:

- the Colorado River Water Conservation District was formed in 1937 to develop the water resources of the Colorado River and its tributaries that define the district's boundaries;
- the Southwestern Colorado Water Conservation District was formed in 1941 to develop the water resources of the San Juan and Dolores Rivers and their tributaries that define the district's boundaries;
- the Rio Grande Water Conservation District was formed in 1967 to develop the water resources of the Rio Grande River and its tributaries that define the district's boundaries; and
- the Republican River Water Conservation District was formed in 2004 to help Colorado comply with its water delivery obligations under the Republican River Compact by reducing water depletions in the basin.

The four water conservation districts were created to promote the conservation, use, and development of waters within the district and to ensure that Colorado receives an equitable share of its rivers. Water conservation districts are primarily project planning and development entities, while conservancy districts are primarily responsible for the construction and operation of water projects.

Other Districts and Entities

Special Districts that Provide Water

Water districts are special districts that supply water for domestic and other public and private purposes and provide related reservoirs, treatment facilities, and other equipment. Water and sanitation districts provide water for domestic and other purposes, as well as sewage, drainage, and water treatment facilities. State law provides additional powers to water and sanitation districts, including the authority to compel property owners to connect to the district's services.

Rocky Mountain National Park

Metropolitan Districts

Metropolitan districts are special districts that provide two or more of the following services: fire protection; transportation; parks and recreation; solid waste disposal; water; and sanitation services.

Water Authorities

State law encourages governmental entities to make the most efficient and effective use of their powers and responsibilities by cooperating and contracting with other governments.

Municipal and County Water Providers

Municipalities and counties in Colorado operate some of the state's largest water supply projects. Municipalities may acquire and operate water facilities and provide water services within and outside municipal boundaries.

Water Activity Enterprises

In 1993, the General Assembly enacted a law to allow the formation of government-owned water activity enterprises and to clarify how the Taxpayer's Bill of Rights applies to these entities. Any state or local government entity that has the authority to conduct water activities may form a water activity enterprise, including water conservancy districts, water conservation districts, and special districts. Each water activity enterprise must be wholly owned by a single state or local governmental entity and may not be combined with any water activity enterprise owned by another district.

PART II: HOW COLORADO MANAGES ITS WATER

Section 1: Prior Appropriation and Water Rights

Colorado's water use is governed by the prior appropriation system. This "first in time, first in right" system determines who uses how much water, the types of uses allowed, and when the water can be used.

First in Time, First in Right

According to the Colorado Constitution, all water is a resource owned by the public. Water rights are created by using water for a legally determined, beneficial use, such as irrigation. Over 150,000 water rights are currently owned by farmers, municipalities, industrial facilities, and other water users in Colorado. In general, in order for a new water right to be created a potential new water user must first go to water court to determine if water may be removed from the stream without injuring existing water rights. If approved, a water judge sets a priority for the right to use a specific amount of water, the location of the diversion, the purpose, and if necessary, any conditions to protect senior water rights. The earlier the date of the appropriation, the more "senior" the water right and the more valuable it is. Some of Colorado's most senior water rights date back to the 1850s. Court recognition of a water right enables the owner to make a "call" during water shortages. Once a valid call has been made, water use by junior water rights must be curtailed until the senior water right has been satisfied. Historically, however, early water right decrees were awarded in excess of the amount needed, so there is an understanding that no more water may be diverted than is actually needed for beneficial use.

Types of Water Rights

Water rights may be obtained for a number of legally recognized beneficial uses. Agricultural, domestic, and mining are the oldest types of legally recognized uses. Others include power generation, snow making, stock watering, fire protection, and dust suppression. In 1973, Colorado recognized the preservation and improvement of natural habitat as a non-diversionary water right, called instream flow water rights. These rights are held solely by the Colorado Water Conservation Board. More recently, water for recreational benefit, called a recreational in-channel diversion (RICD), was recognized as an official water right. A RICD is held by a local government entity for structures that control the flow of water for rafting and kayaking.

RICD at Buena Vista Whitewater Park.

Water Court

In 1969, the Water Rights Determination and Administration Act created the seven water divisions. Each water division has its own water judge appointed by the Colorado Supreme Court, a water referee appointed by the water judge, and a water clerk assigned by the district court. Water judges have jurisdiction in the determination of water rights, the use and administration of water, and all other water matters within the water division.[11]

11 Colorado Judicial Branch, Water Courts

Section 2: Funding and Administration of Colorado's Water

Water in Colorado is funded through the state budget and managed primarily through the Colorado Department of Public Health and Environment (CDPHE) and the Department of Natural Resources (DNR). The Colorado Department of Agriculture (CDA) occasionally receives appropriations from the state, but it primarily works as a partner with CDPHE or DNR to utilize water-related funds. In addition, the Colorado Water Resources and Power Development Authority finances water supply and water quality projects. During the 2022 session, the General Assembly appropriated about $119 million for water administration, projects, and management.

Department of Natural Resources

The DNR is made up of seven divisions, two of which have a role in managing Colorado's water resources. The Division of Water Resources (DWR) and the Colorado Water Conservation Board (CWCB) receive a combination of General Fund, cash fund, and federal fund dollars through the Long Bill.

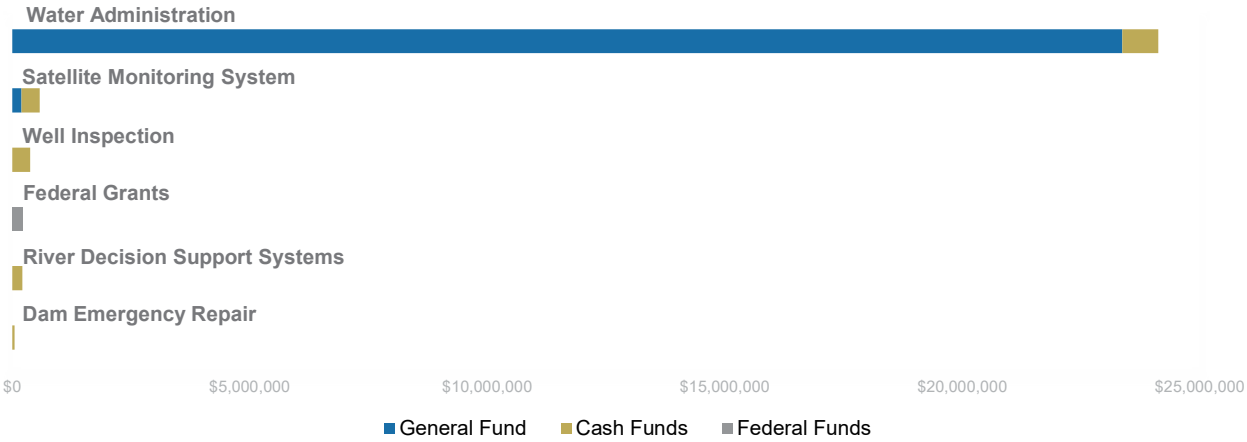
Division of Water Resources

The DWR, otherwise known as the Office of the State Engineer, is responsible for the administration of water resources, including over 170,000 intrastate surface and groundwater rights. The State Engineer also ensures compliance with the nine interstate compact agreements, issues well permits, monitors and distributes water based on priority, and ensures dam safety. Across the state, the DWR consults with water suppliers and conservation districts, and collects and preserves current and historic water records. Table 1 shows the disbursement of funding within DWR.

Colorado Water Conservation Board

According to statute, the 15-member CWCB Board of Directors is tasked with promoting the conservation of waters in the state to secure the greatest utilization of these waters and to prevent floods.[12] CWCB is almost entirely funded through cash funds, with a small amount of money coming from federal funds. The two largest cash funds are the CWCB Construction Fund and the Severance Tax Perpetual Base Fund, which are used to provide loans and grants to increase the beneficial consumptive use of Colorado's water. Grants and loans through these funds are focused on the protection of water resources, water conservation, flood mitigation, stream restoration, drought planning, and the implementation of the Colorado Water Plan. Special bills passed by the legislature are also a significant source of funding for the CWCB.[13]

Table 1
Division of Water Resources Funding



Data source: Colorado State Budget FY22-23. Visualization prepared by Legislative Council Staff.

12 Section 37-60-106 & 37-60-104(1), C.R.S.
13 Joint Budget Committee Staff Figure Setting FY2022-23, Department of Natural Resources.

Table 2 shows how funding is distributed based on the FY 2022-23 state budget.

The CWCB runs several grant and loan programs, which include the following:

- Water Project Loan Program;
- Colorado Water Plan Grants;
- Water Supply Reserve Fund Grants;
- Colorado Healthy Rivers Grants;
- Weather Modification Program Grants;
- Non Reimbursable Project Investment Grants;
- Technical Assistance for Federal Cost-Share Programs;
- Public Education, Participation, and Outreach Grants;
- Turf Replacement Program;
- Agricultural Emergency Drought Response; and
- Federal Technical Assistance Grants.

