



# **WATER QUALITY/ QUANTITY COMMITTEE (QQ)**

BOARD HANDBOOK  
&  
INFORMATIONAL WATER PACKET



## I. Water Quality/Quantity Committee

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## **B. Mission Statement**

“To enable its members to protect and enhance the quality of Colorado’s waters while facilitating the responsible use of those resources for the good of all Colorado citizens and its environment.”

## **C. Purpose**

The Water Quality and Quantity Committee (QQ) consists of towns, counties and water and sanitation districts in the Headwaters Region of Colorado. QQ’s purpose is to enable its members to protect and enhance the quality of our region’s waters while facilitating the responsible use of those resources for the good of all Colorado citizens and its environment.

QQ monitors water development activities and legislative initiatives that affect water quality or quantity in the basin of origin. Regularly scheduled meetings of the QQ Committee operate as a forum for policy formulation and strategy decision-making by QQ Committee members. The QQ Committee staff provides members with monitoring of legislative activities, water quality information, litigation and advocacy support, activity coordination, cooperative problem-solving assistance, transmountain diversion oversight, and technical assistance to further intergovernmental cooperation and increase political clout with state and federal agencies.

## **D. Policies**

### **1) Protect and Implement Local Government Authority to Protect Water Resources**

- a.** Strengthen available tools to protect water quality and quantity. Defend against attacks on 1041 and other local government regulatory authority when necessary.
- b.** Assist local governments to strengthen and implement water quality provisions in their land use codes.
- c.** Fund legal services to local governments for specific projects when the QQ Committee approves involvement and expenditures from the Defense Fund.

### **2) Building Coalitions and Education**

- a.** Advocate the headwaters communities’ water quality and quantity interests throughout the State. Identify and work with other groups statewide that share QQ’s concerns. Develop educational tools for varied audiences.
- b.** Identify strategies to minimize the Front Range’s dependence on West Slope water resources. Advocate “smart growth” to those utilizing headwater sources as water supplies. Oppose the ad hoc policy of growth driving demand for imported water supplies.
- c.** Coordinate with elected officials, private sector and other decision-makers on water quality issues. Develop working relationships with governmental entities, the private sector and others where appropriate.
- d.** Foster cooperative regional management of water resources. Minimize redundant systems.

### **3) Transmountain Diversion Oversight**

- a.** Evaluate future Front Range water development projects and alert QQ members of possible impacts.
- b.** Influence operations of existing projects to minimize local impacts where possible.
- c.** Advocate for all transmountain diversion water to be re-used to extinction by Front Range diverters.
- d.** Provide technical assistance to QQ members to determine water quality and quantity impacts caused by new or expanded transmountain diversions. Identify measures and conditions to help mitigate those impacts. Assist the local government with 1041 permitting of water projects.
- e.** Educate Front Range elected officials on transmountain diversion impacts in the headwaters communities.

### **4) Water Quality**

- a.** Protect local wastewater facilities from increased operational costs caused by hydrologic modifications and transmountain diversions.
- b.** Advocate regional interests during rulemaking hearings before the Water Quality Control Commission and the Colorado Water Conservation Board that affect the upper Colorado River Basin.
- c.** Defend regional water quality management plan (208 Plan).
- d.** Ensure that water development in headwaters region does not adversely affect water quality.
- e.** Limit interpretations of Section 104 of the Colorado Water Quality Control Act so that it is not used to immunize water development from water quality protection requirements.
- f.** Assist local governments in adopting NWCCOG/QQ's Water Quality Protection Standards and other measures to protect local water quality.

### **5) Influence Water Policy**

- a.** Identify and plan for future West Slope water needs.
- b.** Coordinate with State water planning efforts. Participate in State water policy initiatives and forums. Help formulate and implement water quality and water quantity policy.
- c.** Educate policy makers and expand scope of state water policy to include water quality, headwater impacts and recognition of instream water uses.
- d.** Develop strategies to improve conservation measures on the West Slope.
- e.** Support instream flow program in this region.

## II. Water Law 101

### A. Prior Appropriation

The prior appropriation system was adopted in Colorado in 1882 following the Colorado Supreme Court decision in *Coffin v. Left Hand Ditch Co.* This decision held that water rights in Colorado divest based on the notion of “first in time, first in right.”<sup>1</sup> This means that the first person to appropriate water for a beneficial use has the first right to use that water within that particular stream system. An appropriation occurs when an individual physically takes or diverts water from a stream to another location for a beneficial use. This first appropriator is said to have a “senior” water right, and that right must first be satisfied before any other junior rights are fulfilled.

Users of Colorado water under this system gain water rights through court decrees. These rights are guaranteed pursuant to Article XVI, Section 6, of the Colorado Constitution which states, “[t]he right to divert the unappropriated waters of any natural stream to beneficial uses shall never be denied.”<sup>2</sup> Appropriators usually first begin to use the water and then go to the water court for a decree legalizing their use. This beneficial use must be demonstrated by the user in order for the court to grant the decree or “perfect” the water right. If granted, the decree shows the priority date of the diversion, the type and place of the use, and the amount of water to be diverted. The water amount is calculated in either total acre-feet and/or cubic-feet-per-second.

The amount of water permitted for diversion is the amount that is able to be put to a beneficial use in a reasonable time with reasonable diligence. What is reasonable depends on the type of use and how the water is taken and applied. The goal is to eliminate water waste, so that the resource is available to as many users as possible. Diverting more water than what is necessary for the beneficial use is not considered part of the water right.

Water rights, like other property rights, may be sold, leased, or exchanged. The designation and place of the use may also change as long as there is “no-injury” (see definitions). “No-injury” applies even if the user suffering the injury has a junior right to the user causing the injury.

Water rights are not forever guaranteed and may be lost through non-use. This is called abandonment and occurs when a person stops using their water right with the intent to abandon it. In Colorado, a water right is abandoned if it is not used within ten years and the water rights’ holder intends to abandon the right. Forfeiture, on the other hand, refers to the abandonment of a water right and does not take into consideration whether the rights’ holder intended to abandon the right or not. Colorado does not have a forfeiture statute.

### B. Beneficial Use

Beneficial use is the use of that amount of water that is reasonable and appropriate under reasonably efficient practices to accomplish without waste the purpose for which the appropriation is lawfully made and, without limiting the generality of the foregoing, includes the impoundment of water for

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<sup>1</sup> *Coffin v. Left Hand Ditch Co.*, 6 Colo. 443 (1882).

<sup>2</sup> Colo. Const. Art. XVI, § 6 (2000).

recreational purposes, including fishery or wildlife. For the benefit and enjoyment of present and future generations, beneficial use shall also include the appropriation by the state of Colorado of such minimum flows between specific points or levels for and on natural streams and lakes as are required to preserve the natural environment to a reasonable degree.<sup>3</sup>

The definition of beneficial was intentionally left open and given generality by the legislature in order to allow it to change in accordance with the changing ways people and entities use water. Historically, beneficial uses were limited to agriculture, industry, and municipal uses. These uses have expanded to include CWCB instream flows and recreational in channel diversions, such as kayak parks.

## **C. Administration**

Along with providing a definition of beneficial use, the Water Right Determination and Administration Act of 1969 established seven major water divisions in Colorado based on the major river basins. Each division has their own water court and judge to deal with issues related to the watershed. Most of the divisions also have a water referee to assist the judge in dealing with minor water-related issues. Some of the controversies that necessitate adjudication relate to water rights, changes in water rights, plans for augmentation, findings of reasonable diligence with regard to conditional water rights, abandonment of conditional and absolute water rights, and requests for alternate points of diversion and storage. Decisions by the water courts are appealed directly to the Colorado Supreme Court.

Many of these hearings occur due to the over-appropriation of a watershed or stream segment. Over-appropriation occurs when the water court divvies out more water rights decrees than there is water actually available. This practice is allowed, but causes problems when senior users put calls out for water causing a junior user to lose the water previously available to them.

The amount of available water is determined by combining the physical and legal constraints currently in place. Physical restraints refer to water that is available from natural stream and river flows, as well as water found in tributary aquifers. Legal restraints are those senior water rights whose appropriation has already occurred. This includes senior water rights in Colorado, as well as the water the state must allow to flow beyond its borders to comply with interstate water compacts, U.S. Supreme Court equitable apportionment decrees, and international treaties.

