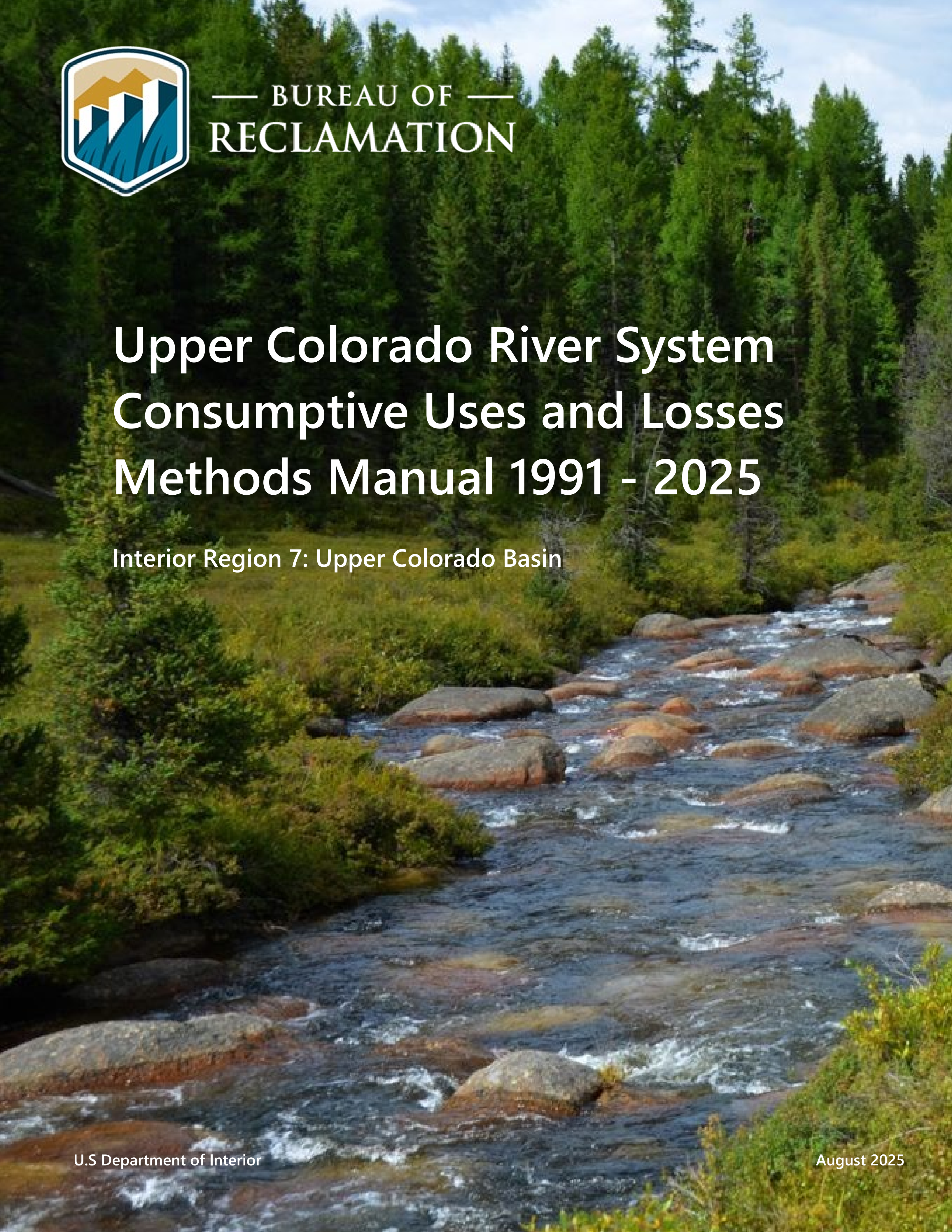


BUREAU OF RECLAMATION

Upper Colorado River System Consumptive Uses and Losses Methods Manual 1991 - 2025

Interior Region 7: Upper Colorado Basin

U.S Department of Interior

August 2025

Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Cover photos: background photo of a scenic view of the Colorado River in Rocky Mountain National Park.

Foreword

This manual reflects the Department of the Interior's current methods to estimate actual consumptive uses and losses within the Upper Colorado River System. The reliability of the estimates based on these methods is affected by the availability of data and the current capabilities of data evaluation.

Summary

This manual details the current recommended methods to estimate consumptive uses and losses from the Upper Colorado River System. Irrigated agriculture estimates have been updated using the new eeMETRIC methodology for each calendar year back to 1991. The Bureau of Reclamation (Reclamation) intends to update historical data back to 1991 during the 2025 CUL update using these new methods for each described use categories. This manual will be updated as more accurate data and estimation methods become available. This manual includes a breakdown of the methods for consumptive use by major types of use and by major tributary streams.

Acronyms and Abbreviations

BIA	Bureau of Indian Affairs
CDL	Cropland Data Layer
CIMIS	California Irrigation Management Information System
COOP	Cooperative Observer Program
CRSP	Colorado River Storage Project
CRSS	Colorado River Simulation System
CU	Consumptive use
CU_{irr}	Consumptive use for irrigation
CUL	Consumptive uses and losses
eeMETRIC	earth engine Mapping EvapoTranspiration at high Resolution with Internalized Calibration
ET	Evapotranspiration
ET_a	Actual evapotranspiration
ET_c	Potential crop evapotranspiration
EToF	Fraction of reference ET
FWS	Free Water Surface
GEE	Google Earth Engine
GIS	Geographic Information Systems
HLS	Harmonized Landsat Sentinel
HUC	Hydrologic Unit Code
IU	Incidental use
K_{cb}	Basal crop coefficient
K_e	Soil surface evaporation coefficient
K_s	Stress coefficient
M&I	Municipal and Industrial
NDVI	Normalized Difference Vegetation Index
NIWR	Net irrigation water requirement
NLDAS	North American Land Data Assimilation System
NLCD	National Land Cover Database
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service

P_{rz}	Effective precipitation residing in the root zone available for E and T
SCS	Soil Conservation Service
Stat.	Statute
SSURGO	
STRM	Shuttle Radar Topography Mission v3
UCHDB	Upper Colorado Hydrologic Data Base
UCRC	Upper Colorado River Commission
UCRS	Upper Colorado River System
UDS	Upper Division States
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

Contents

1. Introduction

The Colorado River System is composed of portions of seven states: Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, as well as a part of Mexico. It has a drainage area of about 241,000 square miles (excluding Mexico) and represents about one-fifteenth of the area of the United States[1].

This manual explains the procedures to estimate anthropogenic consumptive uses and losses of water from the Upper Colorado River System. The manual first presents the study reporting areas in the Upper Colorado River System followed by a detailed description of the methods and data adequacy for each reported consumptive use and loss category.

Nothing in this manual is intended to interpret the provisions of the Colorado River Compact (45 Statute [Stat.]. 1057), the Upper Colorado River Basin Compact (63 Stat. 31), the 1944 Treaty between the United States of America and Mexico (Treaty Series 994; 59 Stat. 1219), the decree entered by the Supreme Court of the United States in Arizona vs. California, et al. (376 U.S. 340), the Boulder Canyon Project Act (45 Stat. 1057), the Boulder Canyon Project Adjustment Act (54 Stat. 774; 43 United States Code [U.S.C.] 618a), the Colorado River Storage Project Act, (70 Stat. 105; 43 U.S.C. 620), or the Colorado River Basin Project Act (82 Stat. 885; 43 U.S.C. 1501).

2. Study Reporting Areas

The Upper Colorado River system is defined as that portion of the basin above Lee Ferry, Arizona. The drainage area of the Upper Colorado River System is approximately 109,500 square miles. The river originates in the Rocky Mountains of Colorado and Wyoming, flows southwest about 640 miles, and leaves the study area at Lee Ferry. The upper system consists of portions of five states: Arizona, Colorado, New Mexico, Utah, and Wyoming. The drainage area was divided into three reporting areas for the purposes of the Upper Colorado River System Consumptive Uses and Losses report. These study reporting areas generally follow the watersheds of major tributary streams

The major tributary streams selected as reporting areas in the Upper Colorado River System are: Green River (Wyoming, Colorado, Utah), Upper Main Stem (Colorado, Utah), and San Juan-Colorado (Colorado, New Mexico, Utah, Arizona). These boundaries of the reporting areas are shown in Figure 1.

The term "Upper Division States" refers to the States of Colorado, New Mexico, Utah, and Wyoming. "Lower Division States" refers to the States of Arizona, California, and Nevada. The Upper Colorado River System refers to the hydrologic boundaries. Lee Ferry is the division point between the Upper Colorado River System and the Lower Colorado River System.

---

[1] Drainage area refers to the boundary used for the Colorado River System for the Consumptive Uses and Losses Report.

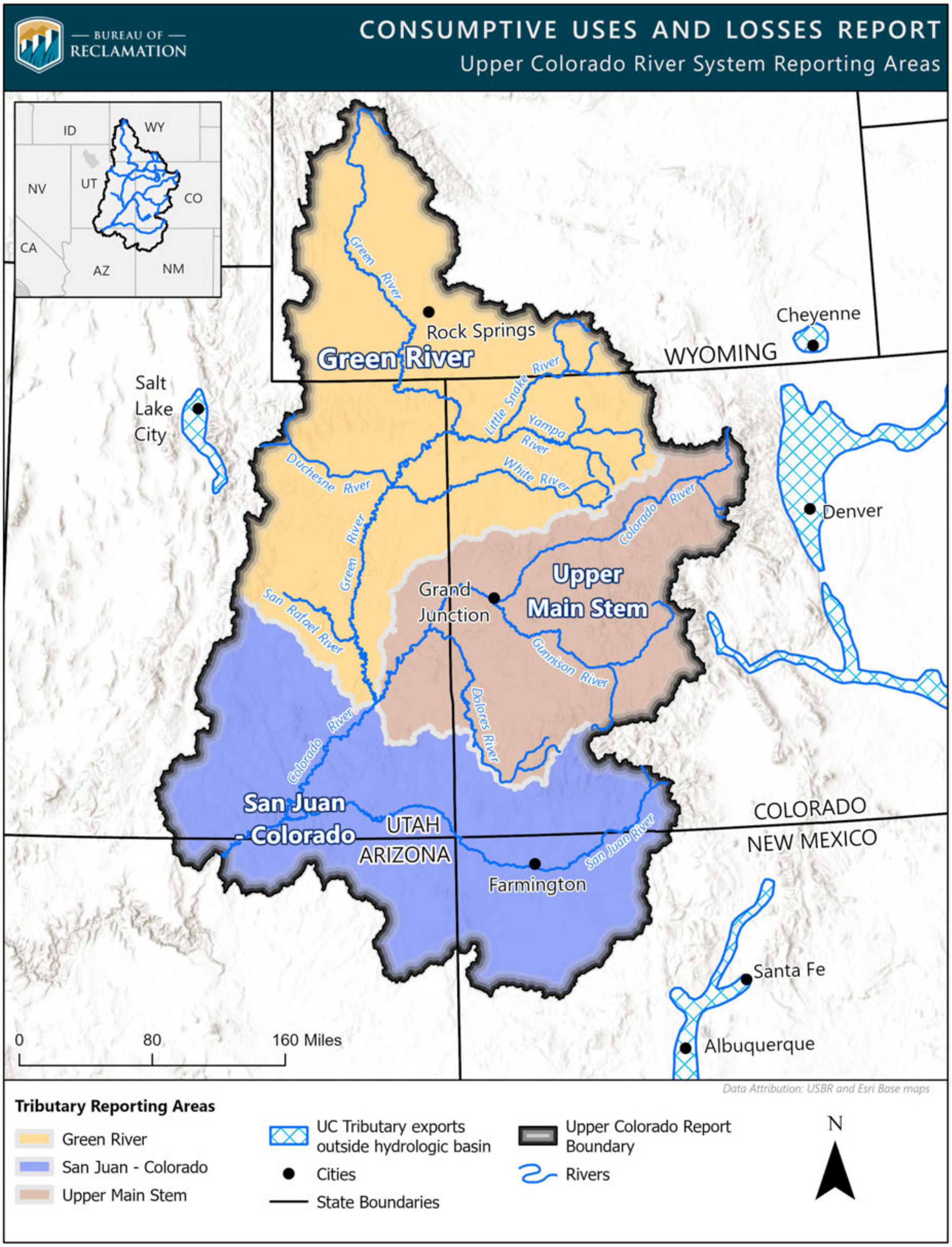


Figure 1. Upper Colorado River System reporting area boundaries.

2.1. Green River (Wyoming, Colorado, and Utah)

The Green River reporting area comprises approximately 44,700 square miles in southwestern Wyoming, northwestern Colorado, and northeastern and east-central Utah.

Principal tributaries of the Green River are Blacks Fork, New Fork, and Little Snake River in southwestern Wyoming; Yampa and White Rivers in northwestern Colorado; and the Price, Duchesne, and San Rafael Rivers in eastern Utah.

Additionally, the Great Divide Basin Hydrologic Unit Code (HUC) 8 (14040200), a closed basin in Wyoming, is not included as part of the Upper Colorado River System reporting area.

The largest towns in the reporting area are Rock Springs and Green River in Wyoming; Vernal and Price in Utah; and Craig, Steamboat Springs, and Meeker in Colorado.

Fontenelle Reservoir in Wyoming, Flaming Gorge in Wyoming and Utah, and Strawberry Reservoir in Utah are the major impoundments in the reporting area. Flaming Gorge Reservoir evaporation is not reported in this reporting area because its evaporation remains undistributed by state and is reported separately along with three other major reservoirs noted in the sections below.

2.2. Upper Main Stem (Colorado and Utah)

The Upper Main Stem reporting area consists of the Colorado River and its tributaries above the mouth of the Green River. Principal tributaries are the Roaring Fork, Gunnison, and the Dolores Rivers. The Upper Main Stem reporting area consists of 26,200 square miles, with about 85 percent of the area in Colorado and the remainder in Utah.

Grand Junction, Montrose, Rifle, and Glenwood Springs are the principal towns in the Colorado portion of the upper main stem of the Colorado River. Moab is the only major community in the Utah portion of the upper main stem of the Colorado River.

The Aspinall Unit and Lake Granby in Colorado are the major impoundments in the reporting area. The Aspinall Unit evaporation is not reported in this reporting area because its evaporation remains undistributed by state and is reported separately along with two other major reservoirs noted in the section above and below.

2.3. San Juan - Colorado (Colorado, New Mexico, Utah, and Arizona)

The San Juan reporting area is drained by the Colorado River and its tributaries below the mouth of the Green River and above Lee Ferry, Arizona. The largest of the tributary streams is the San Juan River which originates on the western slope of the Continental Divide in southwestern Colorado. Principal tributaries of the San Juan River are the Mancos, Piedra, Los Pinos, Animas, and La Plata Rivers. The other main tributaries in the basin are the Dirty Devil, Escalante, and Paria Rivers, which drain a portion of the eastern slope of the Wasatch Plateau in Utah. The reporting area includes about 38,600 square miles in portions of Utah, New Mexico, Arizona, and Colorado.

The largest towns are Durango and Cortez in Colorado, Monticello and Blanding in Utah, Farmington in New Mexico, and Page in Arizona.

Navajo Reservoir in Colorado and New Mexico and Lake Powell in Utah and Arizona are the major impoundments in the reporting area. Lake Powell evaporation is not reported in this reporting area because its evaporation remains undistributed by state and is reported separately along with three other major reservoirs noted in the sections above.

3. Terminology

The Colorado River is not only one of the most highly controlled rivers in the world but is also one of the most institutionally encompassed. A multitude of legal documents, known collectively as the "Law of the River," effect and dictate its management and operation. Major documents include:

- Colorado River Compact—1922
- Boulder Canyon Project Act—1928
- California Limitation Act—1929
- California Seven Party Agreement—1931
- Mexican Water Treaty—1944
- Upper Colorado River Basin Compact—1948
- Colorado River Storage Project Act—1956
- United States Supreme Court Decree in *Arizona vs. California*—1964
- Colorado River Basin Project Act—1968
- Minute 242 of the International Boundary and Water Commission, (United States and Mexico)—1973
- Colorado River Basin Salinity Control Act—1974, amended 1984, 1995, and 1996

The Colorado River System is defined in the Colorado River Compact of 1922 as ". . . that portion of the Colorado River and its tributaries within the United States," whereas the Colorado River Basin is defined as ". . . all of the drainage area of the Colorado River System and all other territory within the United States of America to which waters of the Colorado River System shall be beneficially applied." The compact divided the Colorado River Basin into two subbasins—the "Upper Basin" and the "Lower Basin," with Lee Ferry as the division point on the river. Lee Ferry, Arizona, is a point in the main stem 1 mile below the mouth of the Paria River. For the purpose of this report, the Great Divide Basin, a closed basin in Wyoming, the Wilcox Playa, a closed basin in Arizona, and the Animas Valley, a closed basin in New Mexico are considered as part of the Colorado River System since surface water inflow or outflow are limited or do not reach the Colorado River. Transbasin diversions are considered herein as exports or imports and have not been classified by types of use.

Beneficial consumptive use is normally construed to mean the consumption of water brought about by human endeavors and in this report includes the use of water for municipal, industrial, irrigated agriculture, power generation, export and import, and other purposes, along with the associated losses incidental to these uses.

Reservoir evaporation loss is a consumptive use associated with the beneficial use of water for other purposes. For Reclamation's consumptive uses and losses reports reservoir evaporation for Flaming Gorge, Blue Mesa, Morrow Point, and Lake Powell are undistributed by state and excluded from state totals but included in Upper System totals. Their evaporation will be reported separately in Upper System Table UC-1.

Channel losses within the system are construed to be the consumptive use by riparian vegetation along the stream channel (or conveyance route) and the evaporation from the stream's water surface and wetted materials. Seepage from the stream normally appears again downstream or reaches a groundwater aquifer where it may be usable again. A decided lack of data, along with the intermittent flow characteristics of many southwestern streams, combine to make a reasonable determination of channel loss difficult. Channel losses have not been estimated for this report within the Upper System.

4. Methodology

In this Methods Manual, direct measurements of water use are used wherever available, but most categories are theoretically calculated. For the Arizona, Colorado, New Mexico, Utah and Wyoming portions of the Upper Colorado River System, the annual consumptive use of water was estimated using the methodologies described in this section. These methods produce data for Consumptive Uses and Losses reporting at an annual time scale by state and major tributary and for modeling purposes at a monthly time scale by state, HUC8, and Colorado River Simulation System (CRSS) flow-node.

4.1. Irrigated Agriculture

4.1.1. Summary

Irrigated Agriculture consumptive use of irrigation water (CU_{irr}) is a substantial component of the Upper Colorado River System (UCRS) hydrologic budget. Advancements in remote sensing of evapotranspiration (ET) provide estimates of actual ET (ET_a) at spatial and temporal scales not possible with historical approaches. Updated methods to estimate irrigated agriculture consumptive use in the UCRS combine the best available ET estimates from OpenET's implementation of the earth engine Mapping EvapoTranspiration at high Resolution with Internalized Calibration (eeMETRIC) remote sensing ET model. The model used includes effective precipitation (P_{rz}) estimates from the crop ET and daily soil water balance model, ET Demands. Additionally, field-level maps of historical irrigation status were developed from maximum irrigated extents using remotely sensed indices of vegetation vigor and fraction of reference ET to spatially constrain CU_{irr} volume estimates to actively irrigated lands on a yearly basis.

Net Consumptive Use (Net CU), which is ultimately reported, includes the incidental use of irrigation water by phreatophytes and evaporation during its conveyance in canals and laterals from the diversion at the river to the head of the field. The descriptions below summarize the variables and source data used in the determination of Net CU. Methods used to compute each of these variables are subject to change based on the improvement and refinement of techniques and tools available.

Irrigated Agriculture Consumptive Use Variables Description

$$CU_{irr} = ET_a - P_{rz} \tag{1}$$

where CU_{irr} is the volume (acre-ft) of consumptive use of irrigation water excluding incidental use, CU_{irr} is determined at the field spatial scale, though limited by the satellite imagery resolution and ET_a is the volume (acre-ft) of actual ET determined using eeMETRIC. ET_a is determined at a 30 m x 30 m grid cell resolution and aggregated to the field level. P_{rz} is the volume (acre-ft) of effective precipitation in the plant root zone available for plant ET and is determined using ET Demands. P_{rz} is determined at a 4 km x 4 km grid cell using bias-corrected Reference ET computed from gridMET weather data and disaggregated down to the field level.

$$Net\ CU = CU_{irr} + (CU_{irr} \times Incidental\ Use\ Percentage) \tag{2}$$

where Net CU is the volume (acre-ft) of the consumptive use of irrigation water, including the incidental use. Net CU is determined at the field spatial scale.

Incidental Use Percentages are developed at the State-HUC8 level developed from the Upper Colorado Comprehensive Framework Study (1971) supporting information. Existing documentation indicates these percentages account for the incidental use of irrigation water by phreatophytes and evaporation during conveyance in canals and laterals from the diversion at the river to the head of the field, but further study and refinement is warranted to confirm and/or refine the definition and percentage values. Incidental Use Percentages are disaggregated down to the field spatial scale.

Irrigated Acreage is used to take the rate for each variable and determine a volume. Maximum irrigated acreage mapping is provided from each state (excluding the northern Arizona portion of the UCRS as explained below), and irrigation status (irrigated, not irrigated, shorted, and wet soil) is determined using the Harmonized Landsat Sentinel (HLS) Method (2016-2023) or the Normalized Difference Vegetation Index (NDVI) Method (1991-2015), described in Section 4.1.2. Status and field boundaries constrain the computation area of irrigated acreage estimates on a year-to-year basis to determine ET_a and P_{rz}.

The following is an overview of the methods used to estimate CU_{irr} and, ultimately, net irrigated agriculture consumptive use (Net CU) across the UCRS. Detailed method descriptions can be found in Pearson et al. (2024).

4.1.2. Irrigated Acreage

Estimation of CU_{irr} across the UCRS requires information on the location and extent of irrigation. To limit irrigation classification to agricultural areas within the UCRS, a maximum extent dataset was developed using agricultural field boundary Geographic Information System (GIS) information from each of the four Upper Division States. State GIS datasets were compiled from a variety of sources including historical field surveys, irrigated parcel and water right information, and remote sensing imagery. State field boundary GIS data were processed separately and merged to generate a single maximum irrigated extent dataset that includes both current and historical regions of irrigated agriculture.

Maximum irrigated extents for the northern Arizona portion of the UCRS were determined using shapefiles showing historically irrigated fields in the area and an NDVI analysis that utilized recent aerial imagery. The field boundary shapefiles were compiled from the 2007 to 2010 U.S. Geological Survey (USGS) UCRS dataset and the USDA Common Land Unit datasets) (Mefford and Wilson, 2024).

The NDVI analysis used data from the Sentinel satellite and assessed NDVI in both the early part of the growing season (April/May) and mid-July to help identify potential irrigated acreage. These NDVI irrigated acreages were digitized and added to the northern Arizona portion of the UCRS compiled field boundary shapefile.