More information about individual programs, including the application process, requirements, and funding amounts, can be found on the CWCB website.

Colorado Department of Public Health and Environment

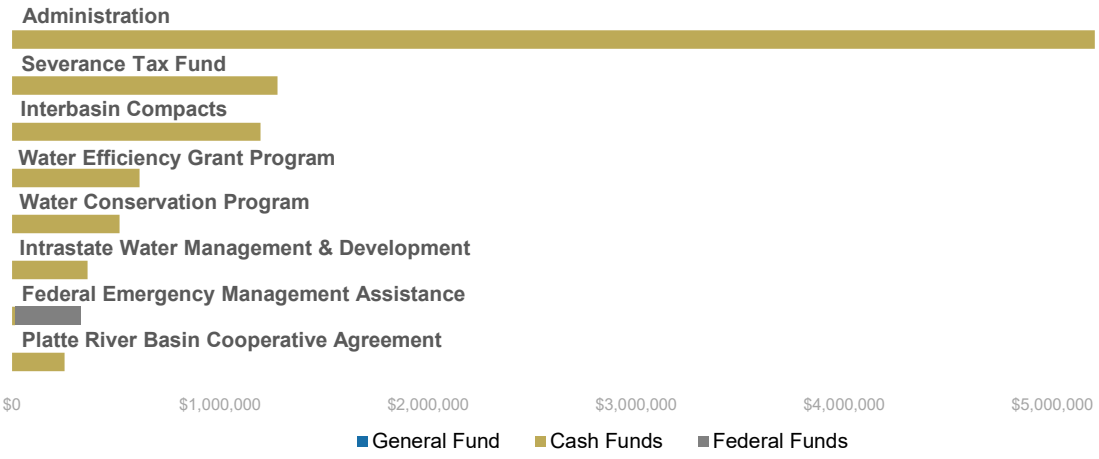
The Colorado Department of Public Health and Environment (CDPHE) is made up of ten divisions that focus on: providing information; disease control; air pollution; water quality; hazardous materials; HIV; environmental health; prevention services; and health facilities. The Water Quality Control Division (WQCD), a division of CDPHE, receives funding from the General Fund, cash funds, and federal funds.

Water Quality Control Commission

The Water Quality Control Commission (WQCC) is the administrative agency responsible for developing water quality policies. These policies implement a broader set of policies determined by the General Assembly in the Colorado Water Quality Control Act. The WQCC is comprised of nine commissioners appointed by the Governor and approved by the Senate, to adopt water quality classifications and standards for surface and groundwater and determine regulations for achieving compliance.[14]

All surface water in the state, except for water in ditches and man-made conveyance structures, is classified by the WQCC into the following categories: recreation; agriculture; aquatic life; domestic water supply; and wetlands. Rivers and streams are segmented for classification and

Table 2
Colorado Water Conservation Board Funding



Data source: Colorado State Budget FY22-23. Visualization prepared by Legislative Council Staff

14 Section 25-8-201 & 202, C.R.S.

quality standards purposes. For each classification segment, numeric water quality standards are adopted. These classifications and standards are reevaluated every three years and submitted to the EPA for approval. The classifications and standards are used to set effluent limits in discharge permits and for other water quality management planning, such as nonprofit source control activities, watershed planning initiatives, and the development of Total Maximum Daily Loads (TMDLs). Water quality permits specify the levels of contaminants, such as bacteria, metals, and chemicals, that can be charged by a certain entity. Violations of any standards must be reported to the EPA.

Water Quality Control Division

The Water Quality Control Division (WQCD) monitors and reports the quality of state waters to prevent pollution and enhance the quality of surface and groundwater. The division inspects water systems, issues permits, ensures compliance, and takes action against any entity that violates state or federal regulations. The WQCD is made up of the following four subdivisions:

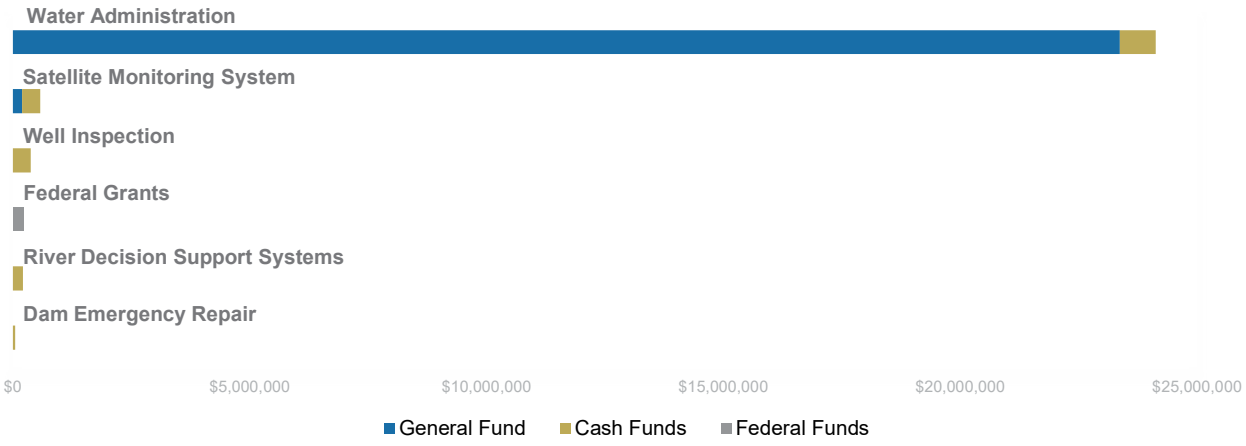
- Administration – provides management and support for the Water Quality Control Commission and is funded through the General Fund, Water Quality Control Fund, Drinking Water Fund, and federal funds;
- Clean Water Sectors – issues discharge permits, monitors permit compliance, conducts inspections, provides technical assistance, and pursues enforcement action within the five industry sectors. Funding comes from the General Fund, the Water Quality Control Fund, and federal funds;
- Clean Water Program – funds grants and contracts to local governments for the Non-Point Source Program and the Water Quality Improvement Program. Funding comes from the General Fund, the Water Quality Improvement Fund, reappropriated funds from the Department of Agriculture, and federal funds;
- Drinking Water Program – established under the Safe Drinking Water Act, ensures that public water systems provide safe drinking water for the state. Funding comes from the General Fund, the Drinking Water Cash Fund, and federal funds.

These four subdivisions partner with utilities, counties, and other agencies to ensure quality drinking water for Colorado. Table 3 shows the disbursement of the different types of funds that are appropriated to the different sectors and programs within the WQCD.

Colorado Department of Agriculture

The Colorado Department of Agriculture (CDA) receives funding for the Agricultural Water Quality Program, which protects state waters and the environment from the improper use of agricultural chemicals. Colorado State University Extension and CDPHE work together

Table 3
Water Quality Control Division Funding



Data source: Colorado State Budget FY22-23. Visualization prepared by Legislative Council Staff.

with CDA to administer the program. In 2021, the department requested a one-time expenditure of $385,000 from the Plant Control and Environmental Protection Cash fund to expand the groundwater well monitoring network in the San Luis Valley in partnership with CDPHE. In the past, CDA has also received a one-time stimulus funds for drought response and other funds from CWCB for various projects.[15]

Colorado Water Resources and Power Development Authority

The Colorado Water Resources and Power Development Authority (authority) is an independent public entity created by the General Assembly in 1981 to finance water supply and water quality projects. The authority may issue revenue bonds as a debt of the authority, which does not obligate the state or any political subdivision. The authority is governed by a nine-member board appointed by the Governor and confirmed by the Senate. The board is comprised of representatives from each of the state's nine major river basins and must include members with experience in each of the following areas: water project financing; engineering aspects of water projects; planning and developing water projects; public health issues related to drinking water or water quality matters; and water law. The authority has provided over 700 different low-interest loans, totaling over $2.9 billion, to governmental entities in Colorado for water pollution control and drinking water projects through the state revolving funds created under the Clean Water Act and the Safe Drinking Water Act. Each year, the General Assembly approves a list of projects that are eligible to receive these funds.

Section 3: The Colorado Water Plan

In 2013, Governor Hickenlooper issued an executive order that directed the CWCB to prepare the Colorado Water Plan (CWP). According to the order, the plan must promote a productive economy that supports vibrant and sustainable cities, viable and productive agriculture, and a robust skiing, recreation, and tourism industry. It must also incorporate an efficient and effective water infrastructure that promotes smart land use and a strong environment, and includes healthy watersheds, rivers and streams, and wildlife.