The courts are not the only bodies in charge of the administration of water matters. The state engineer, division engineers, water commissioners and the Colorado Water Conservation Board (CWCB) also are involved in the process. Their general duties and information are listed below:

### State Engineer

- Appointed by the governor.
- Employed by the Colorado Division of Water Resources.
- Responsibilities include supervision and regulation of the:
  - State's water
  - Division engineers

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<sup>3</sup> Colo. Rev. Stat. § 37-92-103(4) (2000).

- Groundwater permitting and management system
- Interstate water administration
- State's reservoir operations

#### Division Engineers

- Appointed by the state engineer.
- Employed by the Colorado Division of Water Resources.
- In charge of the State's water distribution.
- There is a division engineer's office located in each of the State's seven water basins.
- Each division engineer's office employs several water commissioners.

#### Water Commissioners

- Appointed to handle the daily distribution matters of the State's water. These matters include:
  - Monitoring of headgates
  - Responding to calls for water
  - Issuing orders to reduce or cease diversions
  - Collecting data on diversions
- Employed by the Colorado Division of Water Resources.

#### CWCB

- Entity created by the Colorado General Assembly in 1937.
- Its principal purpose is to help in the protection and development of the State's waters.
- Its main functions include:
  - Planning and implementing flood controls
  - Conducting water studies
  - Resolving interstate water conflicts
  - Coordinating federal and interstate water resources
  - Conserving water and power resources
  - Protecting minimum stream flows.

### **D. Water Exchange and Substitute Supply**

Under Colorado law, appropriators are allowed to transfer their water rights from one location to another using a plan of augmentation and exchange with the approval by the water court.<sup>4</sup> An exchange occurs when a junior user, who normally would not be in priority, takes water and satisfies the senior users' needs through replacement water from another source. In other words, water is added to the stream down river (for the downstream senior) in order for an equal amount of water to be taken at an upstream location (by the upstream junior), so as not to injure the senior appropriator's rights. So long as the senior priority receives its allotment of water, no matter what the source, it may not complain of out of priority diversions by a junior user.

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<sup>4</sup> Colo. Rev. Stat. §§ 37-83-101 et seq (2000).

The water added at the downstream location in the exchange is known as the “substitute supply.” Substitution may be carried out between any combination of ditches and reservoirs and may be either voluntary or involuntary.

## **E. Trans-basin Diversions**

### ***Introduction***

A trans-basin diversion exports water from one basin to another; for example from the Colorado River Basin to the South Platte River Basin. The most common trans-basin diversion in Colorado is water exported east from Western Slope basins to the Front Range. These diversions crossing the Continental Divide are termed “trans-mountain diversions.” There are twelve major diversions taking water from the Colorado River basin to East Slope entities. This amounts to a total of 450,000-600,000 acre/feet per year, which is enough water to inundate the entire metropolitan area of Denver up to six feet deep. During dry years, this accounts for up to 65% of the streamflow for the entire upper basin.<sup>5</sup>

Imported water, such as that found in the Front Range that originates on the Western Slope, is generally referred to as “foreign water.” In Colorado, “foreign water” can be used to extinction (e.g. can be used over and over again), and the return flow is not required to go back to its place of origin. This provides flexibility to the Front Range, as return flows produced from the Western Slope water may be used over and over again. The one exception to this involves the waters of the Colorado-Big Thompson (C-BT) Project. These waters are administered like “native water” and only allowed for single use. This allows senior users downstream from the C-BT Project to fulfill their water rights without placing a call to junior users who are upstream of the project.

### ***Environmental Impacts***

- Basin of Origin
  - Loss of assimilative capacity and concentration of pollutants
    - Wastewater treatment plants = loss of dilution flows
    - Acid mine drainage = loss of dilution flow
  - Loss of natural hydrograph and volume of flow
    - Lower base flows
    - Lower flushing flows
    - Impacts to terrestrial fauna and freezing of exposed fish spawning beds
    - Impacts to threatened and endangered (T&E) and other species
  - Water quality degradation
    - Temperature increase
    - Sediment increase
  - Loss of wetlands values and functions
    - Habitat
    - Flooding
    - Pollution control

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<sup>5</sup> Colorado River Water Conservation District, *H2Oh!: “Moving Water,”* available at <http://www.crwcd.gov/H2Oh/MovingWater.pdf> (last visited July, 20 2004).

- Receiving Basin
  - Channel issues
    - Scouring
    - Flooding
    - Loss of habitat
  - Takings issues (have to maintain habitat for endangered or threatened species, or else face liability for a “taking” of the species)

### ***Economic Impacts***

- Increased treatment costs for water and treatment plants
- Increased carriage and other costs to remaining agricultural system users – harder to get water in head gates
- Loss of return flows
- Loss of recreational income
  - West Slope’s current recreation-based economy
  - Recreational impacts to receiving basin
- Loss of growth related income

### ***Existing Facilities<sup>6</sup>***

- Tunnels
  - Adams Tunnel (Grand County to Fort Collins area)
    - Part of the Colorado - Big Thompson (CBT) project, which is owned by the U.S. Bureau of Reclamation and managed by the Northern Colorado Water Conservancy District.
    - CBT provides water for supplemental irrigation, domestic uses, and hydroelectric power in the South Platte River basin. It also conveys water from the Windy Gap project from east to west.
    - The tunnel travels under Rocky Mountain National Park at Andrews Pass.
    - Diverts approximately 200,000 a/f of water per year.
  - Moffat Tunnel (Grand County to Boulder)
    - Owned by the Denver Water Board.
    - Diverts water from the Williams Fork where it travels under the Continental Divide into South Boulder Creek (near Winter Park Resort) to Gross Reservoir.
    - Diverts approximately 60,000 a/f of water per year.
  - Roberts Tunnel (Summit County to Park County)
    - Owned by the Denver Water Board.
    - Longest major water delivery tunnel in the world (23.3 miles).
    - Water is taken from the bottom of Dillon Reservoir, piped under the Continental Divide and discharged near the town of Grant, on the North Fork of the South Platte

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<sup>6</sup> John N. Winchester, *A Historical View: Transmountain Diversion Development in Colorado*, Hydrosphere Resource Consultants, Inc., available at [www.hydrosphere.com/HRC/Projects/Jnw\\_Trans\\_Mtn\\_Div/Transmountain\\_paper.htm](http://www.hydrosphere.com/HRC/Projects/Jnw_Trans_Mtn_Div/Transmountain_paper.htm) (June 27, 2001).

- Diverts approximately 65,000 acre/feet (a/f) of water per year.
- Hoosier Pass Tunnel (Summit County to Park County)
  - Owned by the city of Colorado Springs for municipal purposes.
  - Diverts water out of the upper Blue River. It is stored in Montgomery Reservoir and then is piped through the tunnel where it is discharged into the South Platte and Middle Fork Rivers.
  - Diverts approximately 9,600 a/f of water per year.
- Vidler Tunnel (Summit County to Clear Creek)
  - Owned by the city of Golden.
  - Water is used primarily for augmentation and municipal purposes in the Clear Creek basin. Also provides some water for Summit County augmentation purposes.
  - Takes waters from Peru Creek, a tributary of the Blue River and Snake, under Argentine Pass and discharges into Leavenworth Creek, a tributary of Clear Creek.
  - Diverts approximately 740 a/f of water per year.
- Straight Creek Tunnel (Summit County to Clear Creek)
  - Owned by Coors and CDOT (Colorado Department of Transportation). The water is used by the Coors Company or others to which it leases the water.
  - Diverts out of Straight Creek, and the water is stored in an underground tunnel, just west of Eisenhower Tunnel. It is then piped under the Continental Divide and discharged into Clear Creek.
  - Diverts approximately 460 a/f of water per year.
- Boreas Pass Ditch (Summit County)
  - Owned by the city of Englewood for municipal purposes.
  - Diverts water from Indiana Creek, a tributary of the upper Blue River, and discharges into North Tarryall Creek, a tributary of the South Platte River.
  - Diversion amount
- Homestake Tunnel (Eagle County to Lake)
  - Owned jointly by the cities of Colorado Springs and Aurora and is used for their municipal purposes.
  - Diverts water out of the tributaries of Homestake Creek where it is stored in Homestake Reservoir, near Leadville. It then passes through the Homestake Tunnel to Lake Fork, above Turquoise Reservoir. Water moves from Turquoise to Twin Lakes Reservoir through the Mt. Elbert conduit and power plant, then through the Otero Pump Station to the South Platte and on to Auora and Colorado Springs. The rest remains in the Arkansas
  - Diverts approximately 27,600 a/f of water per year.
- Wurtz Ditch (near Tennessee Pass in Lake County)
  - Owned by the Pueblo Board of Water Works, which uses it for municipal purposes or leases it to other water users as a supplemental irrigation water supply or for augmentation purposes.
  - Diverts waters out of the South Fork of the Eagle River and delivers it into the headwaters of Tennessee Creek, a tributary of the Arkansas River.
  - Diverts approximately 2,800 a/f of water per year.