Using the maximum extent dataset, two methods were used to assign irrigation status at the field level. The HLS NDVI Approach was used to assign irrigation status from 2016-2024. This approach combined satellite data from Landsat-8 and Sentinel-2 to create a seamless 30-meter resolution data set of NDVI values throughout the entire UCRS. Four irrigation statuses can be assigned to a field using this method: 1) fallow, 2) shorted, 3) irrigated, and 4) wet soil. Below is a summary of the logic used for each irrigation status classification:

- Fallow: if weekly NDVI never reaches 0.6 or values permanently drop below 0.6 before June 1st.
- Shorted: if weekly NDVI values are greater than 0.6 after June 1st but permanently drop below 0.6 before September 1st.
- Irrigated: if weekly NDVI reaches 0.6 and reports values above 0.6 after September 1st.

Wet soil classified fields are areas with persistent ponded water and wet soil that are commonly flood irrigated but may be mistakenly classified as fallow due to NDVI being close to zero. A combination of NDVI and the Fraction of reference ET (ET_oF) method was used to filter and classify wet soil fields. NDVI-based fallow classified areas having growing season ET_oF values greater than 0.5 are classified as wet soil.

Irrigation classification prior to 2016 were based on monthly ET_oF estimates from the OpenET eeMETRIC model. ET_oF is the fraction of grass reference ET (ET_o) that is evaporated or transpired by plants (ET_a) as computed by eeMETRIC. During relatively dry growing seasons, locations with high monthly ET_oF are likely to be receiving irrigation water. Accordingly, a ruleset was developed based on monthly ET_oF data to sort irrigation status into two classes: 1) fallow and 2) irrigated. Pixels having monthly ET_oF values greater than 0.5 in UT and WY and 0.4 in CO and NM for two or fewer months between May-October were defined as fallow. The fallow class also includes pixels that never report monthly ET_oF values greater than 0.5 in UT and WY or 0.4 in CO and NM. Conversely, pixels having ET_oF values greater than 0.5 in UT and WY and 0.4 in CO and NM for three or more months between May-October were defined as irrigated. These state-specific ET_oF thresholds were determined by comparing ET_oF-based estimates during 2016-2022 with HLS derived irrigated area estimates during the same period.

Pixel-level (30-meter) irrigation status classes from both methods were assigned to field boundaries using the calculated majority or mode, where if the majority of pixels within a field boundary polygon were classified as irrigated, the field boundary irrigation status attribute was assigned as irrigated. CU_{irr} calculations include all fields that receive any form of irrigation throughout the growing season, which include fields classified as irrigated, shorted, or wet soil from the HLS approach, and classified as irrigated from the ET_oF approach. Only fallow classified fields are excluded from CU_{irr} totals.

4.1.3. Reference ET

Both eeMETRIC and ET Demands model applications in this work are based on daily reference ET calculated using the American Society of Civil Engineers Standardized Penman Monteith (ASCE-

PM) equation (ASCE-EWRI, 2005). Gridded weather data from the Gridded Surface Meteorological (gridMET) dataset was used to represent weather and evaporative demand (i.e., ET_r) throughout the UCRS from 1991-2023 (Abatzoglou, 2013). GridMET is a daily ~4 km spatial resolution dataset providing continuous estimates of near-surface weather conditions for the contiguous United States from 1979 to present. These high-resolution metrological variables serve as inputs to the ASCE-PM equation.

To assess the accuracy of gridMET and to correct for known biases, comparisons were performed between gridMET and high-quality agricultural weather station datasets collected throughout and adjacent to the UCRS (i.e., within 100km). In total, 69 stations were approved by the CUWG for use in the OpenET v1 gridMET reference ET bias correction analysis. OpenET v1 gridMET bias correction surfaces were developed using UCRS station data from 2016-2020 for stations within the UCRS, and station full periods of records where available for stations located outside the UCRS. Both eeMETRIC and ET Demands workflows use the OpenET v1 bias correction surfaces for all reference ET estimates.

4.1.4. Actual ET - OpenET eeMETRIC

The eeMETRIC model within OpenET is a Google Earth Engine (GEE) implementation of the METRIC model and a derivative of METRIC termed Earth Engine Evapotranspiration Flux (EEFlux) and the ERDAS software version of METRIC (Allen et al., 2007; Allen et al., 2015; Kilic et al., 2021). The eeMETRIC model processes Landsat thermal and short-wave radiation data, along with gridded weather datasets, to generate ET estimates at daily timesteps that can then be aggregated to monthly, seasonal, and annual totals, starting in 1984 with the launch of Landsat 5.

The implementation of the METRIC model on GEE estimates ET by solving the energy balance equation:

$$LE = R_n - G - H \tag{3}$$

where (LE) is latent heat flux density, R_n is net radiation, G is soil heat flux density, and H is sensible heat flux density. METRIC estimates actual ET rather than potential ET by employing the surface energy balance where, as actual ET (LE) decreases due to water shortage or low amounts of vegetation, the sensible heat flux, H, tends to increase, creating an increased flux of heat into the atmosphere. Because H is a thermally driven process, it can be estimated from the surface temperature measured by the thermal instrument on certain Landsat satellites.

METRIC utilizes a calibration process known as 'CIMEC' (calibration using inverse modeling at extreme conditions) to identify locations and conditions in satellite imagery where ET is well known, constrained, and can be used for independent model calibration (Allen et al., 2013; Morton et al., 2013).

eeMETRIC uses publicly available data on GEE, including Landsat imagery, meteorological, land use, and elevation data. Meteorological data sources include the North American Land Data Assimilation System (NLDAS), the Spatial model in the California Irrigation Management Information System (CIMIS), and gridMET. Land cover data come from a combination of a crop type layer derived primarily from the cropland data layer (CDL) and the National Land Cover Database (NLCD). Elevation data are sourced from Shuttle Radar Topography Mission v3 (SRTM). Table 1 provides a summary of eeMETRIC inputs.

Table 1. Summary of eeMETRIC satellite and meteorological inputs.

Satellite and Ancillary Inputs	Meteorological Inputs
Primary: Surface reflectance and thermal radiation data from from Landsat TM/ETM+/OLI (Collection 2) **Secondary:** OpenET Crop Type layer in combination with NLCD land cover data (for USA), Shuttle Radar Topography Mission (SRTM DEM v3), Soil Survey Geographic Database (SSURGO-USA) and the Food and Agriculture Organization's (FAO) Harmonized World Soil Database v 1.2 (globe outside USA)	Insolation, near-surface wind speed, air temperature, and vapor pressure from CIMIS and NLDAS for the USA; daily precipitation and reference ET from gridMET

4.1.5. Potential ET and Effective Precipitation - ET Demands

The ET Demands model was used to estimate potential crop ET (ET_c), the net irrigation water requirement (NIWR), and effective precipitation (P_{rz}). Detailed documentation of the ET Demands model is described in Allen et al. (2005), Allen and Robison (2009), Huntington et al. (2015) and Allen et al. (2020).

At the core of the ET Demands model is the FAO-56 dual crop coefficient model (Allen et al., 1998) that makes separate calculations for transpiration and evaporation from exposed soil. The ET_c for each crop type was estimated at each gridMET cell (i.e., ET cell) using the FAO-56 dual crop coefficient equation:

$$ET_c = (K_s K_{cb} + K_e) ET_r \quad (4)$$

where, for UCRS application, ET_r is bias-corrected gridMET ASCE-PM alfalfa reference ET, K_{cb} is the basal crop coefficient, and K_e is the soil surface evaporation coefficient. K_{cb} and K_e are dimensionless and range from 0 to 1.0 when used with ET_r. Daily K_{cb} values over a season, commonly referred to as the crop coefficient curve, represent the ratio of actual crop ET to reference ET as a function of vegetation phenology and growth stages through time. K_{cb} values can vary from year to year depending on the start, duration, and termination of the growing season, all of which are dependent on temperature during spring, summer, and fall periods. The stress coefficient (K_s) ranges from 0 to 1, where 1 equates to no water stress, which is generally the case for fully irrigated crops during the irrigation season as opposed to rain-fed crops or native vegetation that commonly experience some water stress. A daily soil water balance is used for simulating available water within the root zone and to estimate K_s within ET Demands. A second daily soil water balance for the upper 0.1 m of soil is used in ET Demands to estimate K_e. The crop transpiration layer extends from the surface to each crop type's maximum rooting depth.

The dual crop coefficient approach allows for separate accounting of transpiration and evaporation to better quantify evaporation from precipitation and simulated irrigation events, and in turn allows for year-round simulation and accounting for wintertime soil moisture gains that often offset irrigation requirements during the beginning of the growing season. The NIWR is defined as the amount of water needed in addition to precipitation to grow a non-water-limited crop and is estimated as the ET_c minus effective precipitation. ET Demands P_{rz} is the amount of gross reported precipitation that infiltrates into the soil and remains in the root zone for consumption by evaporation or transpiration. P_{rz} is computed as gross precipitation minus estimated surface runoff and deep percolation of any precipitation below the maximum root zone for the crop or cover condition.

4.1.6. Net Consumptive Use

ET Demands P_{rz} was subtracted from OpenET eeMETRIC ET_a to estimate CU_{irr}:

$$CU_{irr} = ET_a - P_{rz} \tag{5}$$

In cases where field-level Nov-Oct monthly total ET_a was less than P_{rz}, the remaining P_{rz} was carried forward into the next month to account for stored soil moisture that wasn't depleted and is available for crop water use in the following month. CU_{irr} estimates are performed at the field level on a monthly time step.

In addition to CU_{irr}, Net CU estimates were generated by scaling field-level CU_{irr} estimates using basin/state specific incidental use percentages:

$$Net\ CU = CU_{irr} + (CU_{irr} \times Incidental\ Use\ Precentage) \tag{6}$$

Incidental Use Percentages account for additional losses related to the conveyance of irrigation water not directly measured in the field-level ET information, specifically phreatophyte growth in and along canals and laterals and evaporation from canals and laterals. Incidental Use Percentages vary throughout the basin based on infrastructure and were developed from the Upper Colorado Comprehensive Framework Study (1971) supporting information. The memorandum in Attachment 7.1.4 provided context for the development and use of the Incidental Use percentages. Figure 2 provides a map of Incidental Use percentages applied through the UCRS. Final Net CU estimates represent the total amount of irrigated agriculture water use including both on and off-field consumption.

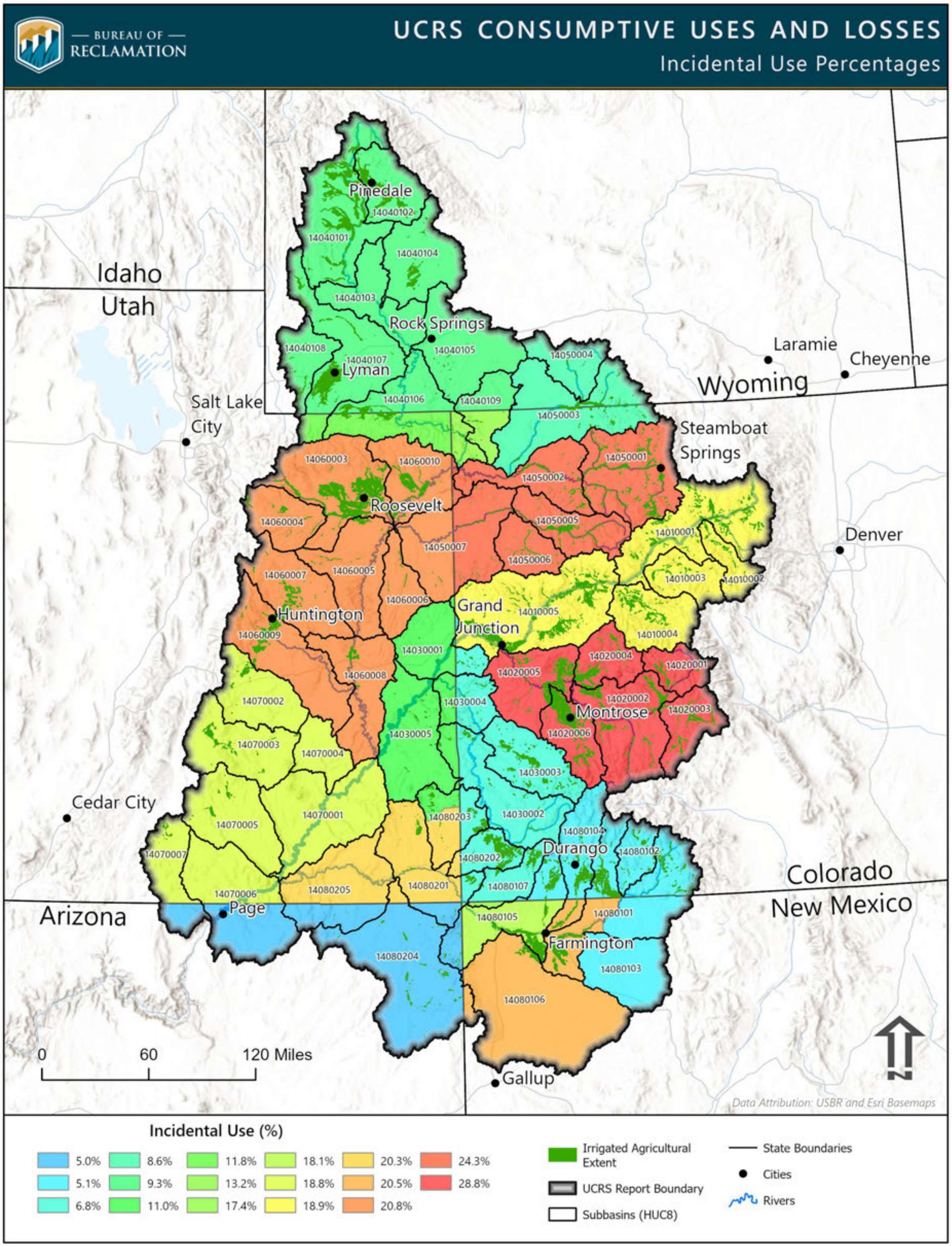


Figure 2: Map of Incidental Use percentages used to determine Net CU.

4.2. Observed Precipitation Data

As explained in Section 4.1.3, the gridMET dataset is used for the irrigated agriculture consumptive use computations. However, an observed precipitation dataset is used for the other categories, specifically reservoir and stock pond evaporation. The precipitation dataset for these categories is built by retrieving monthly observed precipitation data from National Weather Service (NWS) Cooperative Observer Program (COOP) stations in the UCRS and aggregating stations to the HUC8 level for reservoir evaporation or averaging station data for stockpond evaporation. The following summarizes the procedure used to build this dataset.

4.2.1. Retrieving Data

NWS COOP station data is queried from wrcc.dri.edu. Overall, 146 stations in the UCRS were used to build the precipitation dataset back to 1971. Any missing data in the station record was filled in with an estimate based on the average of prior observations during the same month, , hereafter this new dataset is termed Gap filled NWS COOP station data. A list of stations is provided in Attachment 7.2.1.

4.2.2. Reservoir Evaporation - Aggregation to HUC8s

Gap filled NWS COOP station precipitation data is aggregated to the HUC8 level, which is used for computing reservoir evaporation. HUC8 totals are computed by weighting each station with an assigned percentage and then summing each weighted station for each HUC8. It is believed station weighting percentages were developed using a Thiessen Polygon method, but this cannot be confirmed and will need to be further evaluated in the future. Precipitation is assigned to each reservoir, major and minor, by its HUC8.

4.2.3. Stockpond Evaporation – Averaging to State HUC4s

Gap filled NWS COOP station precipitation data is also averaged to the State HUC4 level, which is used for computing stockpond evaporation. State HUC4 totals are computed by averaging all stations within a State HUC4. Stockpond evaporation is computed at a State HUC4 level, so computed State HUC4 precipitation is used accordingly.

4.3. Reservoir Evaporation

4.3.1. Summary

Reservoir evaporation in the UCRS is classified into Major Reservoir Evaporation and Minor Reservoir Evaporation. Classification is based on data availability for each reservoir. For Major Reservoirs monthly surface area is available i.e., they are measured, where Minor Reservoir monthly surface area data is not available, i.e., they are unmeasured.

Evaporation rates for reservoirs in the UCRS are generally informed by studies that utilized Class A Pans, which are widely used to estimate reservoir evaporation across the western United States. These galvanized or stainless-steel pans are typically placed on land near a reservoir or water body, with the intent of simulating and estimating the evaporation occurring from the adjacent open water surface. Although this method is common, research suggests that land pan evaporation does not accurately represent actual reservoir evaporation (Harwell, 2012; Masoner, D. I. Stannard, and S. C. Christenson, 2008). The primary limitation stems from the pans being located on land, where atmospheric conditions differ from those over open water. Additionally, the water in the pans is static and contained, unlike the dynamic conditions of a reservoir. These factors contribute to the Class A Pans often overestimating evaporation rates compared to other methods. While not all evaporation rates utilized by these methods are from class A pan studies, they do constitute a large majority of the available data. Studies are underway to develop better estimates of evaporation rates in the UCRS and will be incorporated into these methods once available.

All reservoir evaporation volumes are reported as net evaporation, meaning pre-reservoir evaporation or precipitation has been removed from gross evaporation

4.3.2. Major Reservoir Evaporation

Major Reservoirs are UCRS reservoir in which monthly surface area is known (measured) through daily or monthly measurement. Major Reservoirs are divided into two groups, Major Reservoirs (Method 1) and Major Reservoirs (Method 2). Major Reservoirs (Method 1) have site-specific evaporation rates along with monthly surface area. Major Reservoirs (Method 2) do not have a site-specific evaporation rate but do have monthly surface area. Net evaporation is ultimately reported for all Major Reservoirs. Net evaporation is reservoir evaporation in which the lessor of pre-reservoir evaporation (formerly termed salvage) or precipitation has been removed. A comprehensive list of Major Reservoirs is available in Attachment 7.3.1

4.3.2.1. Major Reservoirs (Method 1)

Major Reservoirs (Method 1) are the reservoirs undistributed by state and a few additional reservoirs operated by Reclamation. For these reservoirs, monthly reservoir evaporation was taken from Reclamation’s UCHDB. Records of monthly evaporation rates applied at these sites are typically based on past pan evaporation studies and maintained by Reclamation’s Upper Colorado Region water operations group. Documentation for these rates is sparse, but the limited documentation suggests all rates in UCHDB are net evaporation rates. Lake Powell is the exception, where the source of gross evaporation rates and the method to determine net evaporation are well documented in USBR (1986).

4.3.2.2. Major Reservoirs (Method 2)

Major Reservoirs (Method 2) are the reservoirs that do not have site specific evaporation rates but do have monthly surface area data. Monthly water-surface area is obtained for these reservoirs from UCHDB or other local (e.g., state) sources. For Major Reservoirs (Method 2) annual free water surface (FWS) evaporation rates are used to determine reservoir evaporation. The FWS evaporation values are taken from the National Oceanic and Atmospheric Administration (NOAA, 1982). Annual FWS evaporation is based on the reservoir location information. The annual FWS evaporation rates are distributed monthly based on an average basin monthly distribution (Reclamation 1991). Monthly precipitation rates, described in Section 4.2, and an annual pre-reservoir evaporation rate are also determined for each reservoir. The annual pre-reservoir evaporation rates, formerly called “salvage” rates, are defined as the evaporative losses (i.e., evapotranspiration) that would have occurred in the reservoir inundation area prior to the reservoir being there. The annual pre-reservoir rates were developed from Comprehensive Framework Study (1971) supporting information. These pre-reservoir evaporation rates are shown in Attachment 7.3.1. The annual pre-reservoir rates are distributed to the monthly timescale using the observed monthly precipitation, described in Section 4.2, for that year. The net evaporation rate is the gross rate minus the lesser of precipitation or the monthly pre-reservoir evaporation rate. This is done because it is assumed pre-reservoir native plant ET is limited to precipitation in the arid west. The monthly net evaporation rate is then multiplied by the monthly surface area to determine a monthly evaporation volume.

Equations 7 – 9 below summarize the Major Reservoirs (Method 2) evaporation method:

$$Reservoir\ Evap = Net\ Evap * Surface\ Area \tag{7}$$

where Reservoir Evap is the monthly reservoir evaporation volume (acre-ft), Net Evap is the monthly net evaporation rate (ft), and Surface Area is the reservoir surface area (acre) from UCHDB.

$$Net\ Evap = Gross\ Evap - min\ (PreReservoir\ Evap, Precip) \tag{8}$$

where Gross Evap is the monthly gross evaporation rate (ft), PreReservoir Evap is the pre-reservoir evaporation rate (ft), and Precip is the observed area-averaged precipitation (ft).

$$Gross\ Evap = FWS * Dist_M \tag{9}$$

where FWS is the Free Water Surface evaporation (ft) and $Dist_M$ is the monthly distribution (unitless).

4.3.3. Minor Reservoir Evaporation

Minor Reservoirs do not have site specific evaporation rates or monthly surface water area (unmeasured) available. A comprehensive list of Minor Reservoirs (see Attachment 7.3.2) has been developed using lists from historical Reclamation CUL datasets, input from the Upper Division States and UCRC, and the National Inventory of Dams database. For a reservoir to be classified as a Minor Reservoir, information needed includes location (latitude/longitude), elevation, maximum water surface area, reservoir type, and pre-reservoir evaporation rate (if available).

Minor Reservoir evaporation is computed similarly to Major Reservoirs (Method 2), except on an annual timestep and using a Fullness Factor to estimate the average annual surface area. Annual FWS evaporation rates are used to determine reservoir evaporation rates. The FWS evaporation values are again taken from the National Oceanic and Atmospheric Administration (NOAA, 1982). Annual FWS evaporation is based on the reservoir location information. Annual precipitation, described in Section 4.2, and an annual pre-reservoir evaporation rate are also determined for each reservoir. The annual pre-reservoir rates were developed from Comprehensive Framework Study (1971) supporting information. Fullness Factors are determined by the type (e.g. recreation, irrigation) of reservoir and its elevation. Fullness Factors were initially derived from supporting data in the 1971 Comprehensive Framework Study and are presented in Table 2 of the *Colorado River System Consumptive Uses and Losses Report: 1981–1985 Technical Appendix Volume 1* (Reclamation, 1991). Current Fullness Factors may differ from the guidance provided in Table 2 and there is no available documentation explaining the reasons for these changes.

Table 2. Original Fullness Factors developed during the Comprehensive Framework Study (Citation, 1971) adopted from the 1981-1985 CUL Technical Appendix Volume 1.

State	Irrigation	M&I	Stockponds
Arizona	30%	NA	25% to 30%
Colorado	75% if < 8600 ft. 87% if > 8600 ft.	75% if < 8300 ft. 87% if > 9000 ft.	75% if < 7500 ft. 87% if > 8000 ft.
New Mexico	14% to 79% (no rule)	Variable	30%
Utah	50% if < 7000 ft. 80% if > 7200 ft.	87%	50% to 75% (no rule)
Wyoming	60%	NA	50%

Note: there are some exceptions to nearly all the rules in cases where site specific data is available.
Reservoirs within the elevation gaps presented in Table 2 generally follow these guidelines:

- Colorado – M&I between >=8300 ft and <=9000 ft generally use 75% when closer to 8300 ft and 87% when closer to 9000 ft
- Colorado – Stockponds use 75% at 7500 ft and have no location above 7500 ft (see Table 3)
- Utah – M&I between >=7000 ft and <= 7200 ft use 80% to 88% for three reservoir locations in this elevation band.