15 Joint Budget Committee Staff Figure Setting FY2022-23, Department of Agriculture.

2023 Water Plan Update

An update to the CWP is currently underway, and is set to be released in early 2023. The 2023 update will focus on four major areas, including vibrant communities, robust agriculture, thriving watersheds, and resilient planning. The current draft is available from the CWCB.

CWP Grants

The CWP provides grants to various entities to assist with making progress toward the goals laid out in the plan. The grant funding categories include:

- water storage and supply;
- water sharing agreements;
- conservation and land use planning;
- engagement and innovation;
- agricultural projects; and
- watershed health and recreation projects.

Water Plan Implementation Cash Fund

The Water Plan Implementation Cash Fund (fund) receives funding from sports betting and other appropriations or transfers made by the General Assembly. The fund may be used for water plan grants and expenditures to ensure compliance with interstate water allocation compacts, equitable apportion decrees, international treaties, and federal laws. The fund requires an annual appropriation.

House Bill 21-1260 appropriated $15.0 million from the General Fund to the Water Implementation Cash Fund and $5.0 million to the Water Supply Reserve Fund. The Water Supply Reserve Fund is administered by the CWCB in collaboration with the Interbasin Compact Committee and the nine basin roundtables. The funding is continuously appropriated and provides grants and loans to assist water users in addressing water supply issues. The $20 million appropriation to these two funds will be used to implement the newest update to the CWP. The bill also directs the CWCB to establish criteria for the Water Plan Implementation Grant Program that requires matching funds of at least 25 percent, but the CWCB may award grants in 2021 and 2022 with reduced matching fund requirements.

Section 4: Water Issues in the General Assembly

The General Assembly has several committees that address water issues. The committees of reference hear water-related bills and receive updates from water experts in Colorado. The interim committee hears from policy experts, attends field trips, and requests bills to address water issues in the state.

Committees of Reference

The Joint Rules of the House and Senate require the House Agriculture, Livestock, and Water Committee and the Senate Agriculture and Natural Resources Committee to stay advised of the activities, functions, problems, new developments, and budget of the Colorado Department of Natural Resources, which includes the Division of Water Resources and the Colorado Water Conservation Board. These committees also consider water-related bills during the legislative session. The Joint Rules also require the Senate Health and Human Services Committee and the House Energy and Environment Committee to stay advised of the activities, functions, problems, new developments, and budget of the Colorado Department of Public Health and Environment, which includes the Water Quality Control Commission and the Water Quality Control Division.

Interim Committee

The recently renamed Water Resources and Agriculture Review Committee (WRARC) is a ten-person committee that meets during the interim. It is statutorily charged with reviewing water issues and proposing legislation related to the conservation, use, development, and financing of Colorado's water resources and agriculture. The committee may meet up to six times during even-numbered years and eight times during odd-numbered years, but no more than two times during the legislative session. It is authorized to take up to two field trips per year. During each interim, the committee may introduce up to three bills unless two-thirds of the committee members vote to approve more bills, up to a maximum of ten. Committee members serve for two-year terms. In odd-numbered years, the Senate President selects the committee chair, and the Speaker of the House of Representatives selects the vice-chair. The opposite occurs in even-numbered years. Members are appointed according to the following criteria:

- five members of the Senate, with three appointed by the President and two appointed by the Senate Minority Leader;
- five members of the House who are appointed by the Speaker in consultation with the House Minority Leader;
- at least four members must reside west of the Continental Divide, or represent a legislative district where a majority of its population resides west of the Continental Divide; and
- members should represent each of the seven water divisions to the extent possible.[16]

Section 5: Federal Role in Water Management

Clean Water Act

The Clean Water Act (CWA) establishes the basic requirements for regulating the discharge of pollutants and quality standards for surface waters. The CWA prohibits the discharge of pollutants from a point source, such as pipes and ditches, into the Waters of the United States (WOTUS) without a National Pollutant Discharge Elimination System (NPDES) permit. The Environmental Protection Agency's (EPA) NPDES permit program limits how much is allowed to be discharged and contains monitoring and permitting requirements and other provisions to ensure that discharge does not negatively impact water quality or people's health. Industrial, municipal, and other facilities must obtain permits if their discharges go directly into surface waters. Federal law allows states to administer the NPDES permitting program, including issuing and enforcing stormwater permits. States may impose stricter regulations than federal regulations, but may not impose less restrictive regulations or exempt activities that would otherwise be regulated by federal law. In 1974, the EPA delegated the authority to administer the NPDES to Colorado.

16 Section 37-98-102, C.R.S.

Waters of the United States

Waters of the United States (WOTUS) establishes the scope of federal jurisdiction over water quality in states under the Clean Waters Act. The Clean Waters Act does not define "waters of the United States." Instead, it provides the EPA and U.S. Army Corp of Engineers the ability to define "waters of the United States" in regulations.

The definition of WOTUS has changed over the last few years. In 2020, the EPA published a revised WOTUS definition and Navigable Waters Protection Rule (NWPR) that substantially reduced federal protections from the previous 2015 rule. According to CDPHE, approximately 25 to 50 percent of Colorado streams, lakes, and wetlands could have been impacted by the revised rules. [17]

In the summer of 2021, the EPA and the Army Corp of Engineers announced their intent to initiate new rulemaking to restore the protections that were in place prior to the 2020 NWPR and to develop new rules for defining WOTUS. On November 18, 2021, the EPA and Army Corp of Engineers announced the signing of a proposed rule to revise the definition of WOTUS. The proposal put the pre-2015 definition of WOTUS back into place with updates to reflect recent U.S. Supreme Court decisions. More information about the current WOTUS definition is available from the EPA.

Section 6: Colorado Water Delivery Obligations

Colorado is a party to two international treaties, one interstate agreement, two U.S. Supreme Court decrees, and nine interstate compacts. These determine how much water is allowed to flow into and out of the state. Colorado, also known as a headwaters state, is home to the headwaters of several major river systems, including the Arkansas, Colorado, Platte, and Rio Grande. All of these water systems are vital to Colorado, as well as downstream states. Three methods, all stemming from powers granted by the U.S. Constitution, govern how states are permitted to solve water supply issues:

- direct legislation by Congress;
- a suit brought by one state against another in the U.S. Supreme Court; or
- a compact between states that is approved, when necessary, by Congress.

How, when, and where water is delivered across states has long been a source of controversy between Colorado and the 18 other states, as well as Mexico and tribal nations, that all rely on the water that originates in Colorado. Over the last century, the U.S. Supreme Court has heard many cases involving compact compliance. The negotiations, lawsuits, and disagreements have all played a role in informing the current state of interstate water compacts in Colorado.

Colorado Interstate Water Compacts

An interstate compact is an agreement between two or more states that has been approved by their respective state legislatures and Congress. Specifically, a water compact sets the terms for sharing the waters of an interstate water system. Figure 8 shows the seven basins that are governed by interstate compacts involving Colorado.