- Columbine Ditch (Lake and Eagle County)
  - Owned by the Pueblo Board of Water Works, which uses the water for municipal purposes or leases it out to others for use as a supplemental irrigation supply or for augmentation.
  - Water is diverted from the East Fork of the Eagle River and discharged into Chalk Creek. The ditch is located approximately 13 miles north of Leadville.
  - Diverts approximately 1,800 a/f of water per year.
- Ewing Ditch (Lake and Eagle County)
  - Owned by the Pueblo Board of Water Works, which uses the water for municipal purposes or leases it out to others for use as a supplemental irrigation supply or for augmentation.
  - Diverts waters from Piney Creek, a tributary of the Eagle River, over Tennessee Pass and into Tennessee Creek, a tributary of the Arkansas River.
  - Oldest trans-basin diversion in the Arkansas Basin (1880).
- Busk-Ivanhoe Tunnel (10 miles west of Leadville)
  - Originally developed as a railroad. Now owned jointly by the Pueblo Board of Public Works and the city of Aurora.
  - Water is diverted from Ivanhoe Creek, a tributary of the Fryingpan River, and delivered to Turquoise Reservoir in the headwaters of the Arkansas River.
- Boustead Tunnel (Pitkin County)
  - Constructed by the Bureau of Reclamation to provide supplemental water for irrigation and municipal use on the Front Range, though the project also generates electrical power.
  - Transports water from the Fryingpan River under the Continental Divide to the head of Turquoise Reservoir in the Arkansas River Basin.
  - Diverts approximately 60,931 acre-feet of water per annum.
- Twin Lakes Tunnel (Lake County)
  - Diverts approximately 40,615 acre-feet of water per annum.
  - Tunnel runs through the Sawatch Mountains taking water from the Roaring Fork River through the Continental Divide where it is deposited into North Fork Lake Creek, which is a branch of the Arkansas River.
- Major Reservoirs
  - Dillon Reservoir<sup>7</sup> (Summit County)
    - Owned and developed by Denver Water.
    - Stores 254,000 AF
    - Located at the confluence of the Blue River, the Snake River, and Ten Mile Creek where the old town of Dillon used to lie.
    - Water is diverted through the Roberts Tunnel.
  - Green Mountain Reservoir<sup>8</sup> (Summit County)

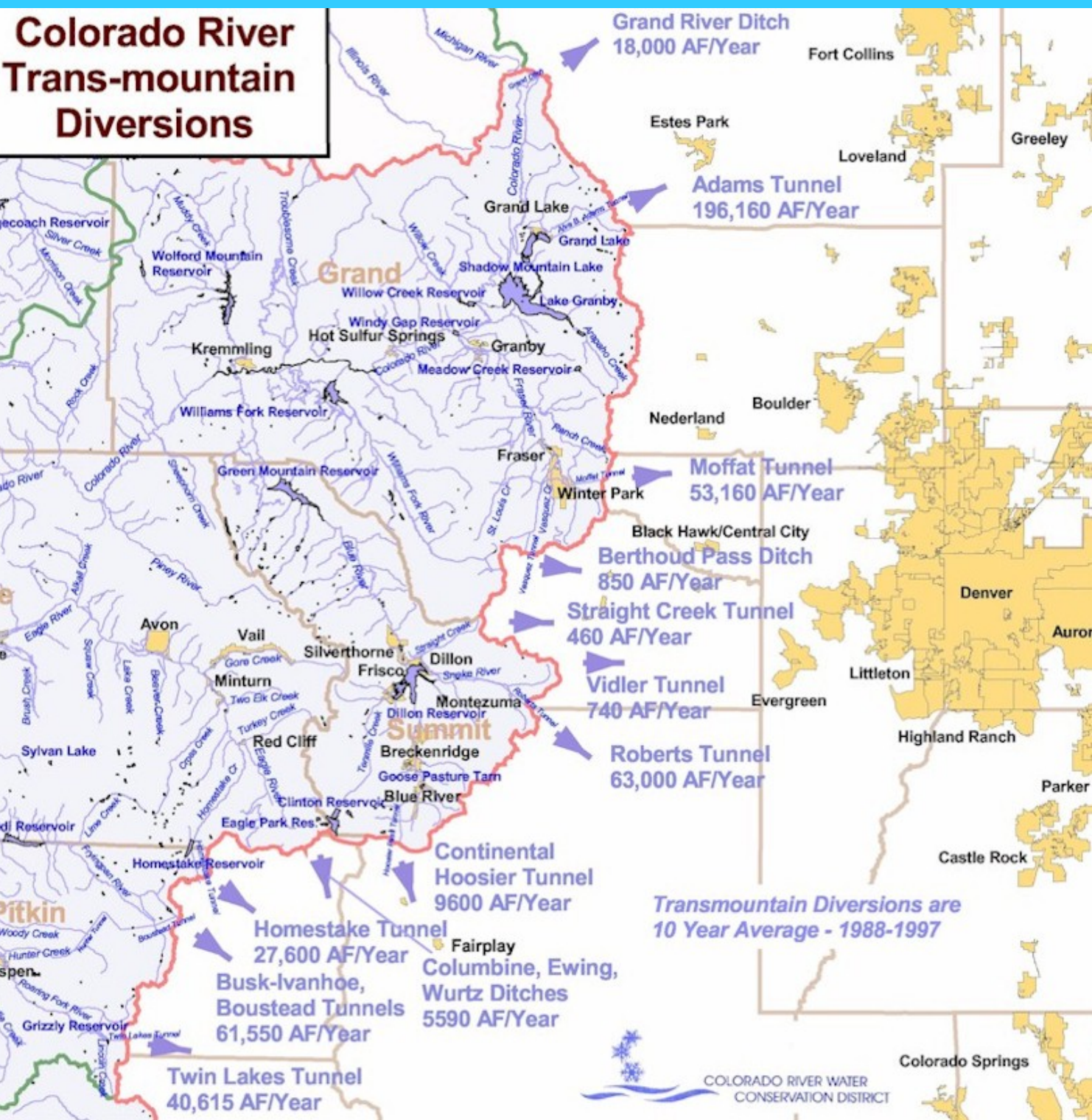
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<sup>7</sup> C. Reich and N. Stowe, *Operating Information: Dillon Reservoir and Roberts Tunnel*, Denver Water PACSM staff (February 4, 1999) (on file with the NWCCOG Water Q/Q Committee).

<sup>8</sup> C. Reich and N. Stowe, *Operating Information: Green Mountain Reservoir*, Denver Water PACSM staff (February 4, 1999) (on file with the NWCCOG Water Q/Q Committee).

- Constructed for the primary purpose of providing replacement storage for the CBT project under the conservancy act. It also provides for generation of electric power, a domestic and irrigation water supply to rights junior to the CBT project, and for future development of the West Slope.
  - Stores surplus flows from the Blue River and is located on the River 13 miles southeast of Kremmling.
  - Stores 154,000 AF
- Granby Reservoir (Grand County)
  - Owned by the Northern Colorado Water Conservancy District and operated by the Bureau of Reclamation.
  - Largest Colorado-Big Thompson storage reservoir with the active capacity to store 465,500 a/f.
- Shadow Mountain Reservoir (Grand County)
  - Contiguous with Grand Lake at normal operating elevation.
  - These two areas have the ability to store 18,400 a/f.
- Willow Creek and Windy Gap systems
  - Operated by the Northern Colorado Water Conservancy District, though Middle Park Water Conservancy District owns 3,000 a/f of this water.
  - Diverts approximately 50,000 a/f of water to Lake Granby every year.
- Williams Fork Reservoir
  - Owned and operated by the Denver Water Board for the purposes of meeting downstream calls which could call out Denver's use of Blue River water.
  - Located about three miles above the confluence of the Williams Fork and Colorado Rivers.
  - Stores approximately 97,000 a/f.
- Wolford Mountain Reservoir
  - Constructed by the Colorado River Conservancy District on Muddy Creek. Denver Water owns 40% of the water with the rest being available by lease through the Conservancy District.
  - The reservoir can hold up to 60,000 a/f of water.