Equations 10 – 13 below summarize the Minor Reservoir Evaporation method:

$$Minor\ Reservoir\ Evap = Net\ Evap * Estimated\ Surface\ Area \tag{10}$$

where Minor Reservoir Evap is the annual reservoir evaporation volume (acre-ft), Net Evap is the annual net evaporation rate (ft), and Estimated Surface Area is the reservoir surface area (acre).

$$Net\ Evap = Gross\ Evap\ - min\ (PreReservoir\ Evap, Precip) \tag{11}$$

where Gross Evap is the annual gross evaporation rate (ft), PreReservoir Evap is the pre-reservoir evaporation rate (ft), and Precip is the observed area-averaged precipitation (ft).

$$Gross\ Evap = FWS \tag{12}$$

where FWS is the Free Water Surface evaporation (ft)

$$Estimated\ Surface\ Area = Fulness\ Factor * Maximum\ Surface\ Area \tag{13}$$

where Fullness Factor is the percentage of maximum surface area that is the annual average (%) and Maximum Surface Area is the maximum water-surface area (acres)for a Minor Reservoir, estimated from historical, observed, or local data.

Annual Minor Reservoir evaporation is distributed on a monthly timescale using a distribution presented in the 1981-85 Consumptive Uses and Losses Technical Appendix Volume 1, Reservoir Evaporation computer program section.

4.4. Stockpond Evaporation

Stockpond consumptive use is assumed to be the evaporation from stockponds and is computed in the same manner as Minor Reservoirs described in Section 4.3.3. Stockponds are small ponds used for cattle and other livestock consumption of water. The Stockpond surface areas are taken from Table 2 - Evaporative Losses From Stockwater Ponds of the publication Soil Conservation Service (1975) for the Upper Colorado Region for all states except northern Arizona. The aggregated subareas stockpond surface areas presented in this publication were subdivided to state major tributary using the Type I study livestock water use proportions presented in the 1976-80 Consumptive Uses and Losses Report Technical Appendix (Reclamation, 1980). The total surface area for each state major tributary area treated as one unmeasured reservoir. Table 3 presents these stockpond variables along with additional variables described below.

Table 3. Variables required for stockpond computation

State	Major Tributary	HUC	Elevation	Latitude	Longitude	Surface Area	Fullness Factor	Free Water Surface Annual Evaporation	Potential Pre-Reservoir Evaporation Rate (Salvage)
			[feet]	[dd]	[dd]	[acres]	[%]	[inches/year]	[inches/year]
Colorado	**Green**	14050002	7100	40.39	108.04	1337	0.75	40.02	14
	Main Sem	14020004	7500	38.95	107.61	2397	0.75	40	14
	San Juan - Colorado	14080104	7100	37.24	107.92	2502	0.75	46.37	14
New Mexico	**San Juan - Colorado**	14080101	5700	36.39	108.08	1391	0.3	54.66	13
Utah	**Green**	14060005	5900	39.82	110.16	1542	0.75	40	13
	Main Sem	14030005	7100	38.55	109.36	63	0.5	48.08	14
	San Juan - Colorado	14070001	5500	37.79	110.64	1391	0.75	48.83	13
Wyoming	**Green**	14040103	7000	41.72	109.38	2160	0.5	44.6	14

The latitude, longitude, and elevation are assigned to each state major tributary area and an average FWS was determined for each area based on NOAA (1982). An annual precipitation rate, as described in Section 4.2, and an annual pre-reservoir evaporation rate was determined for each state major tributary area. The annual pre-reservoir evaporation rates, formerly called “salvage” rates, are defined as the amount of evaporative losses (i.e., evapotranspiration) that would have occurred in the reservoir inundation area prior to the reservoir being there. Note the stockponds in each state major tributary area are treated as one single reservoir. The annual pre-reservoir rates were developed from Comprehensive Framework Study (1971) supporting information.

The net stockpond evaporation rate is the gross rate minus the lesser of annual precipitation and the annual pre-reservoir evaporation rate. The annual net evaporation rate is then multiplied by an estimated surface area to determine an annual evaporation volume. Annual surface area is estimated by multiplying the stockpond surface area by a Fullness Factor, where the Fullness Factor was assigned as described in Table 2.

For northern Arizona, the stockpond surface area were last taken from a Bureau of Indian Affairs (BIA) report (BIA, 1985) and a 30% Fullness Factor was assumed. Table 4 shows the northern Arizona stockpond variables. The surface area used is further refined by multiplying the percentage of water supply available (the ratio of the current year precipitation to the average annual precipitation) by the average water surface area. Water supply availability was only considered for northern Arizona, which has a high evaporation potential. It was further assumed consumptive use by natural vegetation prior to the construction of the stock ponds is limited to precipitation, which is subtracted from the gross evaporation rate to determine net stockpond evaporation rate.

Table 4. Variables required for Arizona stockpond computation

State	**County**	**Elevation** [feet]	**Surface Area** [acres]	**Fullness Factor** [%]	**Free Water Surface Annual Evaporation** [inches/year]
Arizona	**Cococino**	5500	80	0.3	57
	Navajo	5800	40	0.3	55
	Apache	5900	646	0.3	53

The net annual stockpond evaporation by state major tributary were distributed to the HUC8 level using the average 1986-1995 distributions from the livestock state major tributary to HUC8 level consumptive use distributions.

Annual stockpond evaporation is distributed to the monthly timescale using the same distribution applied for Minor Reservoir Evaporation presented in the 1981-85 Consumptive Uses and Losses Technical Appendix Volume 1 (Reclamation, 1991), Reservoir Evaporation computer program section.

4.5. Livestock

Livestock consumptive use is determined as the headcount of livestock in the basin multiped by the livestock use rate in gal/head/day.

Livestock head count is taken from population data published in the U.S. Department of Agriculture's (USDA) Census of Agriculture (published every 5 years on the 2nd and 7th years of the decade). Livestock population data included cattle, milk cows, horses, hogs, sheep, goats and chickens. Consumption rates for the various livestock were derived from "Method of Estimating Water Withdrawals for Livestock in the United States, 2005". The median values reported in Table 1 of that report were used to compute consumptive use volumes (Lovelace, 2009). Table 5 below presents these median consumptive use values by animal type.

Table 5. Water-use coefficients for livestock

Animal Type	Median water-use coefficients [Amounts are in gallons per animal per day]
Cattle	12.0
Milk cows	35.0
Horses	12.0
Hogs	3.5
Sheep	2.0
Goats	2.0
Chickens	0.06

Equations 14 - 15 below summarize the Livestock method:

$$Livestock\ CU\ by\ county\ = Heat\ Count * Usage\ Rate \tag{14}$$

where Livestock CU by county is the annual volume (ac-ft), Head Count is the number of animals per species, and Usage Rate is the CU rate per species ((gal/head)/day).

$$UCRS\ CU\ by\ county\ = CU\ by\ county * percent\ of\ county\ in\ UCRS \tag{15}$$

where UCRCS CU by county is the annual UCRS CU volume (acre-ft), CU by county is the county CU volume (acre-ft), and percent of county in URCS is the percent of irrigated agriculture acreage from a county straddling the UCRS boundary that resides within the UCRS.

Livestock CU by county were distributed to the HUC8 level based on the percentage of irrigated lands in each intersecting HUC8 within a given county.

Annual livestock consumptive use is distributed to a monthly timescale using a level distribution through the year that includes a slight increase in June, July and August with a ramp up then down in the shoulder months of May and September

Data privacy concerns continue to impact data availability. The reports released by the Census of Agriculture do include all the data for livestock populations. If publishing a particular value would identify an operation, that information is not published. For example, if there is only one farm in the county with cattle, the census reports that data as "(D)" to represent it was withheld to avoid disclosing individual operations. When data was withheld for a county or a Navajo Nation agency (Navajo Nations lands are reported by agency rather than county), an estimate was made for the livestock population in that county. Cattle, hogs, sheep, and poultry reported farms by their inventory size, so the census data may indicate there are 10 farms with 1 to 24 sheep, but not the total population. When this information was available, the number of farms was multiplied by the mean farm size. In the example here, the 10 farms would be assumed to have approximately 12 sheep each with a total sheep population of 120. Goats and equine species did not provide a farm inventory breakdown. When a livestock population was reported as "(D)" and there was no farm inventory size data, the population was estimated based on the last census year or was assumed to be equal to the number of farms reported. One of these methods was chosen to be the most appropriate on a case-by-case basis using professional judgement. All data estimated for livestock population reported as "(D)" is recorded in supporting files.

4.6. Mineral Resources

The Upper System Mineral Resources use water in the extraction and production of numerous minerals in addition to energy-related materials such as coal, oil, and natural gas. Estimates of annual CU volumes for mineral resources are estimated by applying CU coefficients to withdrawal and delivery volumes sourced from USGS studies. These estimates were made at the HUC8 scale.

Historically, estimates of the water consumptively used in the production of minerals were based largely on phone surveys conducted by the USGS and summarized in "Estimated Use of Water in the United States" reports published every 5 years. These data were last reported at a HUC8 scale in 1995 (Solley et al., 1995). These reports have not included CU estimates at a HUC8 scale since 1995. Recently a "Colorado River Basin Focus Area Study" report provided 5-year total water use estimates from 1985-2010 (Maupin et al., 2018). The data provided in this study included water supply withdrawal and delivery totals but did not provide estimates of CU.

For this reason, water use efficiency coefficients were calculated from the past 1985, 1990, and 1995 "Estimated Use of Water in the United States" reports (Solley et al., 1988, 1993, 1998, respectively), which had included CU estimates. These efficiency coefficients were applied to the new withdrawal and delivery totals from the "Colorado River Basin Focus Area Study" report (Maupin et al., 2018) to estimate CU volumes.

Annual Mineral Resources CU is distributed to a monthly timescale using a level distribution through the year that includes a slight increase in June, July and August with a ramp up then down in the shoulder months of May and September.

4.7. Thermal Electric Power

The net use of water for the production of thermal electric energy from the UCRS was collected from electronic records maintained by the State of Colorado and Utah or reported directly by the States of New Mexico and Wyoming and the Salt River project personnel for Arizona...

A list of Thermal Electric Power locations and data sources is included in Attachment 7.4.1.

4.8. Municipal and Industrial

Municipal and Industrial (M&I) CU is determined as population multiped by usage rate in acre-feet/year/person.

The basis for estimating M&I uses is the population within the reporting areas. The preparation of annual population estimates was guided by the U.S. Census Bureau's decadal, intercensal, and postcensal data products. The Census Bureau's decadal reports are published on the final year of the decade (e.g., 2010, 2020, etc.). The intercensal estimate is available between official decadal census counts. The postcensal estimates projecting population beyond the last published decadal census. Decadal populations are available at the census block scale, the smallest spatial scale available in census population data products. Intercensal and postcensal populations are available at county spatial scale. A GIS procedure was developed to use decadal census blocks to create spatial distribution coefficients that transform county scale populations to State-HUC8 scale populations where a State-HUC8 polygon is the intersection of HUC8 watershed boundaries with state boundaries.

To accomplish this, decadal census blocks were dissolved into County-HUC8 polygons (the intersection of HUC8 watershed boundaries with county boundaries), and then County-HUC8 populations were divided by county populations to attain a coefficient representing the portion of the total county population that is attributed to a given County-HUC8. County populations are then multiplied by this coefficient to determine a population for a given County-HUC8, which can then be aggregated by state to determine a State-HUC8 population, i.e. the population of a HUC8 within the boundaries of a given state. Distribution coefficients were developed from the 1990, 2000, 2010, and 2020 decadal censuses. The 1990 distribution was applied to the period 1985-1990, and the 2020 distribution was applied to the period 2020-2025. Between 1990-2020, the distributions were interpolated between decadal census years.

Historically, M&I consumptive uses were collected by the USGS and summarized in the "Estimated Use of Water in the United States" reporting series (published every 5 years) at a State-HUC8 scale (Solley et al., 1998). These reports have not included CU estimates at this scale since the 1995 estimated water use report. A "Colorado River Basin Focus Area Study" provided 5-year total water use estimates from 1985-2010 (Maupin et al., 2018), including water supply withdrawal plus delivery totals[2] but not estimates of CU. For this reason, CU efficiency coefficients were calculated from the 1985, 1990, and 1995 "Estimated Use of Water in the United States" reports (Solley et al., 1988, 1993, 1998, respectively) and applied to the recent withdrawal plus delivery totals from the "Colorado River Basin Focus Area Study" report (Maupin et al. 2018) to estimate CU volumes at a State-HUC8 scale. The categories included in these estimated volumes are a composite of the domestic, commercial, industrial, and public use categories from these USGS reports. A composite consumptive per-capita use rate unique to each State-HUC8 was derived by dividing the estimated consumptive use volumes by the State-HUC8 populations published in the "Colorado River Basin

[2] In USGS terminology, withdrawals refer to self-supplied water withdrawals (such as well pumping), and deliveries refer to utility-supplied deliveries (public supply). The term "withdrawal plus delivery totals" refers to total diversion volumes.

Focus Area Study". Then, estimated annual M&I CU volumes were computed at a State-HUC8 scale based on the composite consumptive per-capita use rate multiplied by the annual U.S Census based populations described above.

Between 1985 and 2025, the data used to calculate consumptive per-capita use rates varied in availability.

- For the years 1985, 1990, and 1995, complete data were available from USGS study reports, including population, CU, and water withdrawals plus deliveries volumes. This allowed for unique rate calculations for each of those years.
- For 2000, 2005, and 2010, CU volumes were no longer included in USGS study reporting. To fill this gap, the 1995 consumptive use efficiency coefficient was reused for these years through 2025. However, population and withdrawal plus delivery volumes were still available, allowing for continued rate calculations.
- Between 1985 and 2010, the rates were interpolated between the study years to estimate values for the in-between years.
- After 2010, no new data were available for any of the components needed to calculate the rate. As a result, the 2010 rate was carried forward unchanged through 2025.

Once new data beyond 2010 are published, the methods and estimates will be updated accordingly.

Population data from the Census Bureau is used each year, along with the rates, to estimate annual M&I consumptive use volumes.

Equation 16 - 17 below summarizes the M&I method:

$$Municipal \; \& \; Industrial \; CU = Population \; * consumptive \; use \; per - capita \; use \; rate \; (Usage \; Rate) \tag{16}$$

where Municipal & Industrial CU is the annual CU volume (ac-ft/year), population is the number of people in a spatial unit (persons) sourced from the US Census Bureau, and usage rate is the CU rate per person (acre-ft/year/person).

$$Usage \; Rate = \frac{Efficuency * Withdrawals \; plus \; Deliveries}{Rate \; Population} \tag{17}$$

where efficiency is the CU rate per person, withdrawals plus deliveries are the total annual diversion volume (ac-ft/year) sourced from USGS Colorado River Focus Area Report (Maupin et al. 2018), and rate population in the number of people in spatial unit sourced from USGS Colorado River Focus Area Report (Maupin et al. 2018).

$$Efficiency = \frac{Consumptive \; Use \; Volume}{Withdrawals \; plus \; Deliveries} \tag{18}$$

where consumptive use volume is the total annual depletion volume (ac-ft/year) and withdrawals and deliveries both sourced from USGS Estimated Use of Water in the United States (Solley et al., 1988, 1993, 1998)

Annual M&I consumptive use is distributed to a monthly timescale using a distribution obtained from the Colorado Water Conservation Board that is used in its Colorado's Decision Support Systems tools.

4.9. Transbasin Diversions

Nearly all the transbasin diversions (exports) both out of and into the Colorado River System were measured and reported by state agencies, USGS, or local water commissioners and users. The remainder were estimated based on past records and capacity of facilities. Transbasin diversions include water exported and imported between basins in the Colorado River System, and water exported to or imported from basins outside the Colorado River System. An example of water exported and imported between basins in the Colorado River System is the Dolores Tunnel, where water is exported from the Upper Main Stem and imported to the San Juan – Colorado. An example of water imported to the Colorado River system is a small volume of water imported from the Great Basin in Utah to the San Juan-Colorado reporting area.

Consumptive use volumes from transbasin diversions are typically measured at the outlet of the conveyance structure that carries flows out of the Colorado River Basin however there are exceptions where circumstances warrant. An example of this is the San Jan Chama Project, which diverts Colorado River Basin flows out of the San Juan Basin through the Azotea Tunnel into the Rio Chama, a tributary of the Rio Grande River. Rather than measuring CU volumes at the outlet of the Azotea Tunnel, a composite volume is constructed by summing three flow measurements made upstream of the tunnel inlet where tributary stream diversion entered the closed conveyance structure. The purpose of this deviation from the typical point of measurement is to not include incidental flows (seepage) into the tunnel that are not directly attributable to the Colorado River Basin. Another example is a ruling of decree that establishes the proportion of flows attributable to the Colorado River Basin from the Straight Creek Tunnel in Colorado, which diverts water from the Upper Main Stem Basin into Clear Creek, a tributary of the South Platte River. A Colorado Water Court decree issued in 1970 established that 40% of tunnel flows are attributable to the Clear Creek Basin, and as such only 60% of tunnel flows are considered consumptive use from the Colorado River Basin.

A list of transbasin diversion location and data sources is included in Attachments 7.5.1, 7.5.2, and 7.5.3. Attachment 7.5.1 lists the transbasin diversions that export water to basins outside of the Colorado River System, while Attachment 7.5.2 lists the transbasin diversions that export water between basins in the Colorado River System. Attachment 7.5.3 lists the transbasin diversions that import water both within and from outside the Colorado River System, with the one import from outside the Colorado River System noted.

4.10. Groundwater

Currently, all water consumed from groundwater pumping is counted as consumptive use from the Colorado River System unless there is specific geologic information to demonstrate that the water source is not connected to the Colorado River System.

Currently, the Arizona portion of the Upper System is the only part of the basin that reports separately the portion of consumptive use served via groundwater pumpage (see the corresponding report for the Arizona portion of the Upper Colorado River Basin Consumptive Uses and Losses Reports). For groundwater pumped in the Upper Division States, the use is quantified in the category for which the water is consumed. For example, domestic well pumping is quantified in the M&I category.

5. Glossary

actual evapotranspiration (ET_a): the volume or depth of water that is removed from available supplies through a combination of evaporation and transpiration from vegetation incorporating on-the-ground conditions that result in non-optimal growth and reduced ET such as deficit soil moisture, nutrient supply, or pests. In this work, ET_a is estimated using the OpenET eeMETRIC remote sensing surface energy balance model.

Colorado River Basin: Defined in the Colorado River Compact of 1922 as all the drainage area of the Colorado River System and all other territory within the United States of America to which waters of the Colorado River System shall be beneficially applied.

Colorado River System: Defined in the Colorado River Compact of 1922 as that portion of the Colorado River and its tributaries within the United States.

Colorado River Tributaries: Major rivers and associated watersheds that naturally drain into the Colorado River. For the purpose of this report "tributary water" is water that is sourced from the Lower Colorado River System but not diverted from the mainstream of the Colorado River

consumptive use: A depletion of surface water or groundwater due to human-caused activity, including interbasin transfers.

consumptive use of irrigation water (CU_{irr}): the amount of irrigation water consumed by crop ET. In this work, CU_{irr} is estimated for irrigated fields as ET_a minus P_{rz}.

crop potential ET (ET_c): the volume or depth of water that is removed from available supplies through a combination of evaporation and transpiration assuming full supply, well-watered conditions throughout the growing season. In this work, ET_c estimates are generated by the ET Demands crop ET and soil water balance model. Growing season timing and crop phenology is estimated by ET Demands based on crop dependent temperature thresholds.

evapotranspiration (ET): the combined sum of soil evaporation and vegetation transpiration, plus a minor component that includes any direct evaporation from vegetation surfaces following rain, dew or overhead irrigation.

Fullness Factor: a coefficient used to adjust a maximum reservoir surface area to an average annual reservoir surface area.

free water surface (FWS) evaporation: commonly estimated by multiplying the observed pan evaporation by a coefficient.

hydrologic units: the four levels of subdivisions, developed by the USGS, used for the collection and organization of hydrologic data. The four levels of subdivision: regions, subregions, accounting units, and cataloging units are arranged to form an eight-digit hydrologic unit number.

incidental use (IU): consumptive use that can be attributed to meeting the net irrigation requirement. These losses include phreatophyte growth in and along canals and laterals and evaporation from the canals and laterals. In this work, IU is estimated as CU_{irr} times IU percentage where IU percentages are HUC8-State specific values based on estimates documented in the 1976-1980 CUL Report Technical Appendix (Reclamation, 1980).

net evaporation: gross reservoir evaporation minus the lessor of pre-reservoir evaporation or precipitation.

net irrigated agriculture consumptive use (Net CU): the combined consumptive use of irrigation water and incidental use. In this work, Net CU is estimated as CU_{irr} plus IU (i.e., Net CU = CU_{irr} × IU percentage + CU_{irr}).

net irrigation water requirement (NIWR): the amount of supplemental water required in addition to effective precipitation to meet non-water limited, potential crop conditions. In this work, NIWR is estimated by the ET Demands model as ET_c minus P_{rz}.

pre-reservoir evaporation: water that was consumptively used before the reservoir came into existence. This includes water used by natural vegetation, evaporation from the underlying stream or river, or people living on the site.

reference evapotranspiration: potential ET from a defined, standardized reference crop that is actively growing, not limited by soil moisture, and is at full cover and standardized height. Standardized reference crops in the US are 0.5 m tall, full-cover alfalfa (ET_r) and 0.12 m tall clipped, cool-season grass (ET_o). ET_o and ET_r are estimated using the using the American Society of Civil Engineers Penman-Monteith equation (ASCE-PM) in this work.

root zone effective precipitation (P_{rz}): the amount of precipitation available for either evaporation or transpiration. In this work, Prz is calculated by the ET Demands model as total precipitation minus losses to runoff and deep percolation.

transbasin diversion: water exported or imported between basins within the Colorado River System or outside the Colorado River System. Exports or imports outside the Colorado River System may also be termed transmountain diversion.