Colorado River Compact

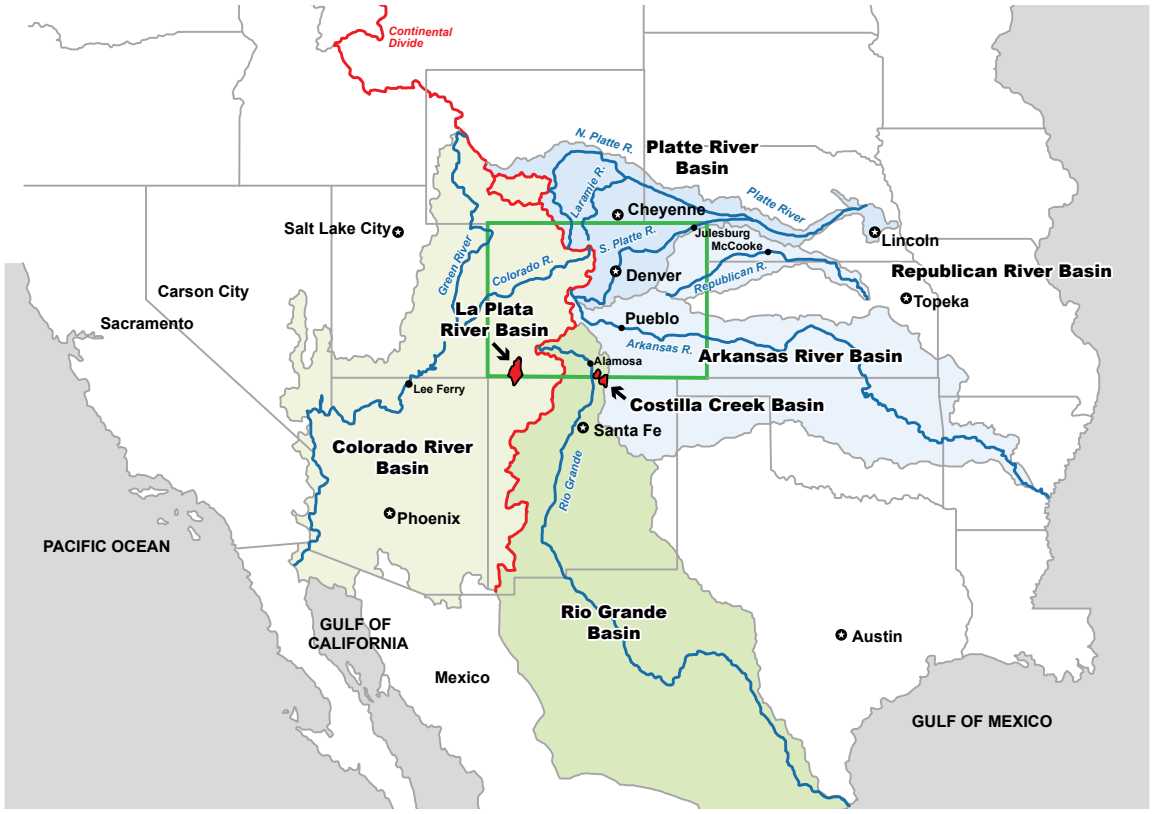
The first of its kind in Colorado, the Colorado River Compact came out of several water battles that Colorado faced in the early 1900s. In 1922, under President Hoover, interstate and federal negotiations led to the planning and eventual damming of Lake Powell (using the Glen Canyon Dam) and Lake Mead (using the Hoover Dam).

The compact required that the upper basin states not deplete the cumulative flow to the lower basin states below 75 million acre feet (MAF) at Lee Ferry, Arizona, over any period of ten consecutive years. This is measured by calculating an average of the annual flows at the gauge. Since signing the compact, the flow of the river has varied greatly, ranging anywhere from 3 MAF to 24 MAF in any given year, but Colorado has consistently met its compact obligations. The last ten-year cumulative streamflow was about 92.5 MAF from 2011 to 2020.[18]

17 Waters of the United States and the Navigable Waters Protection Rule

18 72nd Annual Report of The Upper Colorado River Commission

Figure 8
Geography of River Basins Governed By Interstate Compacts



Source: Water Education Colorado.

Upper Colorado River Compact

After the 1922 compact was approved, Congress would not fund any water storage projects until the states agreed upon how to split the water. This led to the creation of the Upper Colorado River Compact, which was signed in 1948. Due to the obligation to keep the river at 75 MAF and the reservoir storage in the upper basin, the exact amount of water available for development was relatively unknown. This caused the Upper Colorado River Basin Compact to allocate water to each state in set percentages for consumptive use, rather than allocating specific quantities. The exception is Arizona, which is allocated 50,000 acre-feet for consumptive use. Once the states settled on their share of water, the federal government established the Boulder Canyon Project Act in 1928 and the Colorado River Storage Project Act in 1956 to fund and build dams along the river for storage, all of which currently aid in meeting the obligations of the two compacts. Today, state engineers, the federal Bureau of Reclamation, and U.S. Geological Survey are authorized to administer the Colorado River Compact, and the Upper Colorado River Commission is authorized to administer the Upper Colorado River Basin Compact. [19]

La Plata River Compact

After a drought in 1917 and 1918, New Mexico was ready to sue Colorado over water in the La Plata River Basin. Instead of going to court, the two states were able to resolve the dispute and sign the La Plata River Compact in 1922.[20] Due to the highly variable flow of the river, the compact requires Colorado to maintain and operate gauging stations at Hesperus in La Plata County and the state line to record the flow from February 15 thru December 1 annually. In practice, the compact restricts Colorado's right to use La Plata River water to a certain amount during this time as long as New Mexico needs the water. From December 1 thru February 15, both states are entitled to unrestricted use of the water.

19 Section 37-62-101(Article IV), C.R.S.
20 Citizen's Guide to Colorado Interstate Water Compacts, Third Edition

Confluence Park, South Platte River

South Platte River Compact

The South Platte River has long been a source of disputes between the states that it serves. The river is currently governed by four agreements, including two U.S. Supreme Court equitable apportionment decrees, an interstate compact, and an interstate administrative agreement.

Extensive studies of the river during compact negotiations allowed for a greater understanding of the relationship between water use, return flows, and the needs of the two states. The compact that was signed between Nebraska and Colorado in 1923 reflected this understanding. [21]

When the flow of the river is less than 120 cubic feet per second between April 1 and October 1 of each year, Colorado must curtail water delivery to any water rights junior to June 14, 1897, that have an impact on the river flow at the state line. Colorado is entitled to the full use of the South Platte River in the lower part of the river basin between October 15 and April 1. However, a compact provision allows Nebraska to build the Perkins County Canal, which would divert water from Colorado. If the canal is built, Nebraska would be able to divert up to 500 cubic feet per second, after Colorado diverts 35,000 acre-feet, from October 15 to April 1.

Platte River Recovery Implementation Plan

The river basin also provides temporary habitat for migratory birds and year-round habitat for the pallid sturgeon, which is on the federal threatened or endangered species list. After 14 years of negotiations the Platte River Recovery Implementation Plan was created. The plan is aimed at restoring and protecting habitat, increasing streamflows, and preserving the ability to use and develop water in each state. [22]

Rio Grande River Compact

The Rio Grande River Compact was signed in 1938 by Colorado, New Mexico, and Texas. Uniquely, the compact accounts for potential spills from Elephant Butte Reservoir. [23]

The amount of water delivered from Colorado to the downstream states varies greatly from year to year. The compact covers two separate delivery schedules, one for the Rio Grande River and one for the Conejos River. As flows increase in the upper basin, the percentage of water that must be delivered downstream also increases. Colorado must manage the diversions by in-state surface water right holders in any given wet or dry year to maintain compact compliance. In an effort to manage water supply and demand, the compact:

- creates a system of credits and debits, and limits new storage in Colorado and New Mexico;
- recognizes the variability in water supply, which may cause under-deliveries and overdeliveries depending on the year;
- allows for excess water, up to a certain level, to be held in reservoirs in upstream states or released at the downstream state's demand;
- protects Colorado and New Mexico from water overuse by downstream states; and
- allows for debits to be erased when the Elephant Butte Reservoir spills over.[24]

Republican River Compact

In 1940, after the Dust Bowl and devastating flooding in 1935, Colorado, Kansas, and Nebraska began negotiating a compact governing the Republican River. The three states agreed to a compact in 1941, but when sent to Congress for approval in 1942, President Roosevelt vetoed the bill. The President's veto was primarily because the Federal Power Commission objected to the compact's proclamation that the Republican River

21 Citizen's Guide to Colorado Interstate Water Compacts, Third Edition

22 Platte River Recovery Implementation Program

23 Citizen's Guide to Colorado Interstate Water Compacts, Third Edition

24 The reservoir has spilled over six times since completion, most recently in 1995.

and its tributaries were not navigable. The final agreed-upon compact, which did not mention the issue of navigability, was signed and approved by Congress in 1943.

Rio Grande River in Del Norte, Colorado

Costilla Creek Compact

The struggle over the Costilla Creek dates back to the early years of Colorado's statehood. When the Union Congress created the Colorado Territory in 1861, a line was drawn through the Costilla Creek valley. Under the prior appropriation decree of Colorado and New Mexico, some of the earliest established water rights belong to acequias.[25] New Mexico, Colorado, and Dutch investors came to an agreement that allowed the Dutch investors to obtain part of the water decreed to the acequias. The original compact was signed in 1944, and an amended version was signed in 1963. The compact sets the amount of water to be delivered to water users in the two states and outlines how to allocate surplus flows and storage in reservoirs.

Arkansas River Compact

Colorado and Kansas have long disputed the water of the Arkansas River Basin. Years of court battles and one doctrine of equitable apportionment led to the creation of the Arkansas River Compact. After three years of negotiations, the two states signed the compact in 1948, which included how to share water in the John Martin Reservoir located in Colorado. The compact is unique compared to other interstate compacts in that it does not apportion the waters of the river between the states in specific amounts or as a percentage. Rather, the language is intended to protect existing uses in both states from future development. The compact allows the two states to use the water as long as the waters of the Arkansas River "shall not be materially depleted in usable quantity or availability for use to the water users in Colorado and Kansas."[26] The compact is governed and enforced by the Arkansas River Compact Administration, which sets procedures for operating the John Martin Reservoir and investigates any compact violations.