# Colorado River Trans-mountain Diversions



## **F. State v. Federal Rights**

### ***Federal Reserved Rights***

Federal laws tend to complicate Colorado's prior appropriation system. The concept of "federal reserved rights" is at the heart of most water conflicts that occur between federal and state interests. These rights permit the federal government to reserve unappropriated adjunct water to the extent needed when it takes land from the public domain and reserves it for a federal purpose. These water rights vest on the date the government reserves the lands. Common acquisitions where the government gains reserved water rights include national forests, national grasslands, national parks, wilderness areas, wildlife refuges, Indian reservations, military installations, as well as a variety of other public lands.

Problems occur with these federal reserved rights because few of the rights are accounted for by states prior to their attainment. This leaves great uncertainty in regards to the amount of water necessary to fulfill the reservations, and, thus, makes it difficult to incorporate these federal rights into the administration of stream systems at the state level.

## **G. Interstate Obligations**

### ***Interstate Compacts***

Compacts provide a way to apportion water between states. A compact is a legal contract that allows states to fix their allocations in perpetuity. Congressional approval is necessary for an interstate compact to become law. Once a compact is approved, it becomes part of both state and federal law

The first major interstate compact entered into by Colorado was the Colorado River Compact of 1922. This agreement, which is still in effect, divides the water of the Colorado River into an upper and lower basin. The upper basin includes Colorado, Wyoming, New Mexico, and Utah. The lower basin is comprised of Arizona, California, and Nevada, as well as parts of New Mexico and Utah that fall below the town of Lee Ferry, AZ. Lee Ferry is the basin dividing point. Lake Powell, which is located just upstream of Lee Ferry, and Lake Mead, which is located outside of Las Vegas, are the primary reservoirs responsible for water delivery to the lower basin states under the Compact. It is at the discretion of the Secretary of the Interior to divvy up the water flowing from the upper basin into these two reservoirs. Lake Powell also releases water to Mexico to fulfill the U.S.-Mexico Water Treaty of 1906.

Other interstate water compacts that involve Colorado, apportion the waters of the La Plata (1922), South Platte (1923), Rio Grande (1938), Republican (1942), and Arkansas (1948) Rivers.

## **H. Colorado Groundwater Law**

Colorado follows a unique classification scheme that divides groundwater into four different categories:

- 1) **Tributary groundwater** – this water interacts with surface water and is considered as part of the surface stream under the appropriation doctrine.

- 2) **Designated groundwater** (most located on eastern plains) – groundwater located within a basin. This groundwater must either (i) not be available and needed to fill surface rights or (ii) be in areas not adjacent to a natural stream wherein groundwater withdrawals have constituted the principal water usage for 15 years prior to the first hearing on proposed designation of the basin.
- 3) **Nontributary groundwater** – groundwater located outside the boundary of any designated basin, the withdrawal of which will not, within 100 years, deplete the flow of a natural stream at an annual rate greater than 1/10 of one percent.
- 4) **Denver Basin Groundwater** – groundwater located wholly within the Denver Basin.

## I. References

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Peter D. Nichols, Megan K. Murphy, and Douglas S. Kenney, *Water and Growth in Colorado: A Review of Legal and Policy Issues*, Natural Resources Law Center, University of Colorado School of Law (2001).

## **III. Water Quality**

### **A. Clean Water Act (33 U.S.C. § 1251)**

The Clean Water Act passed in 1972 is the basis for water quality management for all states. The U.S. Environmental Protection Agency (EPA) is the federal agency in charge of assuring compliance with the Act. However, in Colorado implementation of this Act has been delegated to the Water Quality Control Commission of the Colorado Department of Public Health and Environment. The Colorado Water Quality Control Division is the state agency in charge of regulating water quality under the Colorado Water Quality Control Act.

#### ***Section 208***

Section 208 of the Clean Water Act allows for regional approaches to water quality management. This gives regional agencies the power to recommend ways to protect and enhance water quality, to identify the major water quality issues, to provide input on water quality standards and classifications, and to adopt water quality management plans. NWCCOG is the Section 208 agency for Eagle, Grand, Jackson, Pitkin, and Summit Counties in Colorado (region 12).

#### ***Section 404***

Section 404 of the Clean Water Act (CWA) requires approval for discharges of dredged or fill material into any waters located in the U.S. This section focuses on ensuring that physical, biological, and chemical water quality is protected from unregulated discharges that could permanently degrade waters and wetlands. Section 404 permits are issued by the U.S. Army Corps of Engineers and are required for most any type of water diversion or storage project. When determining the validity of a permit, the Corps follows the Section 404(b)(1) guidelines of the CWA. This permitting process is a key component to water development in Colorado, as it is necessary for the development of most reservoirs and other diversion projects.

#### ***Section 401***

Section 401 of the Clean Water Act is titled the State Water Quality Certification Program and requires states to certify that federal permits or licenses will comply with state water quality laws. Under this section, Colorado has the right to review any federal permit or license that may result in a discharge into its waters, including a 404 permit for wetlands. This allows the state to ensure that discharges are consistent with the state's water quality laws, as these are sometimes more stringent than federal requirements. Federal permits must meet these state requirements in order to be issued.

#### ***Section 402***

The NPDES (National Pollution Discharge Elimination System) is the regulatory program created under the Clean Water Act to issue permits to those discharging pollutants from "point sources." "Point sources" are points of discharge, most commonly from factories or wastewater plants that emit water directly into the stream system. These sources are normally discharged from the end of a pipe and are of different quality than the receiving stream. The NPDES, or CPDES as it is called in Colorado, requires discharges to meet technology-based effluent standards, which are set nationally by the EPA for each category of water based on where the discharges occur. In Colorado, the Water

Quality Control Commission is charged with classifying waters based on current and future uses. These classifications include uses for agriculture, aquatic life, domestic water supplies, recreation, and wetlands. Discharges that reduce water quality below standards adopted to protect these classified uses are prohibited.

## **B. Colorado Water Quality Control Act**

The Colorado Water Quality Control Act is Colorado’s version of the Clean Water Act, and it is the source of Colorado’s state laws pertaining to water quality. It was adopted by the Colorado General Assembly in order “[t]o protect, maintain, and improve where necessary and reasonable, water quality for public water supplies, for protection and propagation of wildlife and aquatic life, for domestic, agricultural, industrial, and recreational uses.”<sup>9</sup>

## **C. Water Pollution and Pollutants**

### ***Introduction***

A “pollutant,” as defined by federal and state law, includes any substance that will detrimentally affect water quality or interfere with the desired uses of a stream. Some of the most common pollutants include metals, nutrients (phosphorus and nitrogen), ammonia, pathogens (disease-causing bacteria and viruses), sediment, and saline. Metals and ammonia can kill fish, nutrients may cause a water body to fill with algae, pathogens can cause human illness, and sediment can destroy an aquatic habitat.

“Pollution” is defined more broadly than “pollutant,” and refers to human induced activities that lead to changes in the chemical, physical, biological, and radiological makeup of the water.

### ***Point Source Discharges***

Point sources are discharges that flow into water bodies and are readily discernible and confined. They are generally thought of as discharges that occur from the end of a pipe and were at one point under some sort of human control. However, they may also include overflows from impoundments and stormwater runoff that is concentrated in drainage systems. The largest source of this type of pollution comes from industrial wastewater treatment and municipal sewage plants.

### ***Nonpoint Source Discharges***

Nonpoint source pollution comes from various unconfined sources, rather than from one fixed source location. Examples include runoff from agricultural lands, inactive mine sites, construction sites, diffuse stormwater and urban development. It is the largest remaining source of pollution contributing to the degradation of water quality throughout the state and nation.

## **D. Antidegradation**

The Water Quality Control Act adopted antidegradation provisions to protect existing levels of water quality. This protects the water quality standards that were in place at the time of the Act. So if a

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<sup>9</sup> C.R.S. § 25-8-102

water body had better water quality standards than required when the Act took effect, these standards are protected and degradation of the body of water is not permitted.

The provisions under the Act designate Colorado's water bodies into three types of water:

- 1) **Outstanding waters** – absolutely no degradation is permitted to take place.
- 2) **Use-protected waters** – degradation is allowed so long as water quality standards are not violated.
- 3) **Reviewable waters** – degradation is severely limited and must be shown to be necessary for important social or economic development and there are no reasonable alternatives to the degrading activity available.