6. References

Abatzoglou, J. T. (2013). Development of gridded surface meteorological data for ecological applications and modelling. International Journal of Climatology, 33(1): 121-131. https://doi.org/10.1002/joc.3413

Allen, R.G., & Robison, C.W. (2009). Evapotranspiration and Consumptive Irrigation Water Requirements for Idaho, University of Idaho Report, 222 p. Available at http://www.kimberly.uidaho.edu/ETIdaho/

Allen, R. G., Pereira, L. S., Raes, D., & Smith, M. (1998). Crop Evapotranspiration - Guidelines for Computing Crop Water Requirements. FAO Irrigation and Drainage Paper 56, FAO: Rome, Italy, 1998. https://www.fao.org/3/x0490e/x0490e00.htm

Allen, R. G., Pereira, L. S., Smith, M., Raes, D., & Wright, J. L. (2005). FAO-56 Dual Crop Coefficient Method for Estimating Evaporation from Soil and Application Extensions. Journal of Irrigation and Drainage Engineering, 131(1): 2-13. https://doi.org/10.1061/(ASCE)0733-9437(2005)131:1(2)

Allen, R. G., Tasumi, M., & Trezza, R. (2007). Satellite-based energy balance for mapping evapotranspiration with internalized calibration (METRIC)—Model. Journal of irrigation and drainage engineering, 133(4), 380-394. https://doi.org/10.1061/(ASCE)0733-9437(2007)133:4(380)

Allen, R.G., Burnett, B., Kramber, W., Huntington, J., Kjaersgaard, J., Kilic, A., Kelly, C. and Trezza, R. (2013). Automated Calibration of the METRIC-Landsat Evapotranspiration Process. JAWRA Journal of the American Water Resources Association, 49(3), pp.563-576. https://doi.org/10.1111/jawr.12056

Allen, R.G., Morton, C., Kamble, B., Kilic, A., Huntington, J., Thau, D., Gorelick, N., Erickson, T., Moore, R., Trezza, R., and Ratcliffe, I. (2015). EEFlux: A Landsat-based evapotranspiration mapping tool on the Google Earth Engine. In 2015 ASABE/IA Irrigation Symposium: Emerging Technologies for Sustainable Irrigation-A Tribute to the Career of Terry Howell, Sr. Conference Proceedings (pp. 1-11). American Society of Agricultural and Biological Engineers. https://digitalcommons.unl.edu/natrespapers/1482

Allen, R.G., Robison, C.W., Huntington, J., Wright, J.L., and Kilic, A., 2020. Applying the FAO-56 dual Kc method for irrigation water requirements over large areas of the Western US. Transactions of the ASABE, 63(6), pp.2059-2081. https://digitalcommons.unl.edu/natrespapers/1485/

ASCE-EWRI, (2005). "The ASCE Standardized Reference Evapotranspiration Equation." ASCE-EWRI Standardization of Reference Evapotranspiration Task Committee Report, available at http://www.kimberly.uidaho.edu/water/asceewri/

Bureau of Indian Affairs (BIA), 1985. 1985 Survey of Irrigated Land in the Arizona Portion of the Upper Colorado River.

Harwell, Glenn R. (2012). Estimation of Evaporation from Open Water: A Review of Selected Studies, Summary of U.S. Army Corps of Engineers Data Collection and Methods, and Evaluation of Two Methods for Estimation of Evaporation from Five Reservoirs in Texas. *U.S. Geological Survey Scientific Investigations Report* 2012–5202. https://doi.org/10.3133/sir20125202.

Kilic, A., Allen, R. G., Blankenau, P., Revelle, P., Ozturk, D., & Huntington, J. (2021). Global production and free access to Landsat-scale Evapotranspiration with EEFlux and eeMETRIC. In 6th Decennial National Irrigation Symposium, 6-8, December 2021, San Diego, California (p. 1). American Society of Agricultural and Biological Engineers. https://doi.org/10.13031/irrig.2020-038

Lovelace, John K. (2009). Method for estimating water withdrawals for livestock in the United States, 2005. *U.S. Geological Survey Scientific Investigations Report* 2009–5041. 7 p. https://doi.org/10.3133/sir20095041

Masoner, J. R., D. I. Stannard, and S. C. Christenson. (2008). Differences in Evaporation between a Floating Pan and Class A Pan on Land. JAWRA Journal of the American Water Resources Association, 44: 552–61. https://doi.org/10.1111/j.1752-1688.2008.00181.x.

Maupin, M.A., Ivahnenko, T., and Bruce, B. (2018). Estimates of water use and trends in the Colorado River Basin, Southwestern United States, 1985–2010. *U.S. Geological Survey Scientific Investigations Report* 2018–504. 61 p. https://doi.org/10.3133/sir20185049

Mefford, B. and Wilson, E. (2024). Memorandum Re: Maximum Extent Layer for Irrigated Acreage in Arizona in the UCRB.

Morton, C. G., Huntington, J. L., Pohll, G. M., Allen, R. G., McGwire, K. C., & Bassett, S. D. (2013). Assessing calibration uncertainty and automation for estimating evapotranspiration from agricultural areas using METRIC. JAWRA Journal of the American Water Resources Association, 49(3), 549-562. https://doi.org/10.1111/jawr.12054

National Oceanic and Atmospheric Administration (NOAA). (1982). Evaporation Atlas for the Contiguous 48 United States. *NOAA Technical Report 33*. National Weather Service (NWS). Washington, DC. https://repository.library.noaa.gov/view/noaa/55711.

Pearson, C., Minor, B., Morton, C., Volk, J., Dunkerly, C., Jensen, E., ReVelle, P., Kilic, A., Allen, R., Huntington, J.L. (2024). Historical Evapotranspiration and Consumptive Use of Irrigated Areas of the Upper Colorado River Basin. Desert Research Institute, Publication No. 41304. DOI:10.13140/RG.2.2.31069.63206

Reclamation. (1980). Colorado River System Consumptive Uses and Losses Report 1976-1980 Technical Appendix. U. S. Department of Interior, Bureau of Reclamation.

Reclamation. (1991). Colorado River System Consumptive Uses and Losses Report 1981-1985 Technical Appendix Volume 1. U. S. Department of Interior, Bureau of Reclamation

Soil Conservation Service. (1975). Livestock Water Use. Special Projects Division, Soil Conservation Service, U.S. Department of Agriculture.

Solley, W.B., Merk, C.F., and Pierce, H.A. (1988). Estimated Use of Water in the United States in 1985. *U.S. Geological Survey Circular* 1004. https://pubs.usgs.gov/circ/1988/1004/report.pdf.

Solley, W.B., Pierce, H.A., and Perlman, H.A. (1998). Estimated Use of Water in the United States in 1995. *U.S. Geological Survey Circular* 1200. https://pubs.er.usgs.gov/publication/cir1200.

Solley, W.B., Pierce, H.A., and Perlman, H.A. (1993). Estimated Use of Water in the United States in 1990. *U.S. Geological Survey Circular* 1081. https://pubs.usgs.gov/circ/1993/1081/report.pdf.

Upper Colorado Region State-Federal Inter-Agency Group for the Pacific Southwest, Inter-Agency Committee Water Resources Council. (1971). Upper Colorado Region Comprehensive Framework Study. Washington D.C. https://www.usbr.gov/lc/region/programs/crbstudy/1971UCRStudy.pdf

7. Attachments

7.1. Irrigated Agriculture

7.1.1. Summary table of UCRS reference ET weather stations

State	Station Name	Network ID	Elevation [feet]	Latitude [dd]	Longitude [dd]	Start Year	End Year	Category	Network
Colorado	Carbondale	cbl01	6291.4	39.36	-107.21	2016	2022	Inside Basin	COAGMET
Colorado	Center 2	ctr02	7606.3	37.83	-106.04	2003	2022	Outside Basin	COAGMET
Colorado	Clark	clk01	7219.2	40.7	-106.93	2018	2022	Inside Basin	COAGMET
Colorado	Collbran	cbn01	6553.3	39.2	-107.99	2018	2022	Inside Basin	COAGMET
Colorado	Cowdrey	cow01	7891.7	40.87	-106.34	2009	2022	Outside Basin	COAGMET
Colorado	CSU ARDEC	ftc03	5110.2	40.65	-105	1992	2022	Outside Basin	COAGMET
Colorado	CSU Fruita Station	frt02	4517.8	39.18	-108.7	2016	2022	Inside Basin	COAGMET
Colorado	CSU Orchard Mesa Exp. Station	orm02	4698.8	39.04	-108.47	2019	2022	Inside Basin	COAGMET
Colorado	Durango	drg01	6201.4	37.11	-107.88	2018	2022	Inside Basin	COAGMET
Colorado	Eckert	ekt01	5520.6	38.84	-107.97	2016	2022	Inside Basin	COAGMET
Colorado	Granby	gby01	7909	40.1	-105.94	2018	2022	Inside Basin	COAGMET
Colorado	Gunnison	gun01	7892	38.61	-106.9	2016	2022	Inside Basin	COAGMET
Colorado	Gypsum	gyp01	6468.3	39.63	-106.95	2017	2022	Inside Basin	COAGMET
Colorado	Hayden	hyd01	6452.3	40.5	-107.18	2016	2022	Inside Basin	COAGMET
Colorado	Hebron	heb01	8167.2	40.55	-106.39	2009	2022	Outside Basin	COAGMET
Colorado	Ignacio	ign01	6615.3	37.14	-107.71	2018	2022	Inside Basin	COAGMET
Colorado	Kline	kln01	6753.3	37.13	-108.15	2018	2022	Inside Basin	COAGMET
Colorado	Kremmling	krm01	7532.1	40.12	-106.28	2018	2022	Inside Basin	COAGMET
Colorado	Larand	lar01	8249.2	40.61	-106.3	2009	2022	Outside Basin	COAGMET
Colorado	Mancos	mnc01	6728.3	37.32	-108.34	2016	2022	Inside Basin	COAGMET
Colorado	Montrose	mtr01	5649.6	38.55	-107.91	2016	2022	Inside Basin	COAGMET
Colorado	Norwood	nwd01	6998.2	38.15	-108.28	2018	2022	Inside Basin	COAGMET

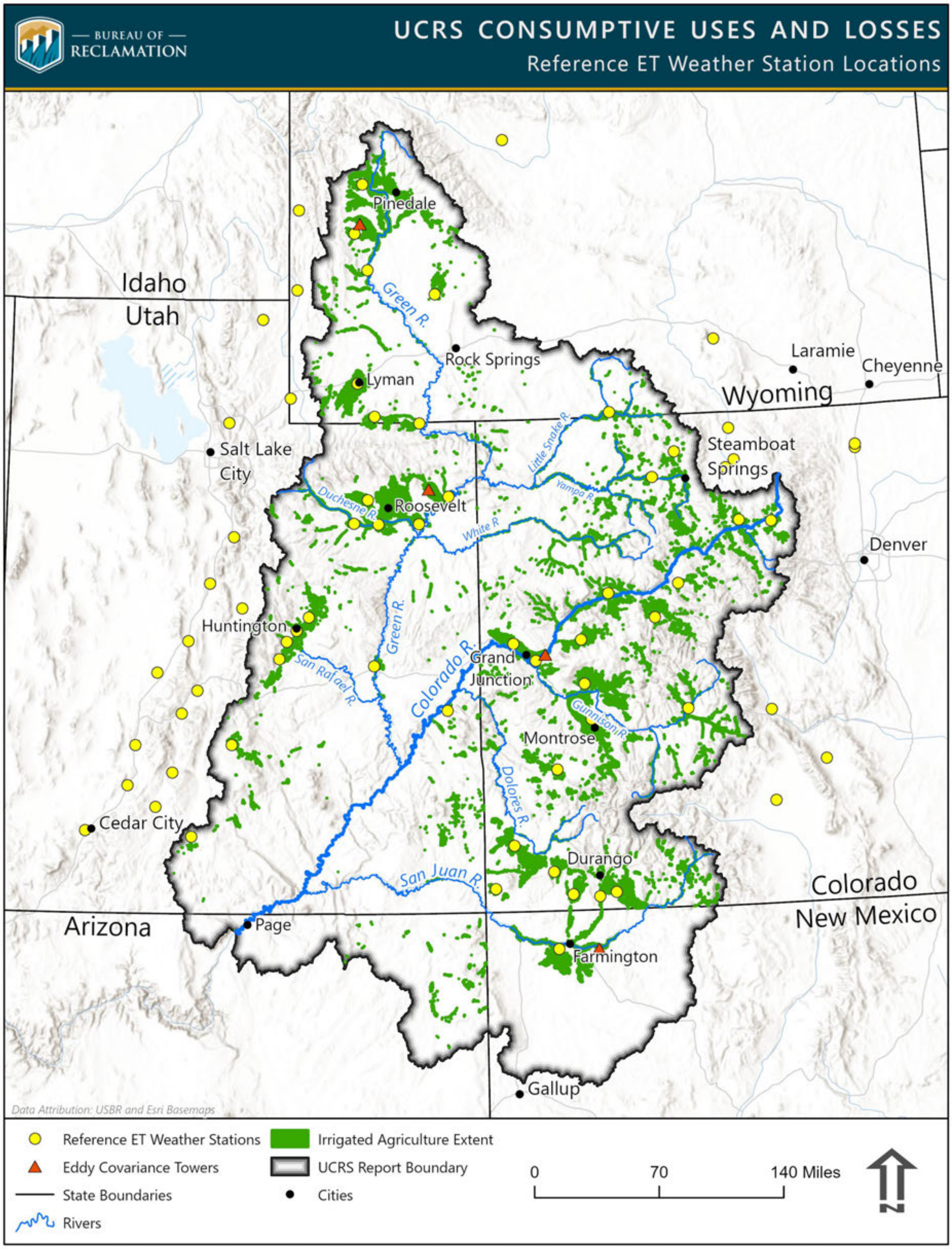
State	Station Name	Network ID	Elevation [feet]	Latitude [dd]	Longitude [dd]	Start Year	End Year	Category	Network
Colorado	Salida	sld01	7225.8	38.57	-106.04	2010	2022	Outside Basin	COAGMET
Colorado	Silt	slt01	5618.6	39.57	-107.69	2016	2022	Inside Basin	COAGMET
Colorado	Towaoc	twc01	5317.6	37.19	-108.94	2016	2022	Inside Basin	COAGMET
Colorado	Wellington	wlt01	5143	40.68	-105	2005	2022	Outside Basin	COAGMET
Colorado	Westcliffe	wcf01	7731	38.15	-105.5	2010	2022	Outside Basin	COAGMET
Colorado	Yellow	yjk01	6898.2	37.54	-108.74	2016	2022	Inside Basin	COAGMET
New Mexico	Farmington	farmington	5641.6	36.69	-108.31	2019	2022	Inside Basin	ZiaMET
Utah	Bluebell	1265823	6182.8	40.37	-110.21	2018	2022	Inside Basin	UCC (AgWeather)
Utah	Buckhorn	bucu	5818.7	38.04	-112.71	2016	2022	Outside Basin	Agrimet PN
Utah	Castle Dale	csdu	5897.4	39.22	-111.07	2016	2022	Inside Basin	Agrimet PN
Utah	Castle Valley	csvu	4687.1	38.65	-109.4	2016	2022	Inside Basin	Agrimet PN
Utah	Cedar City	cedu	5526.8	37.67	-113.14	2016	2022	Outside Basin	Agrimet PN
Utah	Circleville	2125	6117.2	38.15	-112.25	2016	2022	Outside Basin	SCAN
Utah	Duchesne	ducu	5494	40.18	-110.36	2016	2022	Inside Basin	Agrimet PN
Utah	Elmo	elmu	5720.3	39.42	-110.84	2016	2022	Inside Basin	Agrimet PN
Utah	Evanston	1266817	6822.4	41.2	-111.03	2018	2022	Outside Basin	UCC (UAgrimet)
Utah	Ferron	frnu	6002.4	39.08	-111.15	2016	2022	Inside Basin	Agrimet PN
Utah	Flowell	flou	4733	38.96	-112.42	2016	2022	Outside Basin	Agrimet PN
Utah	Green River	2131	4101.9	39.02	-110.16	2016	2022	Inside Basin	SCAN
Utah	Huntington	hntu	5753.1	39.31	-110.97	2016	2022	Inside Basin	Agrimet PN
Utah	Laketown	laku	5956.5	41.84	-111.33	2016	2022	Outside Basin	Agrimet PN
Utah	Loa	1265824	7114.3	38.38	-111.64	2018	2022	Inside Basin	UCC (AgWeather)
Utah	Manderfield	2156	6182.8	38.37	-112.64	2016	2022	Outside Basin	SCAN
Utah	Manila	1282825	6068	40.99	-109.65	2018	2022	Inside Basin	UCC (AgWeather)
Utah	Monroe	mnru	5405.4	38.63	-112.16	2016	2022	Outside Basin	Agrimet PN
Utah	Morgan	2133	5110.2	41	-111.69	2016	2022	Outside Basin	SCAN

State	Station Name	Network ID	Elevation [feet]	Latitude [dd]	Longitude [dd]	Start Year	End Year	Category	Network
Utah	Nephi	1138095	5002	39.69	-111.88	2018	2022	Outside Basin	UCC (AgWeather)
Utah	Panguitch	1138099	6546.9	37.87	-112.42	2018	2022	Outside Basin	UCC (AgWeather)
Utah	Pelican Lake	pelu	4811.8	40.17	-109.67	2016	2022	Inside Basin	Agrimet PN
Utah	Pleasant Valley	plvu	5287.4	40.17	-110.1	2016	2022	Inside Basin	Agrimet PN
Utah	San Pete Valley	spvu	5612.1	39.49	-111.54	2016	2022	Outside Basin	Agrimet PN
Utah	Scipio	scpu	5336.6	39.22	-112.1	2016	2022	Outside Basin	Agrimet PN
Utah	Spanish Fork	1138093	4719.9	40.07	-111.63	2018	2020	Outside Basin	UCC (AgWeather)
Utah	Split Mountain	2154	4842.8	40.39	-109.35	2016	2022	Inside Basin	SCAN
Utah	Tropic	1266814	6209	37.63	-112.05	2018	2022	Inside Basin	UCC (UAgrimet)
Utah	Venice	vecu	5241.4	38.82	-112	2016	2022	Outside Basin	Agrimet PN
Wyoming	Afton	afty	6209	42.73	-110.94	2016	2022	Outside Basin	Agrimet PN
Wyoming	Baggs 2E	baggs_2e	6307.4	41.04	-107.61	2016	2022	Inside Basin	WACnet
Wyoming	Big Piney 11W	big_piney_11w	7412.1	42.54	-110.33	2016	2022	Inside Basin	WACnet
Wyoming	Cokeville	1266816	6189.4	42.08	-110.96	2018	2022	Outside Basin	UCC (UAgrimet)
Wyoming	Daniel 10NW	daniel_10nw	7421	42.94	-110.24	2016	2022	Inside Basin	WACnet
Wyoming	Elk Mountain 6S	elk_mountain_6s	7780.2	41.6	-106.45	2017	2022	Outside Basin	WACnet
Wyoming	Farson 5S	farson_5s	6594.4	42.04	-109.46	2016	2022	Inside Basin	WACnet
Wyoming	Labarge 2S	labarge_2s	6536.1	42.24	-110.19	2016	2022	Inside Basin	WACnet
Wyoming	Lonetree	lonetree	7468.9	41.05	-110.13	2016	2022	Inside Basin	WACnet
Wyoming	Lyman 1SW	lyman_1sw	6708.9	41.32	-110.31	2016	2022	Inside Basin	WACnet
Wyoming	Pavillion 2N	pavillion_2n	5474.3	43.28	-108.68	2007	2022	Outside Basin	WACnet

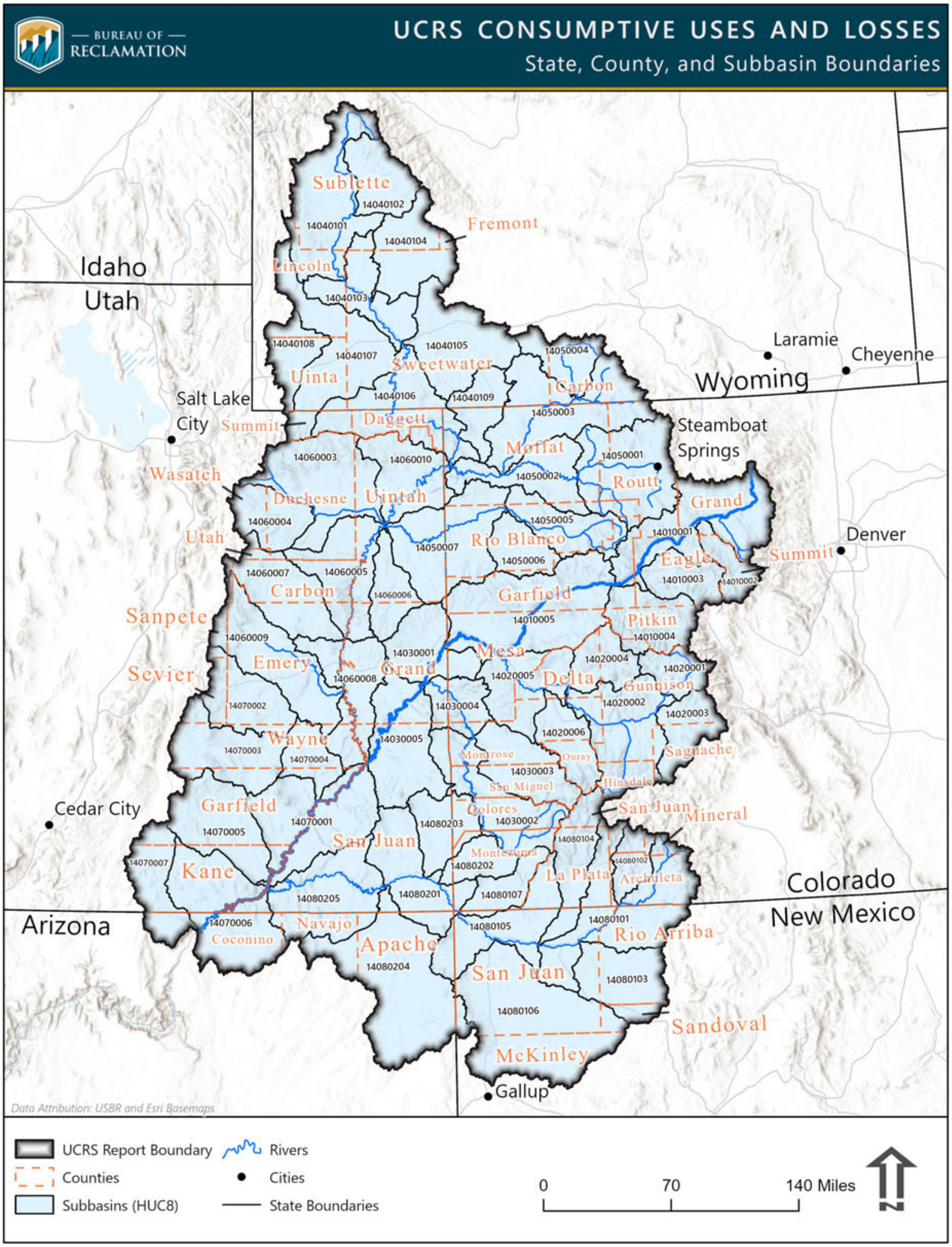
7.1.2. Summary table of UCRS eddy covariance towers

State	Station Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Start Year	End Year	Network
Colorado	Palisade	4742	39.09354	-108.3704	2017	present	USU
New Mexico	Bloomfield	5563	36.69091	-107.9080	2020	present	USU
Utah	Vernal	5464	40.45857	-109.562	2017	present	USU
Wyoming	Big Piney	7220	42.62479	-110.2711	2022	present	USU