Animas-La Plata Project Compact

This compact is unique because instead of being an agreement about an interstate river, the compact governs storage and priority water rights under the Animas-La Plata Federal Reclamation Project (project). The latest rendition of the project includes one off-stream reservoir, which became Lake Nighthorse, located south of Durango. The federally owned reservoir currently serves the two Ute tribes, the Navajo Nation, the San Juan Water Commission, and the La Plata Conservancy District in Colorado and New Mexico. Other structures that were built as a part of the project include a pumping plant to the reservoir, Ridges Basin Dam, and the Navajo Nation Municipal Pipeline. The Animas-La Plata Project Operations, Maintenance, and Replacement Association operates the project.[27]

Animas-La Plata Project in southwestern Colorado

25 An acequia is a communal irrigation canal, from which other, smaller ditches flow. They were commonly used by the earliest settlers in the San Luis Valley coming from Mexican territories. The oldest continuous water right belongs to an acequia named the San Luis People's Ditch from 1852. They are still utilized in Colorado today. (available at History Colorado, last accessed on May 25, 2022).

26 Section 37-69-101, C.R.S. Article IV (D)

27 Citizen's Guide to Colorado Interstate Water Compacts, Third Edition

Supreme Court Decrees

In addition to the interstate compacts, two rivers in Colorado – the North Platte and the Laramie – are governed by two Supreme Court decrees. The U.S. Constitution established that the U.S. Supreme Court has jurisdiction when it comes to controversies or disputes between two or more states.[28] Most often, because of the intense complexity of water issues, the court will appoint a Special Master, typically a magistrate judge, to oversee the case. A Special Master usually hears the initial motions, evaluates and considers presented evidence, and makes a recommendation to the Supreme Court. The Supreme Court will then evaluate the claims and evidence, consider the Special Master's recommendation, and make its final ruling. This section discusses the two Supreme Court cases that determine Colorado's right to waters in the North Platte and Laramie rivers.

Nebraska v. Wyoming, 325 U.S. 589 (1945)

In 1945, Nebraska filed a suit against Wyoming for the equitable apportionment of the North Platte River. Nebraska claimed that Colorado and Wyoming were wrongfully diverting water from the North Platte River under the prior appropriation law, which deprived Nebraska of its share of water. Nebraska asked the court to apportion the water equitably between the states. Colorado argued that it should be dismissed from the case, but was unsuccessful.

The Supreme Court determined that water from the river used for irrigation would be split between Nebraska and Wyoming in flat percentages based on the natural flow of the river. Nebraska was given the larger percentage on the grounds that it had the senior water rights. The main provisions of the decree also prohibit Colorado from:

- diverting water from the North Platte River and its tributaries for irrigation of more than 135,000 acres in Jackson County during one irrigation season (this value was changed to 145,000 acres by the Supreme Court on June 14, 1953); and
- storing more than 17,000 acre-feet of water for irrigation from the North Platte River and its tributaries in Jackson County from October 1 to September 30 of the following year.[29]

Wyoming v. Colorado, 353 U.S. 953 (1957)

In 1957, Wyoming petitioned the Supreme Court with a motion to intervene against Colorado concerning the right to divert water from the Laramie River. A previous decree handed down by the court regarding rights to the Laramie River was subsequently vacated in this case. The court denied Wyoming's motion to intervene and instead granted a new decree governing the river. The decree held that Colorado may divert 49,375 acre-feet of water from the Laramie River and its tributaries, subject to specific limitations.[30]

Memoranda

Colorado has one Memorandum of Understanding (MOU) and one Memorandum of Agreement (MOA) with bordering states. In general, both are legal documents that outline the terms of a specific agreement between parties. The main difference is that an MOA can be enforceable by law, while an MOU cannot. This section discusses the two memoranda that Colorado has with Utah and Wyoming.

Pot Creek Memorandum of Understanding

Colorado and Utah have an MOU governing Pot Creek, which originates in Utah and flows into Colorado's Green River. In 1958, the two states agreed to distribute the water based on the prior appropriation doctrine and appointed a water commissioner with the authority to administer the agreement. They agreed to share the expense of the commissioner equitably, with Colorado bearing 20 percent of the expense and Utah bearing 80 percent. In 2005, the states revised the agreement to include a combined administration list, daily operations in accordance with the Pot Creek Operation Manual, the authority of the water commissioner, and assurance of proper maintenance of the gauging stations. The memorandum also restricts either state from utilizing direct flow diversions before May 1 of each year and establishes a schedule of priorities.[31]

Sand Creek Memorandum of Agreement

Colorado and Wyoming signed an initial MOA in 1939, and then a revised version in 1997, which is currently administered by the Colorado Division of Water Resources. The revised agreement corrected clerical errors concerning the amount

28 U.S. Const., art. III, § 2.
29 Nebraska v. Wyoming, 325 U.S. 589 (1945)
30 Wyoming v. Colorado, 353 U.S. 953 (1957)
31 Revised Pot Creek Memorandum of Understanding

of water appropriated to Wyoming. Today, the agreement requires Colorado to deliver 40 cubic feet per second (cfs) over a sevenday period at the beginning of irrigation season, which is not required to be consecutive. Once Colorado has met this delivery requirement, the state must deliver 35 cfs for the remainder of the irrigation season whenever senior water right holders in Wyoming need the water. The agreement also limits diversions from Sand Creek by Colorado and the Divide Canal and Reservoir Company.[32]

International Treaties

Colorado is involved in two international treaties between the United States and Mexico that govern the waters of the Rio Grande River. The two countries established the Rio Grande and Colorado rivers as a natural border between the two countries through a combination of treaties in the late 19th century. They established the International Boundary Commission in 1889, now known as the International Boundary and Water Commission (IBWC), to administer the rules associated with governing the two rivers. The IBWC prepared the studies that were used to develop the international treaties that determine how the waters of the Colorado and Rio Grande rivers are shared.[33] Today, the IBWC provides binational support and facilitates resolution of issues concerning water quantity, sanitation, water quality, flood control, and boundary demarcation. This section will discuss the two treaties that impact Colorado.

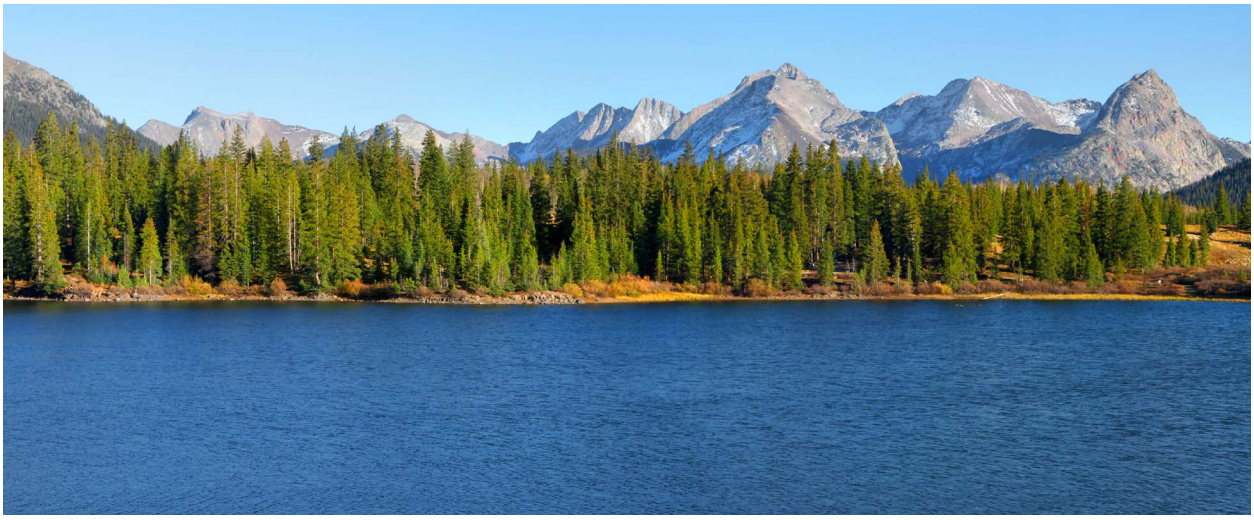
Equitable Distribution of the Waters of the Rio Grande

A May 21, 1906, convention between the United States and Mexico determined the equitable distribution of the waters of the Rio Grande for irrigation and to remove cause for controversy between the two countries over the river. The treaty allocated waters of the Rio Grande from El Paso to Fort Quitman, Texas. Except in times of extraordinary drought, Mexico is entitled to 60,000 acre-feet of the waters that must be delivered according to a set monthly schedule as outlined in the convention.[34]