## **E. Triennial Review Process**

The “triennial review process” requires state and federal water quality classifications and standards to be reviewed once every three years. Any new or revised water classifications or standards that come out of the process must gain EPA approval before becoming effective. The EPA has the authority to implement its own standards if a state standard that is up for review is denied, or if the state chooses not to implement its own standards. The EPA gives the state time to redo a classification or standard that did not initially meet EPA minimum standards. Colorado has its own standards that are in accordance with those required by the EPA.

## **F. Monitoring and Assessment**

The Water Quality Control Division is charged with monitoring and assessing Colorado's water, although a variety of other agencies, organizations and individuals are actively collecting water quality data which is used in the state's decision making process. Monitoring can include both chemical and biological data collection. Chemical monitoring takes samples of water and assesses certain chemical constituents such as ammonia, or metals. Biological monitoring, on the other hand, looks at fish populations, aquatic insects, algae, and aquatic habitat.

## **G. Relationship to Quantity**

There is a natural tension between the extensive use of water resources and the desire to maintain high quality. This is particularly an issue in semi-arid states like Colorado where water rights typically require diversion from the stream. The lower the water level in a stream or water body, the greater the potential for water quality impacts. Therefore, water quality must be considered when weighing the costs and benefits of extracting, diverting, and storing water resources.

Water quality and quantity laws often conflict. This is due mainly to the fact that each body of law was developed at different times with different objectives. Many water quantity laws date back more than 150 years and have been predominately formulated at the state levels. In contrast, water quality law is quite new, largely coming into existence with the passage of the Clean Water and Safe Drinking Acts in the last quarter of the 20<sup>th</sup> century. These Acts are federal laws and contain very specific requirements developed mostly by federal agencies. This often times produces conflicts

with the state water quantity laws, as the federal water quality standards were not taken into consideration upon formulation of the state quantity standards.

## **H. Clean Up of Polluted Waters**

### ***Section 303(d) List***

Section 303(d) of the Clean Water Act requires states to periodically submit a list of polluted waters to the EPA. This list of impaired water segments that do not meet water quality standards is called the Section 303(d) List and is updated by the EPA every two years. This list is established in Colorado by the Water Quality Control Commission. Once the list is submitted to the EPA, the EPA must give its approval. If the EPA finds the list to be incomplete, it has the authority to add additional polluted waters to the list.

Colorado also maintains a Monitoring and Evaluation List. A water body is placed on this list if there is inadequate information to reach a definite conclusion as to whether it complies with water quality standards or not.

### ***Total Maximum Daily Loads (TMDLs)***

As required by the Clean Water Act, the state must develop and implement total maximum daily loads (TMDLs) for waters that are on its 303(d) List. A TMDL identifies the total quantity of pollutants that can be added to a water body from any and all sources to ensure compliance with water quality requirements. The TMDL must include and evaluate all sources of pollution, whether they come from a point source, a nonpoint source, or are naturally occurring. The TMDL identifies all the pollution sources that affect the stream segment, determines how much pollution must be reduced to meet water quality standards, and outlines a plan for reducing pollution loads. The Water Quality Control Division is in charge of developing the TMDL reports, but also receives substantial assistance from local watershed groups.

## **I. Pollution Controls**

The state controls water pollution through NPDES discharge permits for point source pollution, control regulations, and voluntary nonpoint source controls. Section 404 of the federal Clean Water Act also requires permits issued by the U.S. Army Corps of Engineers for certain activities impacting wetland areas (see “Section 404” under the “Water Quality Control Act” section above for more information).

### ***Point source discharge permits***

Point source discharge permits regulate municipal and industrial wastewater, as well as stormwater sewer systems that emit pollutants from point sources. The permits that regulate the storm sewers are required of cities and towns with populations of greater than 10,000 by the National Pollution Discharge Elimination System (NPDES).

The permits are issued in Colorado by the Water Quality Control Division, though the EPA has the power to veto any of these individual permits. The permits are good for five years, at which point the permittee must apply for a renewal.

### ***Control Regulations***

Control regulations are situation specific regulations that the Water Quality Control Commission determines are necessary to regulate specific activities or to protect water quality in certain water bodies that are not already covered by discharge permits. Some activity-specific control regulations that have been adopted include industrial pretreatment of water prior to discharge into municipal sewers, wastewater reuse for landscape irrigation, pollution trading mechanisms and passive treatment for mine drainage. The implementation of control regulations protects Dillon Reservoir, Cherry Creek Reservoir, Chatfield Reservoir, Bear Creek Watershed, and Cheraw Lake.

### ***Nonpoint source pollution controls***

Nonpoint sources represent the largest remaining source of water quality problems nationwide. Despite this fact, there are very limited mandatory federal programs in place regulating the activities that cause this pollution. Colorado has a voluntary program that focuses on preventing the pollution from occurring at the source. This program uses federal grants under section 319 of the Clean Water Act.

## **J. NWCCOG Water Quality Protection Standards**

The NWCCOG has established recommended water quality protection standards for certain activities under the control of local governments. These activities include control of erosion and sedimentation for construction projects, control of post construction stormwater and urban runoff, slope limitations for building, a waterbody buffer system, hazardous materials management, snow storage, standards for wastewater systems, water quality protection standards applicable within a watershed district or sensitive area overlay district, and enforcement and penalties for not complying with these regulations. For more information, please see the NWCCOG's web page under the Water Quality and Quantity Program at [www.nwc.cog.co.us](http://www.nwc.cog.co.us).

## **K. References**

### ***Books***

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## IV. Land Use and Water

### A. Land Use Regulation and Watershed Planning<sup>10</sup>

#### *Introduction*

Traditional land use regulatory techniques can reduce or eliminate nonpoint source pollution in several ways. Comprehensive plans and zoning ordinances can control the location, type and rate of new development. In turn, if abatement of nonpoint source pollution is included within the plans or ordinances, this will help to minimize the pollution problem at the outset of development.

Subdivision controls, special overlay districts, special use permits and site plan review processes can also include measures that require mitigation of nonpoint source pollution. This type of planning allows for pollution controls to be in place before development and curtails the need to deal with a water quality problem after development occurs.

#### *Comprehensive Plans*

Comprehensive plans establish policies to guide decision-makers in such areas as transportation, housing, future land use, water and sewer, and other infrastructure. As a watershed management tool, a comprehensive plan can include statements of goals and objectives to address watershed management. In addition, the comprehensive plan can be used to identify critical areas for water quality protection such as open space sites, stream corridors, drainage-ways and wetlands. Where an area-wide waste water management plan has been adopted under § 208 of the Clean Water Act, local government comprehensive plans should incorporate the policies and strategies identified in the 208 plan.

#### *Zoning Regulations*

Zoning regulations usually address the overall density and uses allowed within the geographic area defined for each zoning classification. Typically, development characteristics such as density, height, setbacks, lot area coverage, impervious surface ratio and access to light are addressed. Setbacks from streams, lakes and wetlands are frequently required by zoning ordinances to minimize sedimentation, bank erosion and chemical pollutants from interfering with water quality.

An alternative to zoning requirements that apply to all zoning categories is the overlay district. An overlay district establishes additional requirements designed to protect specific environmentally sensitive areas. For example, portions of a watershed may be designated as an overlay district in which land use activities are regulated to prohibit degradation to the aquatic habitat. Transfer of development rights programs can also be used to transfer permitted densities from areas critical to water quality protection. One of the most effective zoning tools for minimizing water quality impacts associated with development is a limitation on the percentage of a site that may be covered by impervious surfaces. As impervious coverage increases, the velocity and volume of surface run-off increases and there is a corresponding decrease in infiltration. Increased run-off results in increased erosion from areas disturbed by construction, which, in turn, increases sedimentation in

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<sup>10</sup> Barbara Green and John Alby, *Watershed Planning*, 1 U. Denv. Water L. Rev. 75, 80-82 (1997).

adjacent water bodies. Erosion can also cause loss of streamside habitat and instream habitat as the stream channel is covered by a blanket of eroded sand and silt.

### ***Subdivision Controls***

Another way to protect water quality is through subdivision design standards or approval criteria. Water quality impacts can be minimized by erosion and sedimentation control requirements, stormwater management systems, drainage design standards, landscaping specifications and construction management practices. To the extent the avoidance of polluted run-off from a subdivision cannot occur, a requirement of developers should be to mitigate the impacts of increased polluted run-off through some other project.