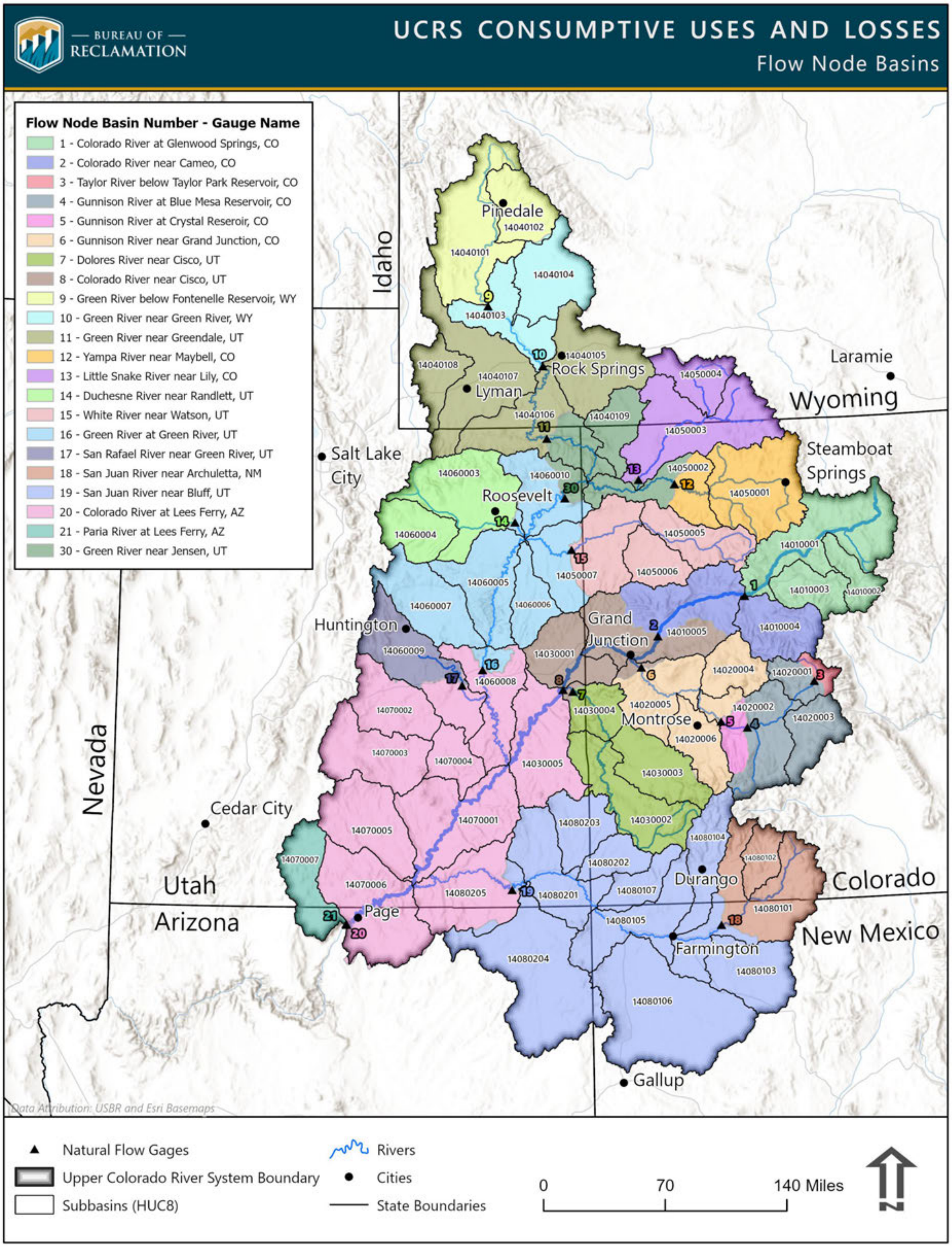
7.1.3. Map of UCRS reference ET weather station locations



7.1.4. Map of UCRS with State, County, and HUC8 boundaries



7.1.5. Map of UCRS with flow node, State, and HUC8 boundaries



7.1.6. Incidental Use Methods Memorandum

Incidental Use for Consumptive Use and Loss Reporting on the Upper Colorado River

The Colorado River Basin Project Act of 1968, Title VI, Section 601(b)(1) directs the Secretary of the Interior to prepare reports on the annual consumptive uses and losses (CUL) from the Colorado River System after each successive five-year period. Irrigated agricultural water use in the Upper Colorado River System (UCRS) comprises over 60% of the total CUL reported by Reclamation. A component of irrigated agricultural water use is incidental use.

Incidental Use Definition

Incidental use is defined in a glossary on page 15 in the *Methods Manual for the Colorado River System Consumptive Uses and Losses Report 1985-1990* (Reclamation, 1992) as "consumptive use that can be attributed to meeting the net irrigation requirement. These losses include phreatophyte growth in and along canals and laterals and evaporation from the canals and laterals." In Reclamation CUL reporting, incidental use is a percentage of irrigated consumptive use. Net consumptive use includes incidental use and is computed by **Equation 1** below.

$$net\ irrigated\ agriculture\ consumptive\ use\ (Net\ CU) = CU_{irr} * IU + CU_{irr} \qquad (1)$$

where Net CU is the volume (acre-ft) of the consumptive use of irrigation water, including the incidental use. CU_{irr} is the volume (acre-ft) of consumptive use of irrigation water determined at the field spatial scale. Incidental Use (IU) percentages are developed at the State-HUC8 level developed from the Upper Colorado Comprehensive Framework Study (1971) supporting information, meaning within each state, a HUC8 has an assigned incidental use percentage that is assigned to each field with that State HUC8.

Incidental Use Documentation

The *Colorado River System Consumptive Uses and Losses Report 1986-1990* (Reclamation, 1998) references the *Upper Colorado Region Comprehensive Framework Study* (Upper Colorado Region State-Federal Inter-Agency Group 1971) as the source for Reclamation incidental use percentage values. The excerpt below is from that study's Appendix V, Water Resource, page 44:

> Incidental use on water-consuming, noncropped areas was charged on those areas which consume water incidental to the cropped lands as a result of the practice of irrigation. Incidental consumptive use was estimated at 315,600 acre-feet or 18.6 percent of the consumptive use by irrigated crops. Incidental water use values for New Mexico and Utah are the figures in the 1948 Upper Colorado River Compact Commission's Advisory Committee Report. Recent survey data from the Wyoming State Water Plan was used for Wyoming. Colorado data are from recent Type IV River Basin Cooperative Studies by the Colorado Water Conservation Board and the U. S. Department of Agriculture. Incidental water use in Arizona was estimated at 10 percent of consumptive irrigation requirement.

This definition of incidental use from this excerpt is different from the Reclamation 1992 definition and may be interpreted that incidental use includes areas other than those along canals. Furthermore, according to the *CRDSS Memorandum* (Bethel & Wilson, 1999), a Type IV River Basin Cooperative

Study conducted by the Colorado Water Conservation Board and U.S. Department of Agriculture noted in the excerpt describes incidental use as "riparian vegetation, nonbeneficial phreatophytes, seeped lands, and incidental areas". Furthermore, it seems the Type IV Study incidental use values were developed from an Upper Colorado Region Type I Survey. A copy of the supporting Type I Survey report and associated data has never been located, and therefore proper documentation of the development of the incidental use percentages has never been found. Subsequently, Bethel & Wilson 1999 recommended that new incidental use acreage be determined in the future. With this history and uncertainty, Reclamation will continue to use the incidental use percentage values from the Upper Colorado Region Type I Survey until a documented incidental use study presents other values.

Incidental Use Percentages for 1991-2024 Net CU Computation

In Reclamation's CUL reporting and computations, it appears undocumented revisions to the incidental use percentage values have occurred since their original application. Some of these revisions appear to be errors possibly caused when re-sorting values in a spreadsheet form. For the 1991-2024 irrigated agriculture consumptive use estimates being computed with the eeMETRIC method in OpenET and released in 2024, Reclamation staff has reverted most incidental use percentages to the original values documented in the *1976-1980 CUL Report Technical Appendix* (Reclamation, 1980), see **Attachment 1** at the end of this document. Original incidental use percentages were assigned to evaluation units, shown in **Figure 1**. Reclamation staff used this figure to assign incidental use percentage at the State/HUC8 spatial scale. **Figure 2** also shows a summary of the incidental use percentage assignments.

Two exceptions include New Mexico, where 1981 supporting technical data provided incidental use percentage updates (see Table 1) by HUC8 that were used in place of the values in Attachment 1. And in Arizona, where since the *1981-83 CUL in the Arizona portion of the Upper Colorado River Basin* (Reclamation, 1985), 5% has been applied for agricultural lands incidental use within this portion of Arizona.

Table 3. 1981 supporting technical data - New Mexico incidental use percentages

Hydrologic Unit Code	County	Year	Total Acres [acres]	Net Cons Use [ac-ft]	Incidental Use [%]
14080101	San Juan	1981	2,598	5,304	20.5
14080104	San Juan	1981	7,068	12,976	20.5
14080105	San Juan	1981	66,263	84,209	18.1
14080106	McKinley	1981	906	771	20.5
14080106	San Juan	1981	10,602	17,405	20.5
14080204	San Juan	1981	1,767	3,156	20.5
14080101	Rio Arriba	1981	4,595	4,763	5.1

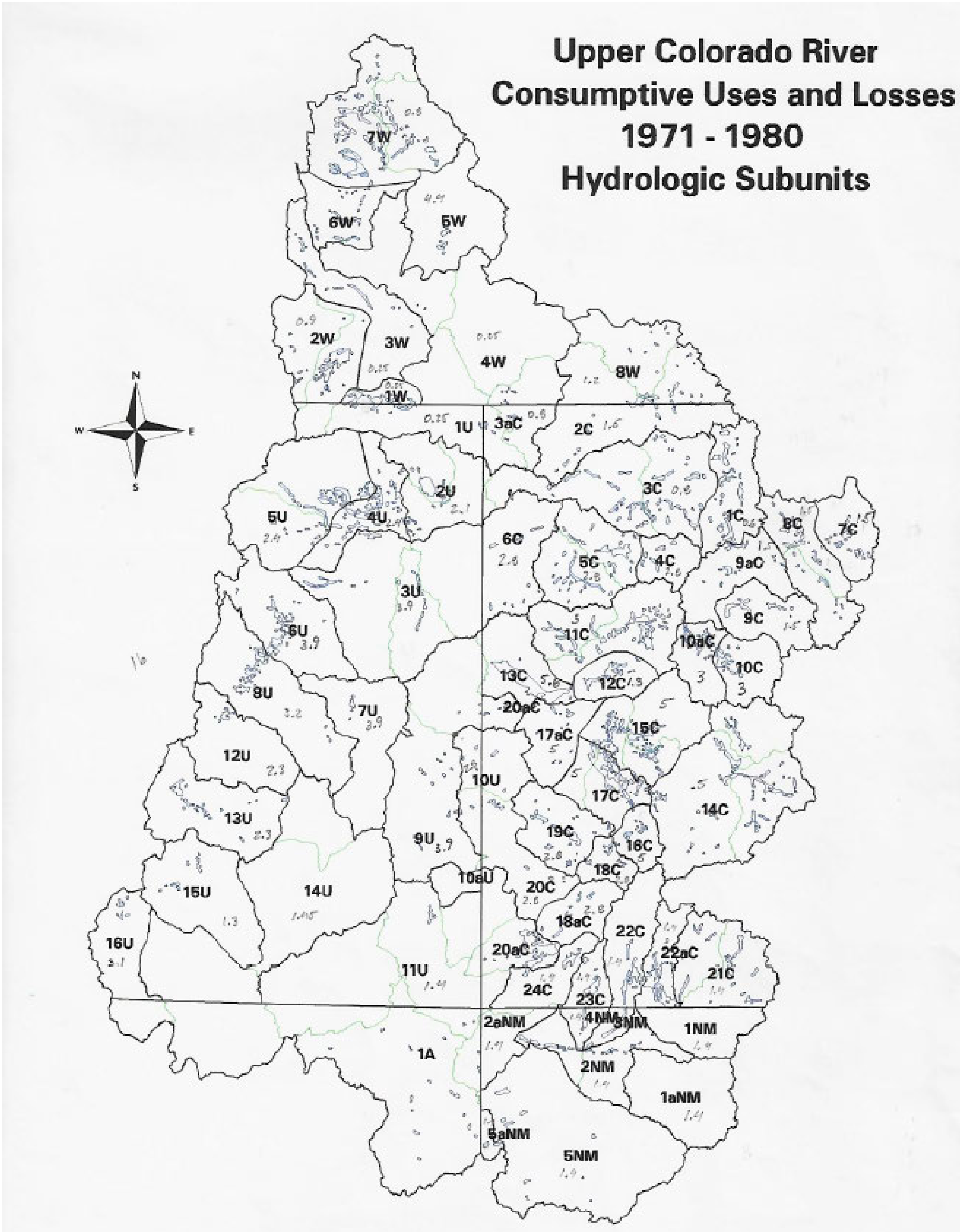


Figure 1: Evaluation Unit Map for which incidental use percentages were originally assigned.

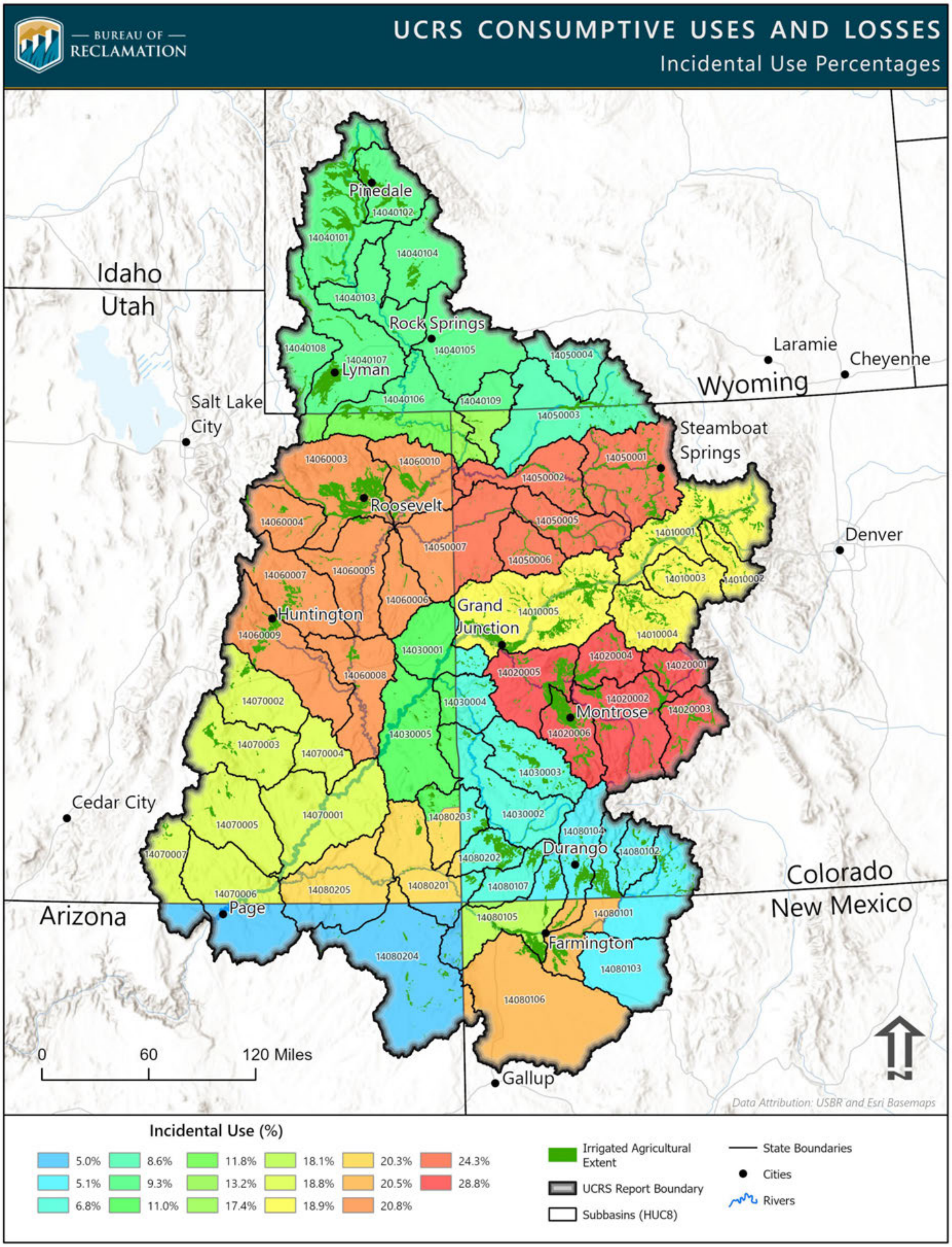


Figure 2: Summary of incidental use percentages in UCRS by State and HUC8.

Several areas along state boundaries had abrupt changes in incidental use values with the original mapping, even among the same field. To smooth the transition, incidental use percentages were revised in two areas. In the first area, incidental percentages in Colorado HUC8 1405003 were updated to 8.6%, to match values in the same HUC8 in neighboring Wyoming. In the second area, fields within Colorado in the red box in **Figure 3** were changed to 17.8%, to match values in the red box in New Mexico.

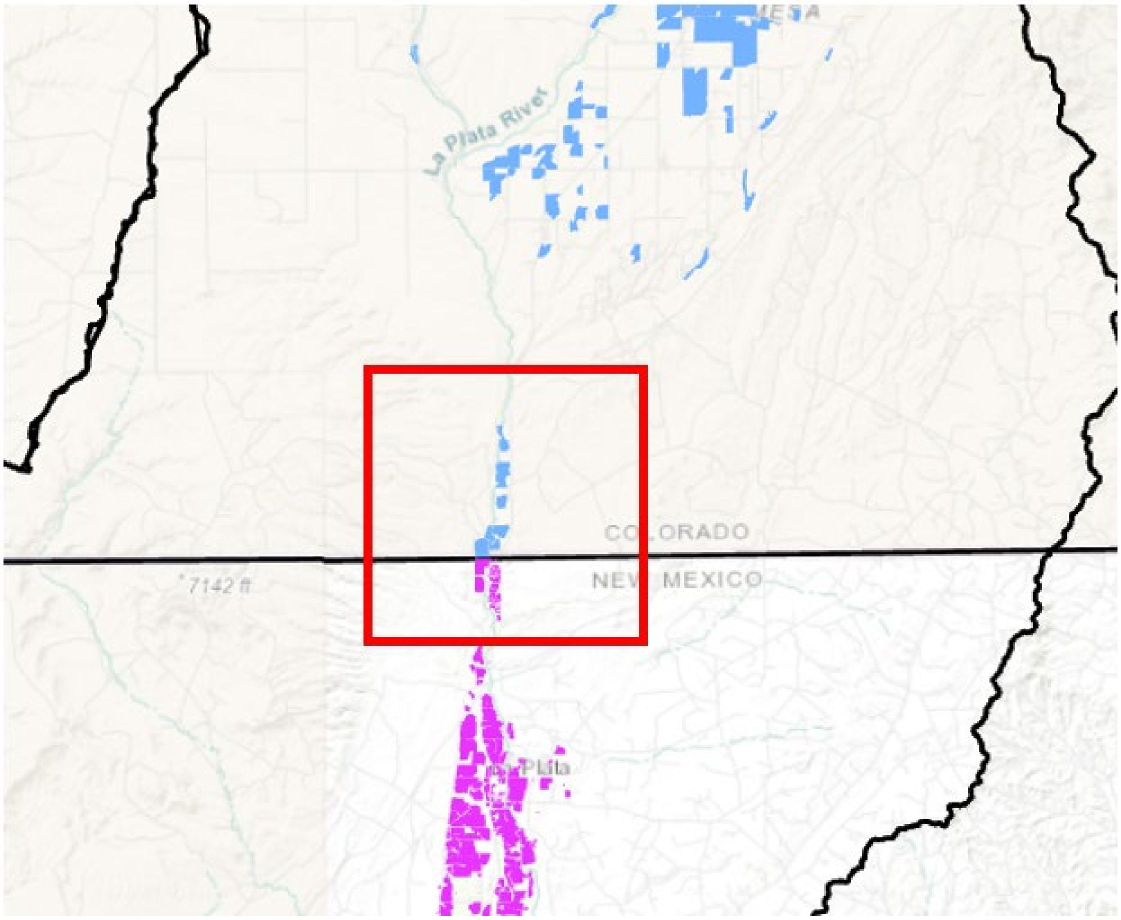


Figure 3: Within the red box, incidental use percentages in Colorado fields were updated to 17.8%, to match New Mexico fields.