Water Treaty of 1944

The Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande Treaty between the United States and Mexico determined the extent of Mexico's right to the water of the Colorado River and the Rio Grande. The treaty guarantees 1.5 MAF of Colorado River water to Mexico. In any instance where the river does not have adequate flow to meet this obligation, the Upper and Lower Colorado River Basins must share in efforts to make up for deficiencies. The treaty also addresses Mexico's right to Rio Grande water from Fort Quitman to the Gulf of Mexico.[35]

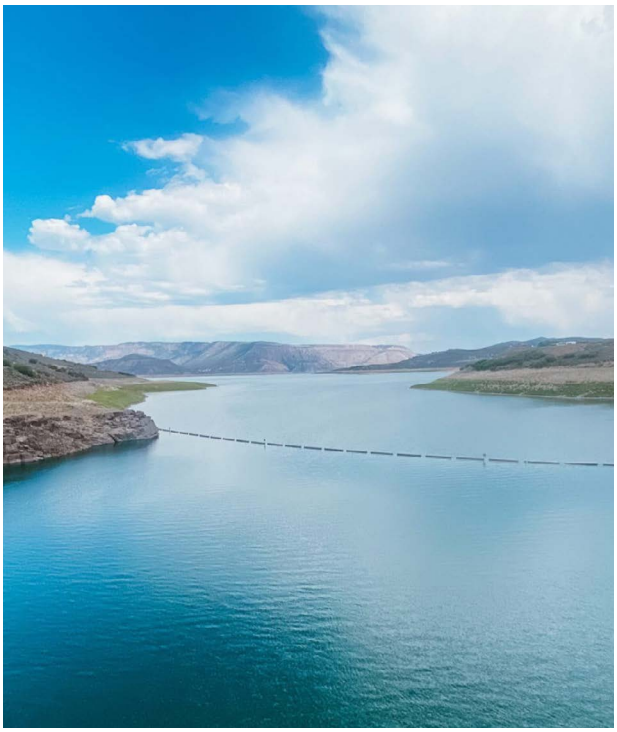
32 Addendum to Sand Creek Memorandum of Agreement and Correction to Clerical Errors
33 History of the International Boundary and Water Commission
34 United States and Mexico Equitable Distribution of Waters of the Rio Grande Convention
35 United States and Mexico Treaty for the Colorado and Tijuana Rivers



Molas Lake

PART III: CURRENT WATER POLICY ISSUES

Section 1: Drought on the Colorado River



Blue Mesa

> **"Two reservoirs along the river, Lake Powell and Lake Mead, are crucial to delivering water to downstream states and providing energy to the region.**

The Colorado River provides water to two countries, seven states, 29 Native American tribes, and four million acres of farmland.[36] Colorado is entitled to 51 percent of the water available to the Upper Basin states. This water is used to support agricultural, municipal, industrial, recreational, and environmental purposes on both sides of the Continental divide.

Lake Powell and Lake Mead

Two reservoirs along the river, Lake Powell and Lake Mead, are crucial to delivering water to downstream states and providing energy to the region. However, due to historically dry conditions across the basin over the last 20 years, the current reservoir water levels are not high enough to sustain the region long-term. The Colorado River Basin states, with the federal government, are required to negotiate operating guidelines for the two reservoirs. Current guidelines for the river will expire in 2025.

Dead Pool Water Levels

Glen Canyon Dam at Lake Powell and the Hoover Dam at Lake Mead provide energy via hydropower to the surrounding region. In order for power to be delivered, the reservoirs must be at or above the minimum power pool elevation. Anything below this level is considered the "dead pool zone." As of August 2022, Lake Powell was sitting at 3,531 feet above sea level; at 3,490 feet, the lake will reach the dead pool zone.[37] At Lake Mead, as of September 2022, the reservoir sat at 1,044 feet.[38] Dead pool for Lake Mead exists at 895 feet in elevation, which is the lowest water outlet at Hoover Dam.[39]

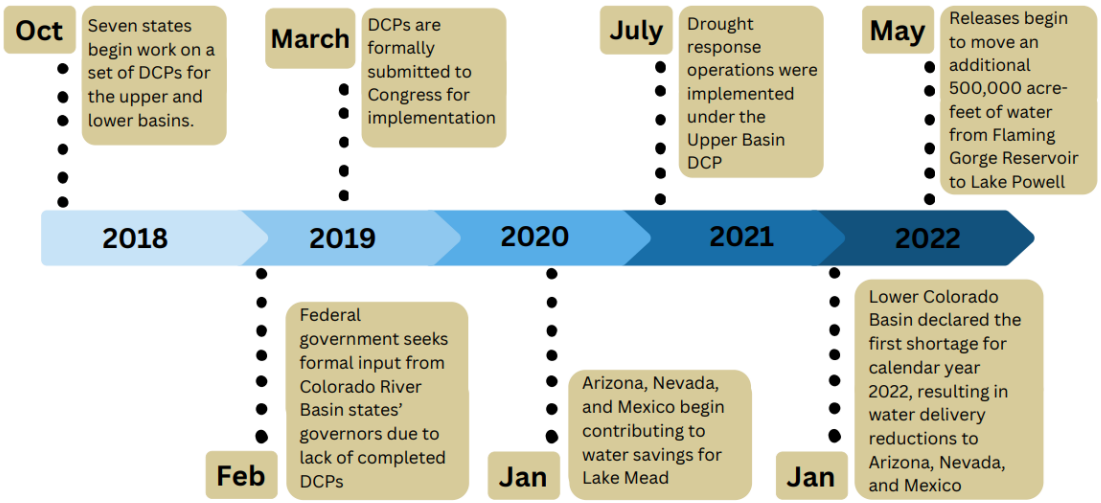
Colorado River Basin Drought Contingency Plans

While the lower basin states have long used the majority share of the river, about 7.5 MAF per year, the upper basin states have consistently faced cuts in order to deliver obligated water and can now only use about 4 MAF per year. This imbalance created the need for a Drought Contingency Plan (DCP), which affected states create together to ensure less water usage and long-term system sustainability. Since the main concern is the reservoir levels at Lake Powell and Lake Mead, the upper basin will carry much of the burden when it comes to managing declining flows of the Colorado River.[40]

36 Colorado Drought Contingency Plan

37 BOR Lake Powell Pool Elevation
38 BOR Lake Mead Pool Elevation
39 Storage Capacity of Lake Mead
40 Historic Colorado River Drought Plan

Figure 9
Timeline of Colorado River Basin States' Drought Response



Source: Information from U.S. Bureau of Reclamation. Visualization prepared by Legislative Council Staff.

Currently, the DCP includes two separate plans, one from the upper basin states and one from the lower basin states. The upper basin plan focuses on reservoir operations during drought conditions, how to reduce water demands, and weather modification. In the lower basin, Arizona, California, and Nevada agreed to take cuts as Lake Mead reaches certain elevations. A timeline of the most recent developments in creating the DCPs is shown in Figure 9.

Upper Basin DCP

The Upper Basin DCP includes the Drought Response Operations Agreement (DROA). The DROA includes a process to temporarily move water stored above Lake Powell from Aspinall, Flaming Gorge, and Navajo reservoirs. When Lake Powell begins to approach 3,525 feet, upper basin states are required to release water into the river to help keep water levels steady. In 2021, water was released from Flaming Gorge and Blue Mesa reservoirs, and in 2022, an additional 500,000 acre-feet has been moved from Flaming Gorge to Lake Powell. The additional water from the upper basin states and the cutbacks by the lower basin states are expected to add about 1 MAF, or 16 feet, to Lake Powell.[41]

Department of Interior 2022 Announcement

In June 2022, Bureau of Reclamation Commissioner Camille Touton testified in front of the U.S. Senate Committee on Energy and Natural Resources about the state of the Colorado River basin and called on the basin states to conserve an additional 2 to 4 MAF of water to protect reservoir levels. Colorado currently uses about 2.20 MAF of water from the Colorado River. During the hearing, Commissioner Touton told the committee that if the seven basin states cannot cut their water use, the federal government will step in. She gave the states a 60-day deadline to come up with a plan.[42] The Upper Division States, through the Upper Colorado River Commission, delivered a 5-Point Plan in response to the Commissioner's request. The plan outlines tools to protect infrastructure, but the tools are limited due to the decreasing water supply and depleted reservoirs. The effectiveness of the plan also relies on actions by all the states relying on water from the Colorado River.[43]

The seven basin states were unable to come up with a joint plan before the deadline, so in September 2022, the Department of the Interior

41 CO River Basin Drought Contingency Plans - BOR

42 Colorado River Managers Face Federal Call for Unprecedented Cuts

43 Upper Division States 5-Point Plan

announced actions to protect the river and set 2023 operating conditions for Lake Powell and Lake Mead. The operating conditions include cuts to water delivery from Lake Mead to Arizona, Nevada, and Mexico. California was not required to take any cuts.[44]

Federal Aid for Water Projects

The Bipartisan Infrastructure Law invested $8.30 billion to help address water and drought challenges. The money will be used for western water and power infrastructure and existing projects. The Inflation Reduction Act included $4 billion specifically for water management and conservation efforts in the Colorado River Basin.[45]

Governor Polis Colorado River 2023 Budget Request

In response to the challenges on the Colorado River, Governor Polis's FY 2023-24 budget request includes $1.9 million and 14 FTE for a Colorado River Policy and Technical Support Team for the Colorado Water Conservation Board. The team will provide policy and technical expertise on behalf of Colorado during interstate compact negotiations.