In areas that experience high snowfall, the implementation of snow storage requirements can take place to ensure that snowmelt does not result in a direct discharge to water bodies. Subdivision site design standards can prevent direct stormwater discharge to water bodies by requiring urban runoff to first pass over vegetated, undisturbed land. Site design standards can prohibit major modifications of stream channels, wetlands or lake shorelines and require that all instream work be avoided.

The design of the subdivision itself can affect water quality by encouraging the clustering of dwelling units and requiring that aquifer recharge areas, wetlands, steep slopes or other sensitive areas be left free from development. Street widths can be reduced to minimize paved surface areas and wetlands can be used to filter runoff from the development before it enters adjacent water bodies.

### ***Regional Planning***

To effectively employ land use planning and zoning techniques as a watershed protection tool, cooperation among neighboring units of government is essential. Typically, land use regulatory authority is coterminous with municipal or county boundaries. However, the need for a regional approach is evident when communities attempt to protect water quality because water pollution problems do not respect political boundaries. Decisions to approve land use activities in one jurisdiction can have adverse water quality impacts on a neighboring, downstream jurisdiction. Regional planning can encompass strategies to control these impacts from developments that transcend the boundaries of individual units of local government.

Recently, a regional planning approach known as the "compact" has received attention from commentators. This is a voluntary approach to regional cooperation that includes a regional plan and an ongoing management process for a particular geographic area. Each unit of government with jurisdiction in that area is a designated stakeholder. Under the compact approach, each governmental unit has the option of implementing portions of a regional plan. If it adopts the plan, it becomes a "participating community" in a compact. The compact approach is ideal for addressing issues on a watershed scale because it integrates units of government horizontally (between neighboring jurisdictions) and vertically (between federal, state and local levels), all of which may have an impact on water pollution associated with the use and development of land.

Colorado has enacted a statute that confers on local governments the authority to regulate "developments of regional impact" ("DRIs"). This Act, the Colorado Areas and Activities of State Interest Act, authorizes municipalities and counties to regulate certain "areas and activities of state

interest.” Pursuant to this authority, several Colorado municipalities and counties have implemented permit requirements to regulate the impact to water quality and loss of quantity caused by matters of state interest.

### **B. House Bill 1041 (S 224-65.1-101)**

Colorado House Bill 1041, also known as the Areas and Activities of State Interest Act, was enacted in 1974 and allows local governments to regulate a wide variety of development activities with guidance from the state. This gives local governments the authority to create land use policies tailored to the intricacies and interests of their communities. Development may only proceed if in line with the environmental and development goals of the local communities as outlined in their 1041 regulation. However, the bill does not give local governments the power to pass regulations absolutely prohibiting the building or operation of municipal extraterritorial water projects. It simply allows local governments to require a permit with expressed guidelines before construction is able to start. The goal is to limit water projects that will create a nuisance or significantly degrade the environment. If a project does not meet the regulations, then the permitting be deemed or conditioned.

Eagle County exercised this local authority by denying local “1041” land use permits to Colorado Springs and Aurora for their Homestake II water development project. The County found the project to breach local interests due to its negative environmental impacts and lack of local control. The Colorado Supreme Court refused to review Eagle County’s decision, even though the project was to solve many water problems for Colorado Springs and Aurora.

### **C. Land Use Control Enabling Act (1034)**

This Act gave towns, cities, and counties the authority to:

- Regulate development in hazardous areas
- Protect wildlife habitat and species
- Preserve areas of historical and archeological importance
- Regulate the location of activities and development that may cause significant changes in population density
- Regulate land use based on impacts to the community
- Impose impact fees or other charges related to impacts from proposed development on facilities provided as a service of the local government (e.g. wastewater treatment plants).

### **D. Intergovernmental Agreements**

Intergovernmental agreements give neighboring municipalities or counties the authority to regulate beyond their borders and within the entire area covered by the agreement. In fact, in Colorado governments are expressly authorized and encouraged “to cooperate or contract with other units of government ... for the purposes of planning or regulating the development of land including, but not limited to, the joint exercise of planning, zoning, subdivision, building and related regulations.”<sup>11</sup>

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<sup>11</sup> C.R.S. § 29-20-105(1).

This allows governments to plan for a regional and coordinated approach to addressing impacts of water development activities. This is particularly important for water projects located within one jurisdiction that cause impacts in other jurisdictions. Intergovernmental agreements can mitigate project impacts by incorporating all the counties or municipalities involved in a cross-border agreement, and agreeing to any stipulations prior to the occurrence of any impacts.

## **E. Resources**

*Citizens Guide to Colorado Water Law*, Colorado Foundation for Water Education (2003).

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## V. Glossary of Relevant Definitions

**Abandonment** – Statutory principle in Colorado mandating that a person who stops using their water right with intent loses that right permanently. Intent to abandon must be shown, but no specific period of non-use is required.

**Absolute water right** – A water right that has been put to beneficial use and therefore gained permanent status as the result of a court proceeding. Water rights may be conditional and then granted absolute status when placed to beneficial use.

**Acre-foot (AF)** – The amount of water needed to fill an acre of land with one foot of water. This equals 43,560 cubic feet or 325,851 gallons. One acre-foot typically supplies 2-3 families of five, depending on location, a supply of water for one year. It takes three or more acre-feet per season to irrigate a single acre of cropland.

**Adjudication** – The process for obtaining a water court decree for a conditional water right, a finding of reasonable diligence, an absolute water right, an exchange, an augmentation plan, a change of water right, or a right to withdraw nontributary water or Denver Basin groundwater that is outside of a designated groundwater basin.

**Administration** – The action taken by the State Engineer's Office when there is not enough water physically available to meet the demands of water rights holders within a river basin. Through the process of administration, senior water rights are satisfied by shutting off water supplies to junior water rights, beginning with the most recent priority dated and moving back chronologically, until the supply of water available for a diversion is expended.

**Alluvium** – Sand and gravel deposits in river channels or flood plains, hydraulically connected to streams.

**Appropriation** – Placement of a specified portion of the waters of the state to a beneficial use pursuant to the procedures prescribed by law. Speculation is prohibited. The appropriator must have its own use for the water or have a contract to serve customers that the water will benefit. Only previously unappropriated surface or tributary groundwater water can be appropriated. The appropriator must have a plan to divert, store or otherwise capture, possess and control the water for beneficial use.

**Aquifer** – An underground formation of rock, gravel and sand where water is stored. *Confined aquifers* are separated from the atmosphere by materials that restrict the movement of the water into or out of the aquifer. *Designated aquifers* are groundwater areas not adjacent to a continuously flowing stream, where groundwater has been the principal water supply for at least fifteen years preceding the designation of the groundwater basin.

**Augmentation** - Replacing the quantity of water depleted from the stream system caused by an out-of-priority diversion. When adjudicated and operated to replace depletions to the stream system, the out-of-priority diversion may continue even though a call has been placed on the stream by senior decreed rights.

**Basin** – A river basin is the drainage area of a particular river. The Colorado River drains or is fed by an area of 250,000 square miles, (creating the Colorado River Basin).

**Beneficial use** – Applying water to a useful purpose in an efficient and responsible manner without being wasteful. Historically beneficial uses included only agriculture, industry, domestic use, and municipal use. Now Colorado also recognizes fish, mining, wildlife, snowmaking and recreation as beneficial uses.

**Blue River Decree** - The Blue River Decree was finalized by a federal court decision in 1955 and was the result of a dispute dating back to 1937. In 1937, Congress authorized a reclamation project known as the Colorado-Big Thompson Project (“CBT”). This project was developed to store replacement water at Green Mountain Reservoir for use by the western slope to compensate for other Colorado River water diverted to the eastern slope as part of the CBT. The Decree recognized the Federal Government’s right to fill and utilize Green Mountain Reservoir and described Denver's water rights to the use of Blue River water and its tributaries.

**Bypass flows** – U.S. Forest Service (USFS) requirements of water diverters, with structure on USFS land, to maintain minimum flow levels from reservoirs or in the routing of water around diversion facilities, typically to serve environmental purposes. These requirements are controversial because it was found by a federally established task force that Congress had not delegated the necessary authority to the Forest Service to require bypass flows as a condition of renewing or reissuing authorization for existing projects, and that such actions undermine McCarran adjudications.<sup>12</sup>

**Call** – A “call” on a river may be placed by a senior water right holder who experiences a shortfall in the water that they are entitled to divert. The state will then force junior water right holders upstream to stop diverting in order to permit more water to reach the senior holder.