References

Bethel, R., & Wilson, E. (1999). *CRDSS Memorandum.*

Bureau of Reclamation. (1980). *Colorado River System Consumpitve Uses and Losses Report 1976-1980.*

Bureau of Reclamation. (1985). *Report on 1981-83 Annual Consumptive Uses and Losses in the Arizona portion of the Upper Colorado River Basin.*

Bureau of Reclamation. (1990). *Colorado River System Consumptive Uses and Losses Report 1986-1990.*

Bureau of Reclamation. (1992). *Methods Manual Colorado River System Consumptive Uses and Losses Report 1985-1990.*

Upper Colorado Region State-Federal Inter-Agency Group. (1971). *Upper Colorado Region Comprehensive Framework Study.*

Attachment 1 – Incidental Use Percentages

As presented in Reclamation's 1976-1980 CUL Technical Appendix

7-1654 (7-73)
Water and Power

COMPUTATION SHEET

BY	DATE	PROJECT COLORADO	SHEET ___ OF ___
CHKD BY	DATE	FEATURE UPPER COLORADO RIVER BASIN	
DETAILS IRRIGATION CONSUMPTIVE USE – USES & LOSSES REPORT			

SUBAREA	INCIDENTAL LOSS (%)	CONSUMPTIVE USE (1000 ACRE-FEET) 1976	1977	1978	1979	1980
C-1	24.3	24.8	18.3	30.4	31.1	33.0
C-2	24.3	9.5	8.5	9.2	10.0	8.2
C-3	24.3	31.7	30.2	38.1	35.8	37.1
C-3A	17.4	4.2	3.3	4.5	4.5	3.7
C-4	24.3	2.5	2.6	3.4	3.7	3.6
C-5	24.3	22.6	22.2	28.6	27.6	24.9
C-6	24.3	5.9	4.2	7.1	7.2	5.8
SUBTOTAL (GREEN)		101.2	89.3	121.3	119.9	116.3
C-7	18.9	16.8	12.3	17.2	13.7	15.0
C-8	18.9	24.7	32.8	37.2	30.4	29.3
C-9	18.9	16.4	15.2	17.4	16.2	19.0
C-9A	18.9	10.2	9.6	12.8	11.7	13.3
C-10	18.9	15.0	15.3	16.0	12.8	16.4
C-10A	18.9	22.5	18.3	22.8	26.6	25.4
C-11	18.9	64.0	46.7	74.1	80.1	72.4
C-12	18.9	42.2	31.1	36.9	46.5	46.4
C-13	18.9	182.6	180.8	193.0	195.4	193.3
C-14	28.8	40.8	35.1	68.1	68.0	71.7
C-15	28.8	118.5	118.7	125.9	115.9	136.0
C-16	28.8	25.5	21.1	25.6	23.6	25.4
C-17	28.8	213.6	191.3	221.5	213.4	220.0
C-17A	28.8	10.2	12.9	11.8	12.8	11.5
C-18	6.8	5.0	3.5	5.3	4.6	5.7
C-18A	6.8	4.3	3.0	4.7	4.9	4.6
C-19	6.8	16.4	15.0	19.2	21.7	19.8
C-20	6.8	10.0	6.4	10.3	12.0	10.6
C-20A	6.8	1.2	0.6	1.3	1.6	1.4
SUBTOTAL (COLO)		839.9	769.7	921.1	911.9	937.2
C-21	5.1	8.8	5.1	10.3	14.4	13.1
C-22	5.1	38.9	32.7	40.9	48.3	44.4
C-22A	5.1	30.4	31.6	30.4	33.7	31.2
C-23	5.1	15.6	8.2	14.5	16.8	16.4
C-24	9.9	10.5	7.9	9.4	12.8	9.7
C-24A	9.9	45.0	33.1	34.5	45.2	45.4
SUBTOTAL (SAN JUAN)		149.2	118.6	140.0	171.2	160.2
TOTAL COLORADO		1,090.3	977.6	1,182.4	1,203.0	1,213.7

7-1654 (7-73)
Water and Power

COMPUTATION SHEET

BY	DATE	PROJECT UTAH	SHEET ___ OF ___
CHKD BY	DATE	FEATURE UPPER COLORADO RIVER BASIN	

DETAILS IRRIGATION CONSUMPTIVE USE – USES & LOSSES REPORT

SUBAREA	INCIDENTAL LOSS(%)	CONSUMPTIVE USE (1000 ACRE-FEET) 1976	1977	1978	1979	1980
U-1	11.8	8.4	5.5	9.7	11.3	9.6
U-2	20.8	50.3	24.1	52.1	54.6	55.1
U-3	20.8	1.6	0.8	1.4	1.4	1.6
U-4	20.8	143.6	77.1	128.1	143.4	140.4
U-5	20.8	116.7	75.7	134.4	121.5	115.2
U-6	20.8	47.6	23.3	52.2	56.1	43.3
U-7	20.8	4.4	2.4	5.0	5.3	5.1
U-8	20.8	43.9	19.1	53.9	56.5	48.3
SUBTOTAL (GREEN)		416.5	228.0	436.8	450.1	418.6
U-9	11.0	7.0	2.1	8.9	9.7	9.4
U-10 & 10A	11.0	3.4	1.9	3.5	4.1	3.6
SUBTOTAL (COLO)		10.4	4.0	12.4	13.8	13.0
U-11	20.3	7.9	0.9	2.8	7.2	8.3
U-12	18.8	5.3	3.4	8.9	7.7	5.5
U-13	18.8	15.0	7.7	18.8	19.4	19.1
U-14	18.8	2.5	0.9	3.9	3.6	4.3
U-15	18.8	4.1	2.1	5.8	10.9	9.4
U-16	18.8	3.4	0.9	4.0	7.5	5.9
SUBTOTAL (SAN JUAN)		38.2	15.9	44.2	56.3	52.5
TOTAL UTAH		465.1	247.9	493.4	520.2	484.1

7-1654 (7-78)
Water and Power

COMPUTATION SHEET

BY	DATE	PROJECT: NEW MEXICO & WYOMING	SHEET ___ OF ___
CHKD BY	DATE	FEATURE: UPPER COLORADO RIVER BASIN	

DETAILS: IRRIGATION CONSUMPTIVE USE — USES & LOSSES REPORT

SUBAREA	INCIDENTAL LOSS (%)	CONSUMPTIVE USE (1000 ACRE-FEET) 1976	1977	1978	1979	1980
NM-1	18.4	2.5	2.4	3.0	2.8	3.0
NM-2	20.6	54.1	54.0	59.2	51.8	54.7
NM-2A	20.6	11.5	11.3	13.0	11.6	10.9
NM-3 & 4	17.8	37.1	30.9	38.5	43.7	44.1
NM-5 & 5A	12.5	2.4	1.5	1.5	2.6	2.4
N.I.I.P. 1/	—	33.8	31.8	41.9	62.3	89.7
TOTAL NEW MEX. (SAN JUAN)		141.4	131.9	157.1	174.8	204.8
W-1	9.3	16.2	16.1	17.4	20.6	16.8
W-2	9.3	27.2	31.1	40.4	42.4	47.8
W-3	9.3	10.4	8.0	12.8	15.8	12.5
W-4	9.3	3.8	2.2	2.7	3.3	2.8
W-5	9.3	20.9	13.7	16.7	27.9	22.3
W-6	9.3	11.4	7.6	15.2	12.2	17.1
W-7	9.3	102.1	45.0	128.1	118.5	109.1
W-8	8.6	12.0	9.4	11.5	12.8	10.9
TOTAL WYOMING (GREEN)		204.0	133.1	244.8	253.5	239.3
ARIZONA (SAN JUAN)		2.7	3.8	4.3	5.3	6.3
BASIN TOTALS						
GREEN		721.7	450.4	802.9	823.5	774.2
COLORADO		850.3	773.7	933.5	925.7	950.2
SAN JUAN		331.5	270.2	345.6	407.6	423.8
TOTAL		1,903.5	1,494.3	2,082.0	2,156.8	2,148.2

1/ NAVAJO INDIAN IRRIGATION PROJECT (N.I.I.P.) CONSUMPTIVE USE EXPRESSED AS A PERCENTAGE OF TOTAL DIVERSION USING E&R CENTER GROUNDWATER STUDY (DIVERSIONS LESS RETURN FLOW).

BY	DATE	PROJECT COLORADO	SHEET ___ OF ___
CHKD BY	DATE	FEATURE UPPER COLORADO RIVER BASIN	
DETAILS IRRIGATED ACREAGE — CONSUMPTIVE USES & LOSSES REPORT			

IRRIGATED ACREAGE (1000 ACRES)

SUBAREA	1976	1977	1978	1979	1980
C-1	34.2	34.2	34.1	34.0	34.1
C-2	7.9	7.7	7.6	7.5	7.5
C-3	30.5	30.0	30.0	29.4	29.5
C-3A	3.2	3.1	3.0	3.0	3.0
C-4	4.1	4.1	4.1	4.1	4.1
C-5	21.5	21.3	21.5	21.4	21.5
C-6	3.8	1.8	3.8	3.8	3.8
SUBTOTAL (GREEN)	105.2	102.2	104.1	103.2	103.5
C-7	18.3	18.3	18.3	18.3	18.3
C-8	33.3	33.0	32.6	32.6	32.6
C-9	14.4	14.3	14.4	14.5	14.4
C-9A	14.6	14.6	14.5	14.6	14.5
C-10	12.7	12.6	12.7	12.7	12.6
C-10A	17.1	17.2	17.2	17.6	17.6
C-11	45.4	27.2	45.9	47.2	47.4
C-12	24.2	24.3	23.7	24.6	25.8
C-13	69.0	59.0	67.4	70.0	73.4
C-14	75.4	35.8	75.2	75.3	75.3
C-15	67.5	66.7	67.7	66.9	66.5
C-16	16.8	16.1	15.5	15.5	15.4
C-17	92.4	84.1	95.1	94.5	96.2
C-17A	5.3	5.3	5.2	5.4	5.6
C-18	7.8	7.1	6.4	6.5	6.7
C-18A	5.8	5.6	5.0	4.9	4.8
C-19	16.7	16.3	16.1	16.1	16.5
C-20	7.7	7.8	7.4	7.6	7.7
C-20A	1.6	1.2	1.5	1.6	1.7
SUBTOTAL (COLO)	546.0	466.5	541.8	546.4	553.0
C-21	18.5	7.4	20.8	21.2	21.1
C-22	42.2	40.3	37.3	37.5	36.8
C-22A	25.9	24.4	22.2	22.2	21.8
C-23	14.0	4.2	11.9	12.0	11.7
C-24	8.8	4.2	7.0	7.3	6.7
C-24A	33.6	18.4	26.7	27.8	28.9
SUBTOTAL (SAN JUAN)	143.0	98.9	125.9	128.0	127.0
TOTAL COLORADO	794.2	667.6	771.8	777.6	733.5

BY	DATE	PROJECT UTAH	SHEET ___ OF ___
CHKD BY	DATE	FEATURE UPPER COLORADO RIVER BASIN	

DETAILS IRRIGATED ACREAGE — CONSUMPTIVE USES & LOSSES REPORT

IRRIGATED ACREAGE (1000 ACRES)

SUBAREA	1976	1977	1978	1979	1980
U-1	8.5	5.1	9.0	9.0	9.2
U-2	26.9	16.1	26.9	26.9	26.9
U-3	2.0	1.1	1.4	1.4	1.5
U-4	81.6	48.9	81.6	81.6	81.6
U-5	81.5	48.9	81.5	81.5	81.5
U-6	21.8	11.0	21.8	21.5	21.0
U-7	1.5	0.7	1.6	1.6	1.7
U-8	28.0	8.9	27.9	27.5	27.7
SUBTOTAL (GREEN)	251.8	140.6	251.7	251.0	251.1
U-9	2.8	0.6	4.0	4.1	4.1
U-10 & 10A	3.2	1.9	3.0	3.1	3.0
SUBTOTAL (COLO)	6.0	2.5	7.0	7.2	7.1
U-11	3.4	0.5	3.4	3.4	3.3
U-12	5.6	3.3	5.4	5.3	5.8
U-13	12.3	4.5	14.4	14.2	15.0
U-14	1.5	0.3	1.8	1.8	1.9
U-15	4.6	0.9	5.3	5.4	5.3
U-16	3.5	0.5	4.2	4.1	4.2
SUBTOTAL (SAN JUAN)	30.9	10.0	34.5	34.2	35.5
TOTAL UTAH	288.7	153.1	293.2	292.4	293.7

7.2. Precipitation

7.2.1. Summary table of COOP precipitation stations used for the Reservoir and stockpond evaporation categories

Station Name	Network ID	Elevation [feet]	Latitude [dd]	Longitude [dd]	Start Year	End Year	Network
Betatakin	AZ0750	7286	36.6778	-110.5411	1939	2025	COOP
Canyon De Chelly	AZ1248	5610	36.1533	-109.5394	1970	2025	COOP
Lees Ferry	AZ4849	3140	36.8667	-111.5833	1916	2013	COOP
Lukachukai	AZ5129	6480	36.4167	-109.2333	1914	2010	COOP
Teec Nos Pos	AZ8468	5290	36.9233	-109.09	1962	2025	COOP
Yampa	CO9265	7855	40.1563	-106.911	1909	2025	COOP
Aspen	CO0372	8175	39.1852	-106.838	1980	2025	COOP
Bonham Reservoir	CO0825	9872	39.1025	-107.8988	1963	2025	COOP
Cimarron	CO1609	8006	38.4432	-107.557	1951	2025	COOP
Cochetopa	CO1713	6167	38.4431	-106.7616	1909	2025	COOP
Cortez	CO1886	6496	37.3444	-108.595	1911	2025	COOP
Craig	CO1932	9081	40.4516	-107.5906	1977	2025	COOP
Crested Butte	CO1959	8860	38.8738	-106.9772	1909	2025	COOP
Dillon	CO2281	9060	39.6246	-106.0335	1893	2025	COOP
Durango	CO2441	6600	37.2833	-107.8833	1991	2018	COOP
Fruita	CO3146	4498	39.1445	-108.728	1893	2012	COOP
Gateway	CO3246	4671	38.6878	-108.9609	1947	2025	COOP
Glenwood Springs	CO3359	5730	39.5556	-107.3385	1988	2025	COOP
Grand Junction	CO3488	4824	39.1344	-108.5408	1900	2025	COOP
Grand Lake	CO3500	8290	40.1819	-105.8706	1948	2025	COOP
Green Mtn Dam	CO3592	7740	39.8833	-106.3333	1939	2020	COOP
Gunnison	CO3662	7622	38.5254	-106.9672	1893	2025	COOP
Hayden	CO3867	6467	40.4926	-107.2548	1909	2025	COOP
Kremmling	CO4664	7403	40.0577	-106.3697	1908	2025	COOP
Lake City	CO4734	8670	38.0333	-107.3167	1905	2010	COOP
Mancos	CO5327	6897	37.335	-108.3161	1898	2025	COOP
Massadona 3 E	CO5422	6190	40.2833	-108.6	1986	2009	COOP
Maybell	CO5446	5946	40.5156	-108.0943	1958	2025	COOP
Meeker	CO5484	6229	40.0358	-107.9058	1893	2025	COOP
Mesa Verde NP	CO5531	7142	37.1996	-108.4893	1922	2025	COOP
Montrose	CO5722	5789	38.4858	-107.8791	1895	2025	COOP
Norwood	CO6012	7020	38.1333	-108.2833	1924	2008	COOP
Palisade	CO6266	4745	39.1135	-108.3506		2025	COOP
Paonia	CO6306	5580	38.85	-107.6167	1893	2017	COOP
Placerville	CO6524	7320	38.0167	-108.05	1947	2008	COOP
Rangely	CO6832	5277	40.0889	-108.7727		2025	COOP

Station Name	Network ID	Elevation [feet]	Latitude [dd]	Longitude [dd]	Start Year	End Year	Network
Rifle	CO7031	5320	39.5333	-107.8	1910	2009	COOP
Sargents	CO7460	8471	38.4037	-106.424		2025	COOP
Silverton	CO7656	9285	37.8088	-107.6633		2025	COOP
Steamboat Springs	CO7936	6866	40.4883	-106.8233		2025	COOP
Taylor Park	CO8184	9179	38.8183	-106.6086		2025	COOP
Telluride	CO8204	8646	37.9493	-107.8736		2025	COOP
Uravan	CO8560	5010	38.3667	-108.7333	1960	2016	COOP
Vail	CO8575	8297	39.6395	-106.354		2025	COOP
Vallecito Dam	CO8582	7644	37.3805	-107.5812		2025	COOP
Williams Fork Dam	CO9096	7639	40.0372	-106.2052		2025	COOP
Bloomfield	NM1063	5800	36.6667	107.96667	1892	2018	COOP
Chaco	NM1647	6180	36.0333	-107.9	1909	2025	COOP
Dulce	NM2608	6790	36.95	-107	1906	2021	COOP
Farmington	NM3142	5625	36.6897	-108.3086		2025	COOP
Fruitland	NM3340	5150	36.7333	-108.3667	1893	2010	COOP
Lybrook	NM5290	7150	36.2333	-107.5667	1951	2011	COOP
Navajo Dam	NM6061	5770	36.8047	-107.6213		2025	COOP
Shiprock	NM8284	4970	36.8	-108.6833	1926	2007	COOP
Blanding	UT0738	6035	37.6132	-109.4848		2025	COOP
Bluff	UT0788	4319	37.2824	-109.5575		2025	COOP
Boulder	UT0849	6650	37.905	-111.42		2025	COOP
Bullfrog	UT1020	3822	37.5269	-110.7166		2025	COOP
Capitol Reef NP	UT1171	5500	38.2913	-111.2622		2025	COOP
Castledale	UT1214	5629	39.2077	-111.0128		2025	COOP
Cedar Point, UT	UT1308	6760	37.7167	-109.0833	1946	2018	COOP
Duchesne	UT2253	5551	40.1703	-110.3978		2025	COOP
Escalante	UT2592	5810	37.7686	-111.5977		2025	COOP
Flaming Gorge	UT2864	6315	40.9296	-109.3969		2025	COOP
Ft. Duchesne	UT2996	5052	40.2841	-109.8611		2025	COOP
Green River	UT3418	4070	39	-110.1667	1948	2009	COOP
Hanksville	UT3611	4250	38.3746	-110.7083		2025	COOP
Heber	UT3809	5630	40.5	-111.4167	1893	2013	COOP
Hite Ranger Stn	UT3980	4000	37.8667	-110.3833	1978	2025	COOP
Kodachrome Basin	UT4755	5805	37.5141	-111.9883		2025	COOP
Loa	UT5148	7065	38.4062	-111.6424		2025	COOP
Manila	UT5377	6393	40.99	-109.7258		2025	COOP
Moab	UT5733	4053	38.5745	-109.5458		2025	COOP
Monticello	UT5805	6820	37.8667	-109.3	1902	2011	COOP
Myton	UT5969	5085	40.194	-110.0609		2025	COOP
Natural Bridges	UT6053	6508	37.6094	-109.9772		2025	COOP
Ouray	UT6568	4674	40.1345	-109.6435		2025	COOP

Station Name	Network ID	Elevation [feet]	Latitude [dd]	Longitude [dd]	Start Year	End Year	Network
Price Warehouses	UT7026	5540	39.5991	-110.8189		2017	COOP
Salina	UT7559	7560	38.9129	-111.4165		2025	COOP
Scofield	UT7729	8697	39.6841	-111.2053		2025	COOP
Wellington 3 E	UT9368	5385	39.5317	-110.7347		2025	COOP
Baggs	WY0484	6245	41.0384	-107.6579		2025	COOP
Big Piney	WY0695	6820	42.55	-110.1167	1948	2025	COOP
Bitter Creek	WY0761	6726	41.5896	-108.5094		2025	COOP
Farson	WY3170	6620	42.1398	-109.4309		2025	COOP
Fontenelle Dam	WY3396	6485	41.986	-110.0611		2025	COOP
Green River	WY4065	6160	41.5167	-109.4702		2025	COOP
Kemmerer	WY5105	6937	41.8181	-110.5333		2025	COOP
La Barge	WY5252	6600	42.2667	-110.2	1958	2012	COOP
Lander	WY5390	5572	42.8154	-108.726		2025	COOP
Mountain View	WY6555	6800	41.2659	-110.3375		2025	COOP
Pinedale	WY7260	7202	42.8749	-109.8623		2025	COOP

7.3. Reservoir Evaporation

7.3.1. Summary table of major reservoirs

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Method	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]	Evaporation data source	Surface Area data source	Storage data source
Arizona	14070006	Lake Powell	3715	36.94	-111.48	1	NA	UCHDB	UCHDB	UCHDB
Colorado	14010001	Granby Dam	8280	40.15	-105.87	2	15	TSC Method	Rick Clayton	UCHDB
Colorado	14010001	Shadow Mountain	8485	40.21	-105.84	2	14	TSC Method	Rick Clayton	UCHDB
Colorado	14010001	Williams Fork	7817	40.04	-106.21	2	12	TSC Method	Rick Clayton	UCHDB
Colorado	14010001	Willow Creek Dam	8140	40.15	-105.94	2	13	TSC Method	Rick Clayton	UCHDB
Colorado	14010001	Wolford Mountain	7485	40.11	-106.41	2	13	TSC Method	Rick Clayton	UCHDB
Colorado	14010002	Dillon	9031	39.62	-106.07	2	15	TSC Method	Rick Clayton	UCHDB
Colorado	14010002	Green Mountain Dam	7950	39.85	-106.24	2	16	TSC Method	Rick Clayton	UCHDB
Colorado	14010003	Homestake	10268	39.37	-106.46	2	15	TSC Method	Rick Clayton	UCHDB
Colorado	14010004	Ruedi Dam	7788	39.36	-106.82	2	15	TSC Method	Rick Clayton	UCHDB
Colorado	14010005	Rifle Gap Dam	5978	39.63	-107.76	2	12	TSC Method	Rick Clayton	UCHDB
Colorado	14010005	Vega Dam	7984	39.23	-107.82	2	15	TSC Method	Rick Clayton	UCHDB
Colorado	14020001	Taylor Park Dam	9344	38.82	-106.61	2	16	TSC Method	Rick Clayton	UCHDB
Colorado	14020002	Blue Mesa	7528	38.45	-107.34	1	NA	UCHDB	UCHDB	UCHDB
Colorado	14020002	Crawford Dam	6578	38.69	-107.61	2	16	TSC Method	Rick Clayton	UCHDB
Colorado	14020002	Crystal Dam	6772	38.51	-107.62	1	NA	UCHDB	Rick Clayton	UCHDB
Colorado	14020002	Morrow Point	7165	38.45	-107.54	1	NA	UCHDB	UCHDB	UCHDB
Colorado	14020002	Silver Jack Dam	8926	38.25	-107.54	2	15	TSC Method	Rick Clayton	UCHDB
Colorado	14020004	Paonia Dam	6460	38.94	-107.35	2	15	TSC Method	Rick Clayton	UCHDB
Colorado	14020005	Fruitgrowers Dam	8600	38.83	-107.96	2	10	TSC Method	Rick Clayton	UCHDB
Colorado	14020006	Ridgway Dam	6886	38.24	-107.76	2	15	TSC Method	Rick Clayton	UCHDB
Colorado	14030002	McPhee Dam	6936	37.58	-108.57	1	NA	UCHDB	UCHDB	UCHDB
Colorado	14080101	Vallecito Dam	7673	37.38	-107.58	1	NA	UCHDB	UCHDB	UCHDB
Colorado	14080104	Lemon Dam	8167	37.38	-107.66	1	NA	UCHDB	UCHDB	UCHDB

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Method	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]	Evaporation data source	Surface Area data source	Storage data source
Colorado	14080107	Jackson Gulch Dam	7831	37.40	-108.27	1	NA	UCHDB	UCHDB	UCHDB
NewMexico	14080101	Navajo Dam	6108	36.80	-107.61	1	NA	UCHDB	UCHDB	UCHDB
Utah	14040106	Flaming Gorge	6047	40.91	-109.42	1	NA	UCHDB	UCHDB	UCHDB
Utah	14040107	Stateline	9164	40.99	-110.38	2	16	TSC Method	Rick Clayton	UCHDB
Utah	14060002	Redfleet	5608	40.58	-109.42	2	11	TSC Method	Rick Clayton	UCHDB
Utah	14060002	Steinaker	5517	40.51	-109.53	2	11	TSC Method	Rick Clayton	UCHDB
Utah	14060003	Bottle Hollow	5106	40.30	-109.88	2	5	TSC Method	last available 1996	last available 1996
Utah	14060003	Moon Lake	8137	40.60	-110.52	2	16	TSC Method	Rick Clayton	UCHDB
Utah	14060004	Currant Creek	7672	40.33	-111.05	2	16	TSC Method	Rick Clayton	UCHDB
Utah	14060004	Soldier Creek Dam (Enl. Strawberry)	7602	40.16	-111.11	1	NA	UCHDB	UCHDB	UCHDB
Utah	14060004	Starvation	5713	40.19	-110.44	2	9	TSC Method	Rick Clayton	UCHDB
Utah	14060007	Scofield	7620	39.79	-111.12	2	16	TSC Method	Rick Clayton	UCHDB
Utah	14060009	Huntington North	5837	40.14	-111.03	2	6	TSC Method	last available 2001	last available 2001
Utah	14060009	Joe's Valley	6992	39.29	-111.28	2	11	TSC Method	Rick Clayton	UCHDB
Wyoming	14040103	Fontenelle	6508	42.03	-110.06	1	NA	UCHDB	UCHDB	UCHDB
Wyoming	14040104	Big Sandy	6757	42.25	-109.43	2	9	TSC Method	last available 2001	last available 2001
Wyoming	14040104	Eden	6709	42.26	-109.39	2	9	TSC Method	last available 2001	last available 2001
Wyoming	14040107	Meeks Cabin	8687	41.03	-110.58	2	16	TSC Method	Rick Clayton	UCHDB
Wyoming	14040107	Viva Naughton	7300	41.96	-110.66	2	14	TSC Method	Rick Clayton	UCHDB