Section 2: Water Speculation in Colorado

Colorado currently has what is colloquially known as the "anti-speculation doctrine" written into the state constitution. The Colorado Constitution states that water flowing in natural streams is property of the public and is subject to appropriation for beneficial use.[46] Any diversion of water with the intent to appropriate must have a specific, stated purpose that qualifies as a beneficial use. Specifying that water must be put to "beneficial use" has shaped how Colorado uses and governs water rights. Rather than an individual owning water under a water right, the individual owns the right to divert water for a beneficial use.[47] The prohibiting of water investment speculation attempts to prevent hoarding of water rights and ensure that other water users are not negatively impacted by speculation.

Water Speculation in the Colorado Supreme Court

In 1979, the Colorado Supreme Court heard Colorado River Water Conservation District v. Vidler Tunnel Water Company (Vidler). The Vidler case determined that the intent to profit is a potential motive of water speculators. The court explained that "the right to appropriate is for use, not merely for profit."[48] The Colorado General Assembly codified the court's ruling in Vidler by defining appropriation as "the application of a specified portion of the waters of the state to a beneficial use pursuant to the procedures prescribed by law; but no appropriation of water, either absolute or conditional, shall be held to occur when the proposed appropriation is based upon the speculative sale or transfer of the appropriative rights to persons not parties to the proposed appropriation, as evidenced by either of the following:

- the purported appropriator of record does not have either a legally vested interest or a reasonable expectation of procuring such interest in the lands or facilities to be served by such appropriation, unless such appropriator is a governmental agency or an agent in fact for the persons proposed to be benefited by such appropriation; or
- the purported appropriator of record does not have a specific plan and intent to divert, store, or otherwise capture, possess, and control a specific quantity of water for specific beneficial uses."[49]

In a more recent water speculation case, High Plains A&M, LLC filed applications for changes to water rights in the early 2000s. High Plains asked the Water Court to approve changes to its water rights from irrigation to any beneficial use without specifying the type of beneficial use. The Southwestern Colorado Water Conservancy District successfully argued that the application should be dismissed since it did not specify the location, use, or users of the changing water rights, thus violating the anti-speculation doctrine. The court asserted that "the anti-speculation doctrine is rooted in the requirement that an appropriation of Colorado's water resource must be for an actual beneficial use." [50]

44 Interior Department Announces Actions to Protect Colorado River System
45 Interior Department Announces Actions to Protect Colorado River System
46 Colo. Const. Art. XVI, Section 5
47 Getches, D. (1990) Water Law in a Nutshell. West Publishing Co
48 Colorado River Water Conservation District v. Vidler Water Company, 594 P.2d 566, 568 (Colo. 1979)
49 Section 37-92-103(3)(a), C.R.S.
50 High Plains A & M, LLC v. Southeastern Water Conservancy District, 120 P.3d 710, 719 (Colo. 2005)

Anti-Speculation and Groundwater

Groundwater is governed by a somewhat modified version of the anti-speculation doctrine given the variety of classifications under which groundwater can be. Some of the significant Colorado Supreme Court cases that have set the precedent for anti-speculation of groundwater law include:

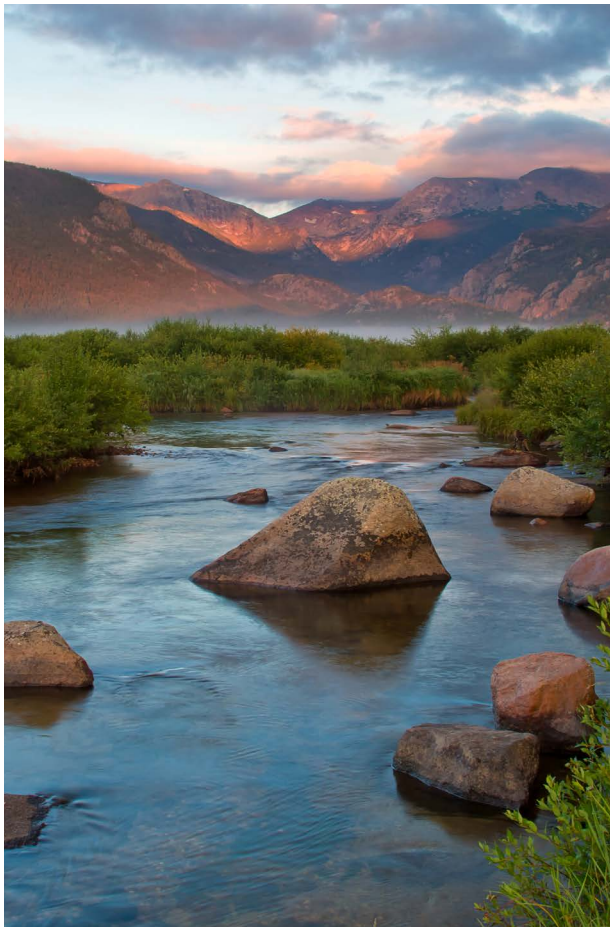
- Jaeger v. Colorado Groundwater Commission (1987), which determined that an entity must prove intent to appropriate groundwater for a specified beneficial use;
- Colorado Ground Water Commission v. North Kiowa-Bijou Groundwater Management District (2003), which reversed a previous ruling and determined that the anti-speculation doctrine applied to groundwater; and
- Danielson v. Milne (1988), which determined that the anti-speculation doctrine is applied to well permit applications for pumping tributary groundwater and when demonstrating beneficial use after the well is drilled.

Even after decades of court cases and the existing anti-speculation laws in Colorado, water investment speculation remains a frequent topic of debate.

Recent Anti-Speculation Efforts in the Colorado General Assembly

Growing concern over businesses inside and outside of Colorado purchasing water rights with the intent to profit from the sale of the rights at a later date has led the General Assembly to pass legislation addressing water speculation. Senate Bill 20-048 required the Colorado Department of Natural Resources to convene a work group to explore ways to strengthen anti-speculation law. The work group's final report, as presented to the Water Resources Review Committee during the summer of 2021, explored the definition of water speculation and outlined eight potential ways to address speculation in the state. The work group failed to agree on any official recommendations.

> **"In order to meet municipal demand in Colorado, cities will traditionally buy water rights from a farmer with the intent to stop irrigating the farmer's land. This method of purchasing water rights is known as the "buy-and-dry" method.**



Rocky Mountain National Park

Section 3: Alternative Transfer Methods

While still a somewhat new idea in Colorado, Alternative Transfer Methods (ATMs) have gained popularity due to the continuing struggle over water supply and population growth. ATMs refer to the various methods and concepts by which new supplies can be made available without permanently drying up irrigated lands.[51] In order to meet municipal demand in Colorado, cities will traditionally buy water rights from a farmer with the intent to stop irrigating the farmer's land. This method of purchasing water rights is known as the "buy-and-dry" method. ATMs are considered a potential way to share water without the farmer losing their entire water right and without the state having to dry up a parcel of land. This section discusses types of ATMs, statewide needs and efforts related to ATMs, and the potential obstacles to ATM programs.

What Qualifies as an ATM

The CWCB, in partnership with WestWater Research, the Colorado Water Center at Colorado State University, and J-U-B Engineers, published a status and progress assessment toward achieving objectives for ATMs in the Colorado Water Plan. This assessment includes a definition of what should qualify as an ATM transaction in Colorado. The assessment generally defines ATM transactions based on the following criteria:

- the water transfer reduces the permanent dry-up of agricultural lands;
- the new water use secures a water transfer for a term of ten years or more;
- the water right ownership is retained in whole or in part by the agricultural sector;
- the water remains in agricultural use as much as possible;
- the avoidance of permanent dry-up should focus on lands that face a risk of dry-up; and
- the net economic benefit must be to agricultural working lands and rural communities.[52]

In addition, one of the key components of an ATM is that the transaction is voluntary and not mandatory. It is a potential tool available to farmers and municipalities, but the water rights are not required to be shared or transferred in this way unless both parties agree to the transaction. Colorado currently promotes several types of ATMs, which are outlined in Table 4.