**Change in use** – Most western states allow water rights holders to file for a change in use or point of diversion where such changes will not result in injury [defined below] to other users.

**Colorado River Water Conservation District (CRWCD or River District)** – A public water policy agency created by the Colorado General Assembly in 1937 whose purpose is to conserve, use and develop the water resources of the Colorado River and its principal tributaries. The District is made up of 15 West Slope Counties in which a majority of the Colorado River Basin in the State is located. These counties are Moffat, Routt, Grand, Eagle, Summit, Pitkin, Gunnison, Rio Blanco, Garfield, Mesa, Ouray, Delta, and parts of Montrose, Saguache and Hinsdale.

**Colorado Water Conservation Board (CWCB)** – Statewide agency created by the Colorado General Assembly in 1937 to aid in "the protection and development of the waters of the state for the benefit of present and future inhabitants of the state..."<sup>13</sup> Its main responsibilities include holding instream flow water rights, flood control and protection, development of statewide water policy, identifying and recommending water development projects, as well as providing loans and grants to fund those projects. They are the only entity that can legally hold instream water rights.

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<sup>12</sup> Kenney, Douglas S., Megan K. Murphy and Peter D. Nichols, *Water and Growth in Colorado: A Review of Legal and Policy Issues*, Natural Resources Law Center, University of Colorado School of Law, 2001, p. 25.

<sup>13</sup> C.R.S. § 37-60-102 (2004).

**Compact** – A legal contract adopted by two or more states and ratified by the U.S. Congress which allocates water flowing by or through those states. Compacts typically guarantee headwater states a future right to a fraction of the water when it becomes needed. Colorado is a member of 10 such compacts.

**Compensatory Storage** – Refers to the concept that the impacts of a transbasin diversion may be partially offset by constructing a second diversion within the basin of origin. Green Mountain Reservoir was constructed as compensatory storage on the West Slope for the Colorado Big Thompson project which diverted Colorado River Water to the East Slope.

**Conditional right** – Conditional rights are a way to essentially hold your place in line within the priority system. A conditional right is a right to use water conditioned upon completion of a specified project within a reasonable amount of time. Maintaining a valid conditional right requires a showing of diligence. A conditional water right becomes an absolute water right (is “perfected”) when the water is actually used.

**Conjunctive use** – Conjunctive use is the coordinated use of both ground and surface water resources to maximize the availability of both. In wet periods, surface water will generally be the preferred water source, and excess surface water may be used to recharge underground aquifers. During drought periods when surface water is scarce, a greater reliance can be placed on ground water to meet consumptive needs. The Front Range, with substantial ground water resources, is increasingly looking to conjunctive use as a way to optimize their water supplies.

**Conservancy districts** – Entities organized pursuant to CRS 37-45-101 et seq. (i.e. Middle Park Water Conservancy District, Upper Gunnison River Water Conservancy District). Property taxes in the district’s area provide for water projects that allow for economic and environmental benefits.

**conservation district** – A conservation district is a policy-making body that is chartered by the General Assembly of Colorado for the purpose of protecting and developing the water resources of a portion of the state. Many conservancy districts can be located within the boundaries of a conservation district. There are four water conservation districts in Colorado: The Colorado River Water Conservation District covers northwest and west central Colorado, The Southwestern Water Conservation District covers the southwest corner of the state, the Rio Grande Water Conservation District covers the San Luis Valley and the Republican River Water Conservation District that represents the Republican River Basin in eastern Colorado.

**Consumptive use** – The amount of water consumed, as apposed to diverted, from the stream as a result of industrial processes, manufacturing, power generation, municipal uses, and evapotranspiration by irrigated crops.

**Cubic foot per second (c.f.s.)** – A common measure of water flow where one cubic foot of flows by a given point in one second of time. One c.f.s. is roughly equal to the flow produced by thirty garden hoses all running at the same time, or 499 gallons per minute.

**Decree** – Legal document issued by a water court that specifies the rights of a water rights’ holder. It shows the priority date of the diversion, the type and place of the use, and the amount of diverted water.

**Diligence** – Reasonable progress towards making a conditional water right absolute by putting unappropriated water to a beneficial use. This must be proved in a water court proceeding through an application initiated every six years after entry of the conditional decree or most recent diligence decree. Acts demonstrating diligence include engineering, permitting, financing, and construction of water facilities needed to complete water diversion and delivery to the place of use.

**Diurnal** – Diurnal describes the fluctuations of streamflow throughout the day. The rate of snowmelt increases with periods of sun exposure and increased temperature. Streamflows increase after the sun exposure of daylight hours and corresponding decrease after periods of darkness.

**Diversion** – Diverting water from a stream means taking the water out of the stream. A diversion is a physical structure that removes water from a natural stream. In-channel diversion means that water is controlled through structures within the stream channel.

**Duty of water** – The amount of water required for the practical and beneficial irrigation of a give amount of land; for example one c.f.s. to irrigate 80 acres.

**Effluent** – Effluent is any outflow of water. In connection with human water uses, the term effluent is most often used in the context of water whose quality has been impaired by human use, animal use or otherwise compromised by its diversion from its natural source. *Treated effluent* is the term used for discharges from wastewater treatment plants and returned to a river, stream or other water source.

**Endangered Species Act (16 U.S.C. § 1536)** – Section seven of this federal statute requires that the government take no action that may jeopardize the continued existence of any endangered or threatened species. Where the federal government is involved in a water project, this act may prohibit the project from proceeding if the loss of water will be harmful to such species. Some states have their own state laws regarding endangered species as well.

**Exchange** – Diverting water at one place and replacing it with another source without causing injury to other water rights.

**Exempt well** – A well, usually domestic or stock watering, that is presumed to be exempt from administration as a result of statutory provisions assuming non-injury to other water users.

**Fee well** – A well that is not exempt and requires a finding by the State Engineer of non-injury to other water rights before a permit can be issued.

**Foreign or imported water** – Water conveyed into a new watershed. In Colorado, as well as in most western states, this water is treated differently, in that an importer of foreign water is not required to return the flow back into the stream, but instead may use it to extinction.

**Free river** – Free river conditions occur when there is more water than all perfected water rights on a river system, enabling any water user, with or without water rights, to use water from that

waterway. A free river is most likely to occur during the spring runoff or on streams that have few water users.

**Futile call** – An unenforceable call that occurs when shutting down upstream users will not result in more water reaching the downstream senior user.

**Groundwater** – Water that is under the ground. Legally, there are three kinds of ground water: tributary, non-tributary, and not-non-tributary.

- *Tributary groundwater* refers to seepage, underflow, and percolating water that will eventually become part of the natural stream. In Colorado, all groundwater is presumed to be tributary unless proved otherwise.
- *Nontributary groundwater* is water that is not physically connected to a stream system, and in Colorado is defined by statute.
- *Not nontributary groundwater* applies only to Denver Basin Aquifers and has different rules for administration for non-tributary.

**Groundwater mining** – The practice of taking groundwater out of an aquifer at a rate faster than it is being replenished.

**Headgates** – Control devices at the head of an irrigation system used to control the diversion of water from a stream, canal, or reservoir. When these are turned off, no irrigation water will be delivered.

**Historic use:** Historic use documents the physical diversion and consumptive use of a water right over a period of time. Private diversion records or State Engineer's office records typically document a water user's historic use.

**Hydroelectric** – Hydroelectric power generation is the production of electricity from running or falling water, either from free-running watercourses or releases from a dam.

**Injury** – Occurs when a change in use or point of diversion by one water user results in diminished supplies to another water user. The “no-injury” rule requires that requests for changes in use be denied where they will result in injury to others, including junior users.

**Instream flow (ISF)** – Legal right for water to remain in the stream to protect the natural environment. Only the CWCB can hold an instream water right.

**Junior priority** – A water right whose date of appropriation is more recent than another right.

**McCarran Amendment (43 U.S.C. § 666)** – A federal law that waives governmental sovereign immunity and permits the federal government to be brought into state court where general adjudications of water rights are under way. If the federal government fails to assert its water rights, including reserved rights, in the course of such a proceeding, such rights are lost.

**Minimum stream flow** – Colorado recognizes the benefits of waterflowing in the state's rivers and streams. The Colorado Water Conservation Board (CWCB) has been granted the exclusive authority to hold water rights for the minimum flows necessary to protect the natural environment.