7.3.2. Summary table of minor reservoirs

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Arizona	14080204	Many Farms	5250	36.36	-109.60	1800		56	Precipitation
Arizona	14080204	Marsh Pass	6200	36.65	-110.43	40	0.5	40	Precipitation
Arizona	14080204	others (many)		NA	NA	38	0.5	55	Precipitation
Arizona	14080204	Round Rock	5500	36.49	-109.45	83	0.5	57	Precipitation
Arizona	14080204	Tsaile	7010	36.27	-109.20	260	1	35	Precipitation
Arizona	14080204	Walker Creek	4900	NA	NA	30	0.5	59	Precipitation
Arizona	14080204	Wheat Fields	7290	36.22	-109.09	272	1	32	Precipitation
Colorado	14010001	Albert	8479	40.26	-106.55	15	0.75	35	15
Colorado	14010001	Antelope	7520	40.21	-106.38	25	0.75	35	15
Colorado	14010001	Beaver Dam Reservoir	7600	39.75	-107.13	2	0.75	40.397	15
Colorado	14010001	Binco	8353	40.27	-106.54	37	0.87	35	15
Colorado	14010001	Bull Run Creek	8047	39.97	-106.21	11	0.87	35	15
Colorado	14010001	Bunte	8140	40.13	-106.00	4	0.75	35	15
Colorado	14010001	Castle	7900	39.82	-106.60	4	0.75	38.15	15
Colorado	14010001	Cole	8500	39.93	-106.18	4	0.75	35	15
Colorado	14010001	Cottonwood	7920	40.07	-106.07	7	0.75	35	15
Colorado	14010001	Craven	8318	40.12	-106.50	2	0.75	35	15
Colorado	14010001	Crescent Lake #1	10758	39.91	-107.16	34	0.87	40	15
Colorado	14010001	Crescent Lake #2	10766	39.91	-107.16	12	0.87	40	15
Colorado	14010001	Dale	8534	39.92	-106.17	3	0.75	35	15
Colorado	14010001	E.M. Curry	8560	40.10	-106.78	3	0.75	37.431	15
Colorado	14010001	East Branch	8950	39.84	-106.08	68	0.87	35	15
Colorado	14010001	Egeria	9100	40.03	-106.96	27	0.87	40	15
Colorado	14010001	Gardner Park	9630	40.02	-107.02	50	0.87	40	15
Colorado	14010001	Grimes Brooks	9360	39.99	-106.82	46	0.87	39.592	15
Colorado	14010001	Hadley	8680	40.03	-106.75	12	0.87	38.473	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14010001	Hankison	8480	40.10	-105.85	8	0.75	35	15
Colorado	14010001	Harper And Sons	9760	40.02	-107.00	20	0.87	40	15
Colorado	14010001	Hartman #2	7600	40.10	-106.32	5	0.75	35	15
Colorado	14010001	Heart Lake (Wd-53)	10705	39.77	-107.32	335	0.87	40	15
Colorado	14010001	Hinman	7647	40.15	-106.46	55	0.75	35	15
Colorado	14010001	Hurt	9000	39.81	-106.78	9	0.87	40	15
Colorado	14010001	Jones #1	7920	40.06	-106.45	18	0.75	35	15
Colorado	14010001	Jones #2	7854	40.06	-106.45	26	0.75	35	15
Colorado	14010001	Jones #3	7920	40.07	-106.45	10	0.75	35	15
Colorado	14010001	Jones (Wd-52)	8900	39.95	-106.46	6	0.87	35	15
Colorado	14010001	Langholen	8110	39.95	-106.18	10	0.75	35	15
Colorado	14010001	Little Ho	8624	40.09	-105.84	7	0.87	35	15
Colorado	14010001	Little King Ranch	8980	40.26	-106.12	52	0.87	35	15
Colorado	14010001	Luark	7340	39.91	-106.87	5	0.75	40	15
Colorado	14010001	Martin Lily Pond	9057	40.35	-106.61	40	0.87	35	15
Colorado	14010001	Matheson	9063	40.30	-106.29	62	0.87	35	15
Colorado	14010001	Mcelroy	7753	40.14	-106.47	12	0.75	35	15
Colorado	14010001	Mcmahon #2	9061	40.18	-106.57	196	0.75	35	15
Colorado	14010001	Meadow Creek (Wd-51)	9840	40.05	-105.76	170	0.87	35	15
Colorado	14010001	Milk Creek	8343	40.27	-106.56	8	0.75	35	15
Colorado	14010001	Monarch Lake	8360	40.11	-105.75	161	0.75	35	15
Colorado	14010001	Morris	8880	40.08	-106.70	10	0.87	37.076	15
Colorado	14010001	Muddy Creek	9508	40.40	-106.63	35	0.87	35	15
Colorado	14010001	Musgrave	8640	40.12	-106.20	13	0.87	35	15
Colorado	14010001	Newton Gulch	8480	39.98	-106.88	40	0.87	39.61	15
Colorado	14010001	Parsons	8614	40.27	-106.41	8	0.87	35	15
Colorado	14010001	Pheney	7760	40.02	-106.27	20	0.75	35	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14010001	Rock Gap	7750	39.95	-106.50	7	0.75	35.566	15
Colorado	14010001	Scholl	8800	40.14	-106.20	19	0.75	35	15
Colorado	14010001	Snow Mountain	8812	39.98	-105.94	9	0.87	35	15
Colorado	14010001	Sterner	9050	40.02	-106.94	28	0.87	40	15
Colorado	14010001	Supply Basin	10800	39.75	-107.33	16	0.87	40	15
Colorado	14010001	Sylvan	8462	39.98	-106.12	49	0.75	35	15
Colorado	14010001	Tonier Gulch	8400	40.09	-106.74	10	0.75	37.304	15
Colorado	14010001	Toponas Rock #2	8600	40.10	-106.76	12	0.75	37.407	15
Colorado	14010001	Ute Creek	9250	39.83	-106.10	12	0.87	35	15
Colorado	14010001	White Owl	10680	39.75	-107.30	19	0.87	40.048	15
Colorado	14010001	Whitely Peak	8000	40.33	-106.52	46	0.75	35	15
Colorado	14010001	Windy Gap	7865	40.11	-105.98	108	0.75	35	15
Colorado	14010001	Wohler	8560	39.95	-106.82	6	0.75	40	15
Colorado	14010001	Yarmony	7520	39.93	-106.67	3	0.75	38.859	15
Colorado	14010002	Black Creek	8750	39.81	-106.26	22	0.87	35	15
Colorado	14010002	Bumgarner	8950	39.97	-106.44	8	0.87	35	15
Colorado	14010002	Clinton Gulch	11006	39.41	-106.17	95	0.87	35	15
Colorado	14010002	Goose Pasture Tarn	9894	39.46	-106.03	105	0.87	35	15
Colorado	14010002	Hoagland #1	8750	39.85	-106.35	18	0.75	35	15
Colorado	14010002	Moore	7360	40.00	-106.32	15	0.75	35	15
Colorado	14010002	Reynolds (Wd-36)	9140	39.58	-106.00	17	0.87	35	15
Colorado	14010002	Sawmill	9680	39.47	-106.06	3	0.87	35	15
Colorado	14010002	Upper Blue	11748	39.40	-106.10	48	0.87	35	15
Colorado	14010002	Way	8900	39.96	-106.42	13	0.87	35	15
Colorado	14010003	Benchmark Lake	7400	39.64	-106.53	19	0.75	37.766	15
Colorado	14010003	Black Lake #1	10500	39.54	-106.22	26	0.87	35	15
Colorado	14010003	Black Lake #2	10400	39.55	-106.23	9	0.87	35	15
Colorado	14010003	Bolts Lake	8120	39.56	-106.40	9	0.75	35.59	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14010003	Chalk Mountain	10918	39.39	-106.21	16	0.87	35	15
Colorado	14010003	Climax-Moly #4	10720	39.40	-106.23	52	0.87	35	15
Colorado	14010003	Homestake Project	10268	39.37	-106.46	320	0.87	35	15
Colorado	14010003	June Creek	7360	39.65	-106.56	1	0.75	38.211	15
Colorado	14010003	L E D E	9280	39.47	-106.78	25	0.87	40	15
Colorado	14010003	Noecker	8320	39.72	-106.82	13	0.87	40	15
Colorado	14010003	Nottingham	7720	39.64	-106.49	2	0.75	37.148	15
Colorado	14010003	O Z Lake	8510	39.48	-106.74	40	0.75	40	15
Colorado	14010003	Robinson	10920	39.40	-106.22	80	0.87	35	15
Colorado	14010003	Welsh	8600	39.79	-106.75	9	0.87	40	15
Colorado	14010004	Alicia Lake	9040	39.39	-106.64	59	0.87	36.417	15
Colorado	14010004	Chapman (Wd-38)	8560	39.32	-106.64	10	0.75	35	15
Colorado	14010004	Consolidated	8080	39.52	-107.14	62	0.75	42.714	15
Colorado	14010004	Crooked Creek	9402	39.42	-106.66	0	0.87	37.681	15
Colorado	14010004	Flannery	8346	39.46	-107.36	20	0.87	43.787	15
Colorado	14010004	Grizzly	10537	39.08	-106.62	44	0.87	35	15
Colorado	14010004	Himmelland	8800	39.34	-106.63	16	0.87	35	15
Colorado	14010004	Hopkins	9000	39.53	-107.21	13	0.87	44.14	15
Colorado	14010004	Hughes	7998	39.48	-107.36	23	0.75	44.88	15
Colorado	14010004	Ivanhoe	10060	39.27	-106.51	104	0.87	35	15
Colorado	14010004	Lake Ann	8320	39.30	-107.12	20	0.87	43.727	15
Colorado	14010004	Lazy O Reservoir No 2	7260	39.29	-106.99	3	0.75	44.521	15
Colorado	14010004	Leonard Thomas Reservoir	8200	39.09	-106.84	1	0.75	35	15
Colorado	14010004	Mcnulty	8000	39.49	-107.09	10	0.75	41.263	15
Colorado	14010004	Ralston #1	8200	39.52	-107.14	8	0.75	42.6	15
Colorado	14010004	Saddle Pond	8612	39.24	-106.85	3	0.87	39.436	15
Colorado	14010004	Spring Park	7481	39.44	-107.09	244	0.75	42.792	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14010004	Thomas (Wd-38)	6820	39.34	-107.19	10	0.75	44.476	15
Colorado	14010004	Von Springs #2	8090	39.52	-107.09	34	0.75	41.791	15
Colorado	14010004	Warren Lake #1	10840	39.17	-106.75	12	0.87	35.829	15
Colorado	14010004	Wildcat	8185	39.24	-106.95	50	0.75	41.975	15
Colorado	14010004	Woods Lake (Wd-38)	9400	39.38	-106.68	22	0.87	38.424	15
Colorado	14010004	Ziff Dam	8739	39.24	-106.84	1	0.75	39.367	15
Colorado	14010005	Anderson Brothers #1	10200	39.13	-107.83	32	0.87	40	15
Colorado	14010005	Barton Porter	7221	39.53	-107.43	12	0.75	45	15
Colorado	14010005	Battlement #1	10180	39.37	-107.94	8	0.87	40.807	15
Colorado	14010005	Battlement #2	10140	39.38	-107.94	6	0.87	40.978	15
Colorado	14010005	Battlement #3	10200	39.38	-107.93	12	0.87	40.717	15
Colorado	14010005	Battlement #4	10200	39.38	-107.93	4	0.87	40.455	15
Colorado	14010005	Big Beaver (Wd-72)	9720	39.08	-108.03	11	0.87	40	15
Colorado	14010005	Big Creek #1	10100	39.08	-107.89	63	0.87	40	15
Colorado	14010005	Big Creek #3	10100	39.10	-107.88	87	0.87	40	15
Colorado	14010005	Big Creek #4	10249	39.09	-107.92	20	0.87	40	15
Colorado	14010005	Big Creek #5	10252	39.08	-107.92	11	0.87	40	15
Colorado	14010005	Bonham-Wells	9801	39.10	-107.90	109	0.87	40	15
Colorado	14010005	Bull Basin #1	10020	39.07	-108.02	13	0.87	40	15
Colorado	14010005	Bull Basin #2	9870	39.09	-108.02	16	0.87	40	15
Colorado	14010005	Bull Creek #1	10700	39.07	-108.02	10	0.87	40	15
Colorado	14010005	Bull Creek #2	10700	39.07	-108.02	10	0.87	40	15
Colorado	14010005	Bull Creek #3	9790	39.08	-108.04	6	0.87	40	15
Colorado	14010005	Bull Creek #4	9855	39.08	-108.04	27	0.87	40	15
Colorado	14010005	Bull Creek #5	9650	39.08	-108.02	24	0.87	40	15
Colorado	14010005	Carpenter	9940	39.13	-107.89	8	0.87	40	15
Colorado	14010005	Colby Horse Park	9880	39.08	-107.79	56	0.87	40	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14010005	Coon Creek #1	10052	39.07	-108.06	49	0.87	40	15
Colorado	14010005	Coon Creek #2	10030	39.07	-108.06	36	0.87	40	15
Colorado	14010005	Coon Creek #3	9980	39.07	-108.07	28	0.87	40	15
Colorado	14010005	Coon Creek #4	9950	39.07	-108.07	4	0.87	40	15
Colorado	14010005	Cottonwood #1	10078	39.08	-107.97	115	0.87	40	15
Colorado	14010005	Cottonwood #2	10145	39.08	-107.99	21	0.87	40	15
Colorado	14010005	Cottonwood #4	10230	39.08	-107.95	38	0.87	40	15
Colorado	14010005	Cottonwood #5	10004	39.09	-107.96	35	0.87	40	15
Colorado	14010005	Currier #2	7360	39.29	-107.72	18	0.75	40	15
Colorado	14010005	Gardner Lake	4720	39.06	-108.61	4	0.75	55	15
Colorado	14010005	Glacier Springs	9790	39.05	-108.09	1	0.87	40	15
Colorado	14010005	Grass Valley	6411	39.61	-107.66	207	0.75	45	15
Colorado	14010005	Grove Creek #1	10080	39.13	-107.85	42	0.87	40	15
Colorado	14010005	Grove Creek #2	10500	39.13	-107.85	39	0.87	40	15
Colorado	14010005	Harris	7022	39.71	-107.87	8	0.75	40.624	15
Colorado	14010005	Hartman Retention	4819	39.12	-108.51	5	0.75	55	15
Colorado	14010005	Hawkhurst	10474	39.36	-107.88	26	0.87	40	15
Colorado	14010005	Indian Wash Det.	4947	39.13	-108.51	42	0.87	54.599	15
Colorado	14010005	Jensen	10790	39.06	-108.00	20	0.87	40	15
Colorado	14010005	Jerry Creek #1	5360	39.19	-108.11	75	0.75	45	15
Colorado	14010005	Jerry Creek #2	5320	39.19	-108.11	200	0.75	45	15
Colorado	14010005	Jumbo	10700	39.05	-108.09	5	0.87	40	15
Colorado	14010005	Kirkendall	10360	39.06	-107.77	32	0.87	40	15
Colorado	14010005	Kitson	10052	39.08	-107.95	35	0.87	40	15
Colorado	14010005	Leon Lake	10120	39.07	-107.80	143	0.87	40	15
Colorado	14010005	Long Slough	9970	39.07	-108.06	50	0.87	40	15
Colorado	14010005	Lost Lake (Wd-72)	10120	39.08	-108.01	12	0.87	40	15
Colorado	14010005	Mack Mesa	4680	39.28	-108.84	18	0.75	53.819	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14010005	Mckelvie #1	8360	39.21	-107.75	19	0.75	40	15
Colorado	14010005	Meadow Creek (Wd-39)	9520	39.81	-107.55	55	0.87	40	15
Colorado	14010005	Mesa Creek #4	9943	39.06	-108.09	38	0.87	40	15
Colorado	14010005	Mesa Lake #1	9790	39.05	-108.10	20	0.87	40	15
Colorado	14010005	Mesa Lake #2	9810	39.05	-108.09	7	0.87	40	15
Colorado	14010005	Mesa Lake #3	9850	39.05	-108.09	31	0.87	40	15
Colorado	14010005	Michaelson	9990	39.12	-107.89	6	0.87	40	15
Colorado	14010005	Mole-Richardson #2	4730	39.08	-108.40	1	0.75	53.115	15
Colorado	14010005	Mole-Richardson #3	4697	39.08	-108.40	1	0.75	53.199	15
Colorado	14010005	Monument #1	10196	39.11	-107.75	40	0.87	40	15
Colorado	14010005	Monument #2	10529	39.11	-107.74	30	0.87	40	15
Colorado	14010005	Palisade #3	8310	39.08	-108.24	3	0.87	41.173	15
Colorado	14010005	Palisade Cabin	7505	39.09	-108.27	27	0.75	44.205	15
Colorado	14010005	Park (Wd-39)	7160	39.68	-107.65	9	0.75	43.455	15
Colorado	14010005	Parker Basin #2	9853	39.09	-107.96	21	0.87	40	15
Colorado	14010005	Parker Basin #3	9801	39.10	-107.96	40	0.87	40	15
Colorado	14010005	Rapid Creek #1	9680	39.08	-108.22	106	0.87	40	15
Colorado	14010005	Rapid Creek #2	9680	39.07	-108.22	84	0.87	40	15
Colorado	14010005	Schorn Fish Pond	7698	39.12	-108.05	2	0.75	40	15
Colorado	14010005	Spring Creek #1	9698	39.09	-108.07	13	0.87	40	15
Colorado	14010005	Twin Basin	9810	39.08	-108.05	17	0.87	40	15
Colorado	14010005	Upper Highline	4697	39.27	-108.85	155	0.75	54.529	15
Colorado	14010005	Werhonig & Gardner	10190	39.37	-107.93	12	0.87	40.374	15
Colorado	14010005	Y T Ranch	7248	39.19	-107.89	11	0.75	41.29	15
Colorado	14010006	Davis Gulch	7434	39.63	-108.11	1	0.75	40	15
Colorado	14010006	Middle Fork	7572	39.64	-108.10	5	0.87	40	15
Colorado	14010006	Unocal Storage Pond #3	5396	39.48	-108.10	9	0.75	44.763	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14020001	Lake Brennand	10323	38.91	-107.00	65	0.87	35	15
Colorado	14020001	Meridian Lake Park #1	9360	38.91	-106.99	5	0.87	35	15
Colorado	14020001	Spring Creek (Wd-59)	9923	38.86	-106.71	89	0.87	35	15
Colorado	14020002	Bald Mountain	11000	38.66	-107.40	10	0.87	37.463	14
Colorado	14020002	Beaver Lake (Wd-62)	9000	38.25	-107.55	7	0.87	37.892	15
Colorado	14020002	Bottle Stomp	8600	38.62	-107.50	2	0.87	39.089	15
Colorado	14020002	Bowers Lakes	10000	38.13	-107.36	4	0.87	35	15
Colorado	14020002	Deer Creek #4	12000	38.02	-107.19	2	0.87	35	15
Colorado	14020002	Don Meek #1	8800	38.52	-107.52	8	0.87	40	15
Colorado	14020002	Fish Creek #1	9080	38.27	-107.57	27	0.87	38.755	15
Colorado	14020002	Fish Creek #2	9420	38.27	-107.57	24	0.87	38.667	15
Colorado	14020002	Frank B. Watters	8480	38.09	-107.29	24	0.87	35	15
Colorado	14020002	High Park Lake	9720	38.28	-107.60	32	0.87	39.754	15
Colorado	14020002	Kenny Moore	8678	38.66	-107.01	20	0.87	36.921	15
Colorado	14020002	Lake Arrowhead	9560	38.31	-107.36	44	0.87	38.695	15
Colorado	14020002	Lower Mill Creek #2	12000	38.01	-107.21	2	0.87	35	15
Colorado	14020002	Meek	8800	38.52	-107.52	6	0.87	40	15
Colorado	14020002	Onion Valley	7323	38.60	-107.59	340	0.75	40.529	15
Colorado	14020002	Poison Spring	8200	38.59	-107.63	10	0.75	41.051	15
Colorado	14020002	Rainbow Lake	8800	38.64	-107.18	16	0.87	35	15
Colorado	14020002	Soderquist	9296	38.29	-107.02	17	0.87	37.834	15
Colorado	14020002	Springer (Rockwell #1)	8100	38.63	-107.57	12	0.87	40.221	15
Colorado	14020002	Tyler	7280	38.63	-107.54	12	0.75	39.579	15
Colorado	14020002	Upper Mill Creek #1	12000	38.00	-107.21	4	0.87	35	15
Colorado	14020003	Hot Springs Creek	8800	38.51	-106.54	29	0.87	35	15
Colorado	14020003	Mcdonough #1	9320	38.16	-106.87	32	0.87	35	15
Colorado	14020003	Mcdonough #2	9153	38.20	-106.85	76	0.87	35	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14020003	Needle Creek	8800	38.35	-106.56	42	0.87	35.076	15
Colorado	14020003	Pitch Wastewater Treatment	8400	38.40	-106.31	5	0.87	35	15
Colorado	14020003	Upper Dome	9100	38.19	-106.73	75	0.87	35	15
Colorado	14020003	Vouga	8588	38.36	-106.66	50	0.75	37.013	15
Colorado	14020004	Aspen Leaf	8000	39.09	-107.43	5	0.75	40	15
Colorado	14020004	Ault	7800	39.07	-107.44	7	0.75	40	15
Colorado	14020004	Bailey	9800	39.02	-107.74	69	0.87	40	15
Colorado	14020004	Baxter (Wd-40)	5660	38.77	-107.67	28	0.75	44.119	15
Colorado	14020004	Beaver	8111	38.82	-107.45	36	0.87	39.836	15
Colorado	14020004	Brockman #1	9300	39.00	-107.73	7	0.87	40	15
Colorado	14020004	Brockman #2	9160	39.00	-107.73	12	0.87	40	15
Colorado	14020004	Bruce Park	8184	38.98	-107.56	33	0.75	40	15
Colorado	14020004	Carl Smith	8240	38.96	-107.75	54	0.75	40	15
Colorado	14020004	Columbine	10440	39.04	-107.77	13	0.87	40	15
Colorado	14020004	Dog Fish Lake	10360	39.04	-107.69	30	0.87	40	15
Colorado	14020004	Doughty	9740	39.02	-107.73	22	0.87	40	15
Colorado	14020004	E. Beckwith #1	9623	38.87	-107.21	59	0.87	36.264	15
Colorado	14020004	Elk Wallows	9520	39.01	-107.71	19	0.87	40	15
Colorado	14020004	Ella	10080	39.04	-107.75	15	0.87	40	15
Colorado	14020004	Fairmont	10300	39.02	-107.69	6	0.87	40	15
Colorado	14020004	Fairmont Park	10100	39.05	-107.70	4	0.87	40	15
Colorado	14020004	Goodenough #2	10540	39.04	-107.68	63	0.87	40	15
Colorado	14020004	Gray	9280	38.99	-107.71	30	0.87	40	15
Colorado	14020004	Hanson #2	9920	39.03	-107.75	14	0.87	40	15
Colorado	14020004	Hartman	9500	39.01	-107.71	3	0.87	40	15
Colorado	14020004	Holy Terror	10280	39.01	-107.67	16	0.87	40	15
Colorado	14020004	Hunt	7400	38.90	-107.76	9	0.75	40.831	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14020004	Lone Cabin	7400	38.84	-107.51	13	0.75	40	15
Colorado	14020004	Lucky Find	9300	39.00	-107.71	7	0.87	40	15
Colorado	14020004	Meridian Lake	9600	38.88	-107.11	28	0.87	35	15
Colorado	14020004	Miller	9500	39.04	-107.70	7	0.87	40	15
Colorado	14020004	Monument	7326	38.88	-107.47	20	0.75	40	15
Colorado	14020004	Mount Gunnison #1-Fw 1	6300	38.93	-107.45	2	0.75	40	15
Colorado	14020004	Overland #1	9897	39.08	-107.65	247	0.87	40	15
Colorado	14020004	Owens	9880	39.02	-107.75	14	0.87	40	15
Colorado	14020004	Patterson #1	8600	38.96	-107.75	8	0.87	40	15
Colorado	14020004	Patterson #2	8280	38.96	-107.75	7	0.75	40	15
Colorado	14020004	Pine Cone	10500	39.04	-107.68	7	0.87	40	15
Colorado	14020004	Reynolds (Wd-40)	7000	38.82	-107.56	15	0.75	40	15
Colorado	14020004	Skim Milk	9300	39.02	-107.72	5	0.87	40	15
Colorado	14020004	Todd	7500	38.78	-107.58	14	0.75	41.171	15
Colorado	14020004	Tomahawk	8282	39.01	-107.31	11	0.75	39.254	15
Colorado	14020004	Waterbug (Breach 1993 To Nj)	10160	39.03	-107.70	14	0.87	40	15
Colorado	14020004	Waterbug (Nj Size)	10160	39.03	-107.70	14	0.87	40	15
Colorado	14020004	West #1	8768	38.93	-107.73	33	0.87	40	15
Colorado	14020004	Williams Creek Lake	8165	39.00	-107.31	12	0.75	39.155	15
Colorado	14020004	Willow	10360	39.02	-107.67	9	0.87	40	15
Colorado	14020005	Alexander Lake	10100	39.04	-107.98	24	0.87	40	15
Colorado	14020005	Anderson #1	10340	39.03	-108.13	59	0.87	40	15
Colorado	14020005	Anderson #2	10400	39.04	-108.13	90	0.87	40	15
Colorado	14020005	Anderson #6	9960	39.02	-108.20	13	0.87	40	15
Colorado	14020005	Arch Slough	10300	39.05	-107.98	12	0.87	40	15
Colorado	14020005	Aubert	8400	38.89	-108.71	11	0.75	45.885	15
Colorado	14020005	Barren	10130	39.04	-107.95	81	0.87	40	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14020005	Basin #1	10400	39.01	-108.05	56	0.87	40	15
Colorado	14020005	Basin #2	10160	39.00	-108.05	8	0.87	40	15
Colorado	14020005	Big Battlement (Battlement #2)	10100	39.00	-108.05	52	0.87	40	15
Colorado	14020005	Big Monitor #1	7500	38.51	-108.32	9	0.75	45	15
Colorado	14020005	Bolen	9900	39.03	-108.22	81	0.87	40	15
Colorado	14020005	Bolen, Anderson, Jacobs	9680	39.02	-108.21	55	0.87	40	15
Colorado	14020005	Bonita	10000	39.05	-107.85	29	0.87	40	15
Colorado	14020005	Boyd	10300	39.02	-107.96	9	0.87	40	15
Colorado	14020005	Bullfinch #1	10100	39.06	-107.93	15	0.87	40	15
Colorado	14020005	Bullfrog	7900	38.51	-108.36	11	0.75	44.103	15
Colorado	14020005	Carbonate Camp #6	10300	39.03	-107.90	34	0.87	40	15
Colorado	14020005	Carbonate Camp #7	10300	39.03	-107.90	22	0.87	40	15
Colorado	14020005	Cedar Mesa	9946	39.05	-107.85	38	0.87	40	15
Colorado	14020005	Chambers	10040	38.94	-108.13	40	0.87	40	15
Colorado	14020005	Cheney	5200	38.89	-108.33	40	0.87	52.202	15
Colorado	14020005	Chipmunk	10400	39.05	-107.82	7	0.87	40	15
Colorado	14020005	Clark	9200	38.92	-108.08	5	0.87	40	15
Colorado	14020005	Cliff Lake	9800	39.03	-108.26	3	0.87	41.475	15
Colorado	14020005	Cole #1	10400	39.06	-107.82	8	0.87	40	15
Colorado	14020005	Cole #2	10400	39.05	-107.82	20	0.87	40	15
Colorado	14020005	Cole #3	10400	39.05	-107.82	14	0.87	40	15
Colorado	14020005	Cole #4	10200	39.02	-107.85	7	0.87	40	15
Colorado	14020005	Cole #5	8720	39.00	-107.85	17	0.87	40	15
Colorado	14020005	Deep Creek #2	10200	39.01	-108.13	66	0.87	40	15
Colorado	14020005	Deep Slough	10018	39.05	-108.00	54	0.87	40	15
Colorado	14020005	Delta Control	9500	38.81	-108.07	4	0.87	46.58	15
Colorado	14020005	Deserted Park	10100	39.05	-107.86	5	0.87	40	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14020005	Donnelly #1	10020	39.04	-107.94	29	0.87	40	15
Colorado	14020005	Dreyfus	10200	39.02	-107.87	6	0.87	40	15
Colorado	14020005	Dugger	9260	38.92	-108.11	17	0.87	40	15
Colorado	14020005	Eggleston	10149	39.04	-107.95	158	0.87	40	15
Colorado	14020005	Elk Park	10065	39.05	-107.89	17	0.87	40	15
Colorado	14020005	Eureka #1	10300	39.02	-107.90	9	0.87	40	15
Colorado	14020005	Eureka #2	10300	39.02	-107.90	9	0.87	40	15
Colorado	14020005	Fish Lake	10100	39.04	-107.89	8	0.87	40	15
Colorado	14020005	Flowing Park	10060	38.96	-108.11	108	0.87	40	15
Colorado	14020005	Fruita #2	8840	38.86	-108.77	14	0.87	45	15
Colorado	14020005	G.H. And S. #2	8400	38.89	-108.68	15	0.75	46.35	15
Colorado	14020005	Gobbo #1	8980	38.86	-108.73	16	0.87	45	15
Colorado	14020005	Gobbo #2	8600	38.88	-108.72	8	0.87	45.527	15
Colorado	14020005	Gobbo #3	8900	38.86	-108.73	15	0.87	45	15
Colorado	14020005	Granby #11	10040	39.00	-108.04	72	0.87	40	15
Colorado	14020005	Granby #12	10020	39.00	-108.04	49	0.87	40	15
Colorado	14020005	Granby #6	10000	39.00	-108.04	8	0.87	40	15
Colorado	14020005	Granby #7	9880	38.99	-108.05	15	0.87	40	15
Colorado	14020005	Granby #9	10000	39.00	-108.04	18	0.87	40	15
Colorado	14020005	Grand Mesa #1	10300	39.01	-108.11	48	0.87	40	15
Colorado	14020005	Grand Mesa #6	10300	39.03	-108.08	51	0.87	40	15
Colorado	14020005	Grand Mesa #8	10630	39.04	-108.05	37	0.87	40	15
Colorado	14020005	Grand Mesa #9	10600	39.03	-108.07	23	0.87	40	15
Colorado	14020005	Hale	9100	39.04	-107.79	10	0.87	40	15
Colorado	14020005	Hallenbeck #1	5634	38.97	-108.29	62	0.87	44.765	15
Colorado	14020005	Hallenbeck #2	10240	39.02	-108.14	62	0.75	40	15
Colorado	14020005	Harry White #2	7700	38.55	-108.34	33	0.75	43.259	15
Colorado	14020005	Hogchute	9890	39.00	-108.11	35	0.87	40	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14020005	Hotel Lake	10200	39.05	-107.97	35	0.87	40	15
Colorado	14020005	Howard	10100	39.02	-107.96	8	0.87	40	15
Colorado	14020005	Island Lake	10060	39.03	-108.00	161	0.87	40	15
Colorado	14020005	Joe King #2	8337	38.89	-108.68	18	0.75	46.108	15
Colorado	14020005	Juniata	5716	38.97	-108.29	144	0.75	44.338	15
Colorado	14020005	Kehmeier	10320	39.06	-107.84	27	0.87	40	15
Colorado	14020005	Kennicott Slough	10000	39.03	-107.96	76	0.87	40	15
Colorado	14020005	King #2	8600	38.86	-108.68	6	0.87	45.129	15
Colorado	14020005	King #3	8600	38.86	-108.69	6	0.87	45.019	15
Colorado	14020005	Kiser	10000	39.04	-107.93	13	0.87	40	15
Colorado	14020005	Kiser Slough	9827	39.03	-107.95	34	0.87	40	15
Colorado	14020005	Knox	9992	39.04	-107.88	16	0.87	40	15
Colorado	14020005	Leon Park	10360	39.07	-107.82	18	0.87	40	15
Colorado	14020005	Little Gem	10100	39.03	-108.00	16	0.87	40	15
Colorado	14020005	Little Giant #1	9113	39.04	-107.79	3	0.87	40	15
Colorado	14020005	Little Grouse	10000	39.03	-107.93	8	0.87	40	15
Colorado	14020005	Little Monitor #1	7500	38.53	-108.32	8	0.75	44.453	15
Colorado	14020005	Lone Star #1	5400	38.81	-108.19	7	0.75	48.673	15
Colorado	14020005	Lone Star #2	5500	38.80	-108.18	6	0.75	48.888	15
Colorado	14020005	Lone Star #3	5600	38.79	-108.17	8	0.75	49.232	15
Colorado	14020005	Marcot Park	9720	39.04	-107.81	43	0.87	40	15
Colorado	14020005	Mckoon	10120	39.04	-107.93	11	0.87	40	15
Colorado	14020005	Military Park	10116	39.06	-107.89	25	0.87	40	15
Colorado	14020005	Mirror Lake #1	8720	38.86	-108.72	16	0.87	45	15
Colorado	14020005	Morris #2	9200	38.92	-108.11	3	0.87	40	15
Colorado	14020005	Oasis	5240	38.79	-107.90	20	0.87	45	15
Colorado	14020005	Park (Wd-40)	9933	39.05	-107.88	138	0.87	40	15
Colorado	14020005	Paulson	6300	38.85	-107.86	12	0.75	44.665	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14020005	Pedro	10100	39.04	-107.92	15	0.87	40	15
Colorado	14020005	Pitcairne #1	9360	38.91	-108.12	9	0.87	40	15
Colorado	14020005	Porter #1 (Big Davies)	9080	38.92	-108.10	15	0.87	40	15
Colorado	14020005	Porter #4 (Little Davies)	9300	38.93	-108.11	11	0.87	40	15
Colorado	14020005	Prebble	10100	39.03	-107.91	26	0.87	40	15
Colorado	14020005	Reed	10100	39.03	-107.95	22	0.87	40	15
Colorado	14020005	Reeder	5680	38.98	-108.32	16	0.87	46.814	15
Colorado	14020005	Rim Rock #1	10100	39.02	-108.01	16	0.87	40	15
Colorado	14020005	Ryan	10100	39.03	-107.92	5	0.87	40	15
Colorado	14020005	Sackett	10480	39.07	-107.83	10	0.87	40	15
Colorado	14020005	Scales #1 (Lower)	10500	39.04	-108.03	55	0.87	40	15
Colorado	14020005	Scales #3 (Upper)	10500	39.05	-108.02	45	0.87	40	15
Colorado	14020005	Scotland Peak	10120	39.02	-108.01	24	0.87	40	15
Colorado	14020005	Sheep Lake	10100	39.03	-107.99	13	0.87	40	15
Colorado	14020005	Somerville-Mccullah	9960	39.04	-108.21	75	0.87	40	15
Colorado	14020005	Stell Lake	10200	39.06	-107.90	8	0.87	40	15
Colorado	14020005	Trickle	9200	39.04	-107.79	5	0.87	40	15
Colorado	14020005	Trio	10200	39.05	-107.84	13	0.87	40	15
Colorado	14020005	Twin Lake #1	10400	39.07	-107.84	14	0.87	40	15
Colorado	14020005	Twin Lake #2	10520	39.07	-107.84	17	0.87	40	15
Colorado	14020005	Twin Lakes	7800	38.53	-108.36	14	0.75	43.496	15
Colorado	14020005	Upper Hotel Lake	10500	39.05	-107.96	14	0.87	40	15
Colorado	14020005	Vela	10120	39.06	-107.87	16	0.87	40	15
Colorado	14020005	Ward Creek	9746	39.01	-108.00	25	0.87	40	15
Colorado	14020005	Ward Lake	10120	39.04	-107.99	83	0.87	40	15
Colorado	14020005	Weir And Johnson	10440	39.07	-107.83	45	0.87	40	15
Colorado	14020005	Weir Park	10000	39.04	-107.89	10	0.87	40	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14020005	Womack #1	10100	39.01	-107.98	34	0.87	40	15
Colorado	14020005	Womack #2 And 3	10300	39.02	-107.96	23	0.87	40	15
Colorado	14020005	Y And S	9700	39.05	-107.81	14	0.87	40	15
Colorado	14020005	Youngs Creek #1 & 2	10200	39.04	-107.91	50	0.87	40	15
Colorado	14020005	Youngs Creek #3	10200	39.04	-107.92	24	0.87	40	15
Colorado	14020006	Alexander	6300	38.46	-107.96	3	0.75	43.785	15
Colorado	14020006	Buckhorn Lake #2	8300	38.34	-107.65	24	0.75	40	15
Colorado	14020006	Carroll Brown	6500	38.07	-107.87	5	0.75	37.529	15
Colorado	14020006	Cerro	8004	38.45	-107.64	28	0.75	40.387	16
Colorado	14020006	Fairview	6346	38.48	-107.77	36	0.75	42.539	15
Colorado	14020006	Garnet Mesa	5132	38.72	-108.04	139	0.75	48.543	15
Colorado	14020006	Mock #1	6500	38.38	-107.86	4	0.75	41.599	15
Colorado	14020006	Ouray	6500	38.01	-107.66	1	0.75	35	15
Colorado	14020006	Roatcap Wash Watershed Rw-1	5500	38.59	-108.09	48	0.75	46.709	15
Colorado	14020006	Shavano Valley #1 (Sv-1)	6077	38.46	-108.00	0	0.75	44.139	15
Colorado	14030001	Duvall #1	7920	38.90	-108.78	15	0.75	45.55	15
Colorado	14030001	Fruita #3	8200	38.85	-108.78	4	0.75	45	15
Colorado	14030001	Middle Canyon Creek	8343	38.85	-108.93	3	0.75	45	15
Colorado	14030002	Belmear Lake	7980	37.82	-108.35	30	0.75	39.093	15
Colorado	14030002	Big Pine	7700	37.42	-108.32	37	0.75	43.76	15
Colorado	14030002	Buck Pasture	8500	37.78	-108.33	6	0.75	38.736	15
Colorado	14030002	Buckeye #1	7600	38.44	-109.05	120	0.75	45	15
Colorado	14030002	Dunham	7920	37.82	-108.35	11	0.75	38.99	15
Colorado	14030002	Ethel Belmear	7900	37.79	-108.38	12	0.75	39.485	15
Colorado	14030002	Garner	7900	37.85	-108.39	5	0.75	39.637	15
Colorado	14030002	Groundhog	8733	37.79	-108.29	545	0.87	38.165	15