The Need for ATMs

Agriculture uses the largest amount of water in Colorado and is one of the biggest economic drivers in the state.[53] The agricultural industry relies on water supply, and many argue that the traditional "buy-and-dry" method is not sustainable to meet the agricultural and water supply needs of the state. Reducing irrigated land means reducing production, which results in reductions in overall food availability and threatens the economic viability of farming communities across the state. The Surface Water Supply Index, which is a predictive indicator of the surface water available compared to historic supply, estimates that Colorado could lose 500,000 to 700,000 acres of currently irrigated farmland by 2050 in an effort to meet municipal growth water demands.[54] ATMs are a potential tool that can be used to keep agriculture viable in Colorado while meeting the demands of a growing population.

Statewide ATM Efforts

The General Assembly has made efforts to encourage the adoption of ATMs in Colorado. Some of the bills passed include:

- Senate Bill 07-122, which authorized an ATM grant program through CWCB;
- House Bill 13-1130, which allowed for a temporary change of a temporary water right for a new use with the approval of DWR;
- House Bill 13-1248, which authorized the Fallowing-Leasing Pilot Program to test the viability of fallowing-leasing as an alternative to buy-and-dry efforts;
- House Bill 13-1248, through which the General Assembly declared its commitment to the development and implementation of agricultural-transfer methods;
- House Bill 13-1248, which required CWCB to establish criteria for the application, selection, and approval process for pilot projects; and

51 Colorado Water Conservation Board - Alternative Transfer Methods in Colorado
52 Ibid.
53 Colorado Water Conservation Board - Alternative Transfer Methods in Colorado
54 Ibid.

- Senate Bill 15-198, which expanded the authority granted in HB 13-1248 to include temporary transfers from agriculture to agriculture, agriculture to industry, and agriculture to recreation.

In the official Basin Implementation Plan submitted to CWCB, the Colorado river basins recommend exploring ATM programs to meet agricultural needs. In addition, the Interbasin Compact Committee has expressed interest in exploring ATMs in Colorado.[55]

55 Interbasin Compact Committee Annual Report 2021

Potential Obstacles to ATM Programs

The implementation of a statewide ATM program could come with institutional, financial, and legal challenges. ATMs are a very different way of handling water rights from the longstanding history of water rights in Colorado. Water court procedures and existing water law may impede the ability to create widespread ATM agreements. In addition, concern from irrigators and cities and towns regarding long-term water availability can keep individuals and municipalities from working together on an ATM agreement. In Colorado, the lack of infrastructure can prevent water transfers, and the high transaction costs can discourage ATMs from being adopted.

Table 4
Types of Alternative Transfer Methods in Colorado

Type of ATM	Description
Rotational fallowing	This method keeps the land available for irrigation, but targets specific plots at certain times. Irrigation is rotated amongst the plots during crop seasons. This allows leased water to become a base supply for a municipality, while keeping much of the water supply with the farmer.
Interruptible supply agreements	These agreements are between non-agricultural water users and farmers, shareholders, or a ditch company, and are made through contractual agreements. Water is temporarily transferred from agricultural use to another use and is leased to the end-user based on the historical consumptive use portion of the water right.
Municipal-agricultural water-use sharing	This water sharing enables sharing of a historic consumptive use of an existing water right between an agricultural user (lessor) and municipal water users (lessee). A farmer reduces the consumptive use of crops, which makes more water available for municipalities.
Water cooperatives	A cooperative identifies potential excess water and moves water from one use to another in a way that does not cause injury to any water user. The Lower South Platte Cooperative is currently the only attempt to implement this type of ATM in Colorado.
Water banks	A water bank acts as an intermediary or broker to manage water supply and water rights. This method is currently being discussed and studied for the Colorado River Basin.
Flex markets	These voluntary agreements are between municipal and industrial water users, agricultural water users, and environmental/conservation water users. A senior irrigation right is changed to include multiple end uses. This creates a trading platform that allows for part of the senior right to be used by cities, towns, and environmental purposes while still supporting farming operations.

APPENDIX A: GLOSSARY OF TERMS AND ACRONYMS

Acre-Foot: A volumetric measurement of water used for quantifying reservoir storage capacity and historical consumptive use. It is equivalent to the amount of water that will cover an acre of land at a depth of one foot (325,851 gallons).

Adjudication: The judicial process of confirming the existence of a water right through a court decree.

Appropriation: The specified portion of water that must be put towards beneficial use.

Aquifer: A subsurface structure containing water.

ATM: Alternative Transfer Method, one of the various methods by which new water supplies can be made available without the permanent dry-up of irrigated lands.

Augmentation: The process of replacing the quantity of water from the stream system caused by an out-of-priority diversion of water.

Beneficial Use: The lawful use of a predetermined appropriation of water without waste.

Call: A request by a senior water right holder for their appropriated amount, which forces junior water right holders to cease or diminish their water use.

CDA: Colorado Department of Agriculture, runs the Agricultural Water Quality Program, which protects state waters and the environment from the improper use of agricultural chemicals.

CDPHE: Colorado Department of Public Health and Environment, regulates water quality through the Water Quality Control Division.

CFS: Cubic feet per second, the measurement of flow rate. 1 cfs = 448.8 gallons per minute or 2 acre-feet per day.

Compact: An agreement between states determining the amount of water each state gets from a river basin.

Confluence: The point where a tributary meets the mainstem of a river.

Conservancy District: A special taxing district that may plan, develop, and operate water supply or water projects.

Conservation District: A geographical area set by Colorado statute to manage a region's water.

Consumptive Use: Use of water in a way that permanently withdraws it from the source.

CWA: Clean Water Act, a federal law that establishes basic requirements for regulating discharges of pollutants and regulating quality standards for surface water.

CWCB: Colorado Water Conservation Board, promotes the conservation of waters of the state to secure the greatest utilization of these waters and to prevent floods.

CWP: Colorado Water Plan, the state's framework for solutions to water challenges.

DNR: Colorado Department of Natural Resources, its divisions include the Division of Water Resources and the Colorado Water Conservation Board.

DWR: Division of Water Resources, also known as the Office of the State Engineer, responsible for the administration of Colorado's water resources.

EPA: The federal Environmental Protection Agency, charged with protecting human health and the environment.

Futile Call: A situation determined by the state that allows a junior water right to continue to divert in spite of senior water right demands because curtailing the junior right would not help deliver water to the senior right.

Headwaters: The source of a river.

Junior Rights: Water rights established more recently than older senior water rights.

MAF: Million acre-feet.

Nonconsumptive Use: A water use that is not consumed, or, more often, water that leaves flows in a river.

Nonpoint Source Pollution: Pollution from a non-specific source, including runoff from cities, farms, or forest land.

Nontributary Groundwater: Groundwater that is not within any designated ground water basin.

NPDES: National pollutant discharge elimination system, the EPA's permit program, which limits allowable discharges and sets requirements for monitoring and other provisions to keep discharges from harming water quality or people's health.

NWPR: Navigable Waters Protection Rule, the federal rule determining which waters qualify as WOTUS.

Point Source Pollution: Pollution from a single, identifiable source, including industry or sewer plants, ditches, channels, sewers, or containers.

Prior Appropriation Doctrine: Determines that water rights are decided by the order in which individuals put the water to beneficial use, also known as "first in time, first in right."

Priority: The ranking of a water right.

Priority Date: The date of establishment of a water right.

Reservoir: An artificial storage space for water supply, often formed by a dam.

RICD: Recreational in-channel diversion, a water right held by a local government entity for structures that control the flow of water for rafting and kayaking.

River Basin: Portion of land drained by a river and its tributaries.

Senior Rights: Water rights established first and older than junior rights.

Snowmelt: Water that results from the melting of snow.

Transbasin Diversion: Moving water from its original basin to another; in Colorado, this is usually across the Continental Divide.

Tributary: A stream that feeds into a larger river or stream.

Water Court: A special division of a district court with a water judge to hear water specific matters; there are seven water courts in Colorado.

Water Right: Property right to use a portion of surface water or groundwater to be put to beneficial use; must be obtained through appropriate legal procedures.

Well: Any structure used for obtaining groundwater for beneficial use.

WOTUS: Waters of the United States, a term in the CWA establishing which waters are subject to federal jurisdiction over water quality, defined by the EPA and the U.S. Army Corp of Engineers in regulations.

WQCC: Water Quality Control Commission, an appointed commission responsible for developing specific water quality policies.

WQCD: Water Quality Control Division, a division of CDPHE responsible for monitoring and reporting on the quality of state waters to prevent pollution and enhance the quality of surface and groundwater.

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