**Mitigation** – Mitigation is the remedy of negative consequences of certain actions. Mitigation is required or requested for most water development projects. Mitigation may be required when constructing reservoirs, diverting large quantities of water from a stream or transferring water from one basin of the state to another. Mitigation can take the form of constructing new wetlands, building new storage to compensate for a loss of water, repairing a stream channel and any other action deemed prudent by affected parties.

**Non-consumptive** – Any use of water that does not consume or deplete water through its use is non-consumptive. Recreation and aesthetics are examples of water use that are non-consumptive.

**Non-point sources** - Pollutants that emanate from an un-concentrated source; such as rainfall/snowfall, agricultural runoff, septic systems and contaminated soils.

**Phreatophytes** - Plants and trees whose roots reach below the water table and which consume a large amount of water through evapotranspiration. Removal of such vegetation along a river may significantly increase streamflow.

**Point sources** – Contaminated discharges flowing into a water body from any discernible, confined, and discrete conveyance (essentially from the end of a pipe).

**Prior Appropriation** – Also known as “first in time, first in right”, the prior appropriation doctrine is the fundamental basis of Colorado water law. Water rights are ranked according to the chronology, not location; the older the right, the more senior the right. When supplies are limited, senior rights are met first; junior rights may not be met.

**Priority date** – The date attached to all water rights in Colorado indicating when the water right was first obtained. This determines how senior the water right is.

**Public trust** – Doctrine making states’ responsible to hold certain valuable property rights in trust for the benefit of the citizens of the state. In California, this has been extended to water rights, and was used to invalidate water rights held by the City of Los Angeles when it was discovered that depletions of water were destroying the unique habitat at Mono Lake. National Audubon Society v. Superior Court of Alpine County, 33 Cal. 3d 419, 189 Cal. Rptr. 346, 658 P. 2d 709 (1983). In Montana, the doctrine has been used to assure stream access to the public. Montana Coalition for Stream Access v. Curran, 682 P.2d 163 (Mt. 1984).

**Reserved water rights** – Water rights deemed to be established in conjunction with the reservation of land by the federal government. For example, National Parks, Forests, and other reservations will be deemed to have such water reserved as is necessary to meet their primary purposes.

[**Winters Doctrine** The US Supreme Court, in *Winters v. United States*, gave the federal government the power to reserve the waters of the US and exempt them from an appropriation under state law. The Court held that the federal government may do this on all federally reserved lands (e.g. National Parks, National Monuments, Indian Reservations, etc.).]

**Return flows** – Water that returns to a stream after it has been used for a beneficial purpose. This includes water which is returned directly from irrigation systems wastewater treatment facilities and also water which gradually seeps back into the ground over time.

**Reuse** – A term that often applies to the use of transbasin water, non-tributary water, or transmountain water, where the owners have the right of successive use as long as they maintain identification and control of their water.

**Riparian** – This refers to land, along or on the bank of a natural water body or water course. It may also refer to the body of water law prevailing in the eastern U.S. which premises the existence of water rights on the ownership of riparian land.

**Salvaged water** – This is water that is saved by adopting water conservation practices. Many western states do not recognize water rights in salvaged water and consequently provide no incentives to conserve.

**Second-foot** – A measure of flow equal to a cubic foot of water per second. The labels “c.f.s.” and “second-feet” are equivalent.

**Special district** – Special units of government created by western states with the authority to issue bonds, levy taxes, and use the money to build water projects. They go by various names such as Natural Resource Districts, Irrigation Districts, Water and Sanitation Districts and Conservancy Districts.

**State engineer** – The official in Colorado who administers all water rights in the state.

**Substitution** – Water that is added at a downstream location by a junior appropriator in order to fulfill a senior priority. The junior then can use the upstream water that is no longer needed by the senior.

**Surface water** – Water which is found in rivers, lakes, streams, and wetlands, and which is distinguished from groundwater. They are appropriated waters, not owned.

**Tranbasin diversion** – Removal of water from its natural course to another basin. The water so removed is totally gone from the basin of origin. None returns to the stream in the basin from which it was taken. Diversion from the headwaters typically takes the highest quality water from a basin and consequently diminishes the water quality downstream.

**Unappropriated water** – This is water flowing in a stream which has not been appropriated or claimed by any person.

**U.S. Bureau of Reclamation (USBR or Bureau)** – Established in 1902 under the federal Newlands Reclamation Act, and is the organization in charge of large scale water development projects in both agrarian and municipal centers. The Bureau oversees the Colorado Big Thompson, Ruedi and Frying Pan Arkansas Projects.

**U.S. Army Corps of Engineers** – Agency that issues Section 404 permits, which are required of virtually every water diversion or storage project in the U.S.

**Usufructuary right** – A right to use something, like water, despite the fact that one does not own the thing or resource. All water rights in Colorado are deemed usufructuary because no one owns the actual molecules of water, but only the right to use the water for a time before it is returned to the system.

**Virgin Flow** – The natural flow of a stream which would occur if man had not affected or used water from the stream.

**Water court** – In Colorado, an individual must go to water court and receive a decree in order to obtain a new water right, or to effect a change in use or point of diversion. This process is unique to Colorado, as most other western states have established administrative processes for the issuance of water rights.

**Water right** – This is a right to use water and is usufructuary in nature. Water rights are fully transferable property rights.

**Watershed** – This is an area that, because of topographic slope, contributes water to a specified surface water drainage system, such as a stream or river. Under eastern riparian water law, water must be used within the watershed. In contrast, western water law generally allows for use outside the watershed. Watershed can be large, (the Colorado River watershed stretching from Colorado to Mexico), or small, (the Fraser River watershed from Berthoud pass to the confluence with the Colorado River).

**1041** – Colorado House Bill 1041 was enacted in 1974. It allows local governments to regulate a wide variety of development activities with guidance from the state. (See page 23 for more information)

**208** – Section 208 of the Clean Water Act, allows for regional approach to water quality management. (See page 15 for further information)

**404** – Section 404 of the Clean Water Act, requires approvals for discharges of dredged or fill material into any waters located in the U.S. (See page 15 for further information)

**401** – Section 401 of the Clean Water Act, State Water Quality Certification Program, requires states to certify that federal permits or licenses will comply with the state water quality laws. (See page 15 for further information)

**402** – The National Pollution Discharge Elimination System (NPDES) is the regulatory program created under the Clean Water Act to issue permits to those discharging from point sources. (See page 15 for further information)

**10825** – East Slope and West Slope water providers in the Upper Colorado Basin have committed to permanently supply 10,825 acre-feet of water per year (10825 Water) to assist with the

recovery of four warm water endangered fish that inhabit the lower reaches of the Colorado River watershed in western Colorado. This water is supplied to the “15-Mile Reach” of the Colorado River near Grand Junction, most commonly during the July through October period. During this time of year the stream flow of the Colorado River within the 15-Mile Reach is substantially impacted by upstream water diversions, and the supplemental 10825 water is beneficial for endangered fish.

**1177** – Colorado House Bill 1177 was enacted in 2005. The “Colorado Water for the 21st Century Act” sets up a framework that provides a permanent forum for broad-based water discussions.

## VI. Commonly Used Acronyms

AF –	Acre feet
C-BT –	Colorado Big Thompson Project
CDPHE –	Colorado Department of Public Health and Environment
C.F.S. –	Cubic feet per second
CRWCD –	Colorado River Water Conservation District
CWA –	Clean Water Act
CWC –	Colorado Water Congress
CWCB –	Colorado Water Conservation Board
DEIS –	Draft Environmental Impact Statement (NEPA process)
DNR –	[Colorado] Department of Resources
EA –	Environmental Assessment (NEPA process)
EIS –	Environmental Impact Statement (NEPA process)
Fry-Ark –	Fryingpan-Arkansas Project
GIS –	Geographic Information System
ISF –	Instream Flow (CWCB program)
NCRWCD –	Northern Colorado River Water Conservancy District
NEPA –	National Environmental Policy Act
NPDES –	National Pollutant Discharge Elimination System
NWCCOG –	Northwest Colorado Council of Governments
OGCC –	[Colorado] Oil and Gas Conservation Commission
PSOP –	Proposed Storage Options Plan
QQ –	[NWCCOG] Water Quality and Quantity Committee
RICD –	Recreational In-Channel Diversions
SEO –	[Colorado] State Engineers Office
SWSI –	[Colorado] Statewide Water Supply Initiative
UPCO –	Upper Colorado River Study
USGS –	United State Geological Survey
WSRA –	Wild and Scenic Rivers Act
WQCC –	Water Quality Control Commission
WQCD –	Water Quality Control Division (staff to the WQCC)