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14030002	Lost Canyon	7300	37.44	-108.40	20	0.75	45.456	15
Colorado	14030002	Morrison	7670	37.86	-108.37	11	0.87	39.386	15
Colorado	14030002	Summit	7400	37.42	-108.39	402	0.75	45.338	15
Colorado	14030003	Alta #1 (Restricted To 4' 1985-1991)	12000	37.83	-107.81	8	0.87	35	15
Colorado	14030003	Alta #2	12000	37.89	-107.84	12	0.87	35	15
Colorado	14030003	Alta #3 (Restricted To 3.5' 1986-1991)	12000	37.89	-107.85	12	0.87	35	15
Colorado	14030003	Blue Lake #1	12300	37.89	-107.77	52	0.87	35	15
Colorado	14030003	Cushman	8500	37.89	-107.90	6	0.75	35	15
Colorado	14030003	Gurley	8264	38.04	-108.25	335	0.75	42.564	15
Colorado	14030003	Lake Hope	11760	37.79	-107.85	35	0.87	35	15
Colorado	14030003	Lilylands	8400	37.92	-108.36	37	0.75	39.563	15
Colorado	14030003	Lone Cone	8323	38.01	-108.26	177	0.75	41.381	15
Colorado	14030003	Miramonte	7700	37.97	-108.34	410	0.87	40.606	15
Colorado	14030003	Mosca Livestock #2	6000	38.19	-107.94	5	0.75	40	15
Colorado	14030003	Nucla 3Rd Ave Reservoir	5926	38.27	-108.54	3	0.75	45	15
Colorado	14030003	Nucla Domestic	6000	38.26	-108.51	7	0.75	45	15
Colorado	14030003	Trout Lake	9717	37.83	-107.89	138	0.87	35	15
Colorado	14030003	Woods Lake (Wd-60)	8500	37.89	-108.06	27	0.75	35.047	15
Colorado	14030004	Burg	8960	38.83	-108.84	34	0.87	45	15
Colorado	14030004	Casto	8073	38.73	-108.68	99	0.75	41.952	15
Colorado	14030004	Craig #1	7120	38.78	-108.72	79	0.75	43.438	15
Colorado	14030004	Craig #2	8260	38.71	-108.71	35	0.75	41.759	15
Colorado	14040106	Cove (Wd-56)	6180	40.62	-108.78	8	0.75	40	18
Colorado	14040106	Offield	6720	40.66	-109.00	20	0.75	37.861	18
Colorado	14040109	Basset #2	5560	40.77	-108.83	5	0.75	40	18
Colorado	14040109	House Reservoir	6840	40.91	-108.77	8	0.75	40.764	18
Colorado	14050001	Allen Basin	8520	40.16	-107.04	93	0.87	40	18

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14050001	Anderson	7200	40.68	-107.30	18	0.75	40	18
Colorado	14050001	B And B	6200	40.53	-107.53	4	0.75	40	18
Colorado	14050001	Bar-Bee Lake	8000	40.20	-106.77	6	0.75	36.492	18
Colorado	14050001	Biskup	6180	40.50	-107.46	11	0.75	40	18
Colorado	14050001	Bull Park #2	9360	40.11	-107.03	15	0.87	40	18
Colorado	14050001	Bunker Lake	8788	40.18	-107.17	15	0.87	40	18
Colorado	14050001	Burnt Mesa	9000	40.13	-107.02	25	0.87	40	18
Colorado	14050001	Chapman (Wd-58)	9160	40.19	-107.09	22	0.87	40	18
Colorado	14050001	Cove (Wd-44)	8200	40.20	-107.57	10	0.75	40	18
Colorado	14050001	Cove Lake	8160	40.20	-107.58	5	0.75	40	18
Colorado	14050001	Craig Holding & Evaporation Ponds	6320	40.46	-107.60	79	0.87	40	18
Colorado	14050001	Craig Raw Water	6160	40.49	-107.60	32	0.75	40	18
Colorado	14050001	Drescher	6380	40.49	-107.44	30	0.75	40	18
Colorado	14050001	Dunkley Dubeau	8720	40.26	-107.23	6	0.87	40	18
Colorado	14050001	Elkhead Creek	6375	40.56	-107.39	550	0.87	40	18
Colorado	14050001	Fish Creek (Enlarged 1996)	9874	40.49	-107.05	79	0.87	40	18
Colorado	14050001	Folly Pond	7140	40.35	-106.88	5	0.75	39.766	18
Colorado	14050001	Freeman	8760	40.77	-107.43	17	0.87	40.361	18
Colorado	14050001	Hahns Peak	8387	40.84	-106.99	26	0.87	37.208	18
Colorado	14050001	Hayden Plant Evaporation Pond	6480	40.49	-107.19	26	0.75	40	18
Colorado	14050001	Hayden Plant Recycled Water	6480	40.49	-107.19	29	0.75	40	18
Colorado	14050001	Hayden Raw Water Ponds	6560	40.48	-107.18	11	0.87	40	18
Colorado	14050001	Heart Lake (Wd-58)	9697	40.11	-107.04	40	0.87	40	18
Colorado	14050001	J.C. Temple #1	6480	40.43	-107.27	62	0.75	40	18
Colorado	14050001	James Marion Yoast	7720	40.30	-107.19	20	0.75	40	18
Colorado	14050001	Kowach	7160	40.45	-107.44	3	0.75	40	18

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14050001	Lake Catamount	6880	40.37	-106.80	563	0.75	38.526	18
Colorado	14050001	Lake Creek	8160	40.15	-106.87	20	0.75	38.623	18
Colorado	14050001	Lake Emrich	6520	40.43	-107.29	40	0.75	40	18
Colorado	14050001	Lester Creek	8045	40.78	-106.89	166	0.87	36.336	18
Colorado	14050001	Long Lake (Overtopped 6/95)	9760	40.48	-106.69	57	0.87	35	18
Colorado	14050001	Martin (Wd-58)	7760	40.29	-106.88	11	0.75	38.719	18
Colorado	14050001	Mcchivvis	9400	40.12	-107.02	25	0.87	40	18
Colorado	14050001	Morgan Creek #1	7130	40.61	-107.17	30	0.75	40	18
Colorado	14050001	Nofstger	6720	40.42	-107.15	12	0.75	40	18
Colorado	14050001	Nofstger-Zeigler	6720	40.41	-107.16	10	0.75	40	18
Colorado	14050001	Poose Creek	9390	40.13	-107.26	36	0.87	40	18
Colorado	14050001	Ram'S Horn	9697	40.05	-107.05	13	0.87	40	18
Colorado	14050001	Saddle	8556	40.26	-107.38	15	0.75	40	18
Colorado	14050001	Seaton	8595	40.26	-107.18	4	0.75	40	18
Colorado	14050001	Sellers-Crowell	9000	40.26	-107.23	15	0.87	40	18
Colorado	14050001	Shaffer	8840	40.26	-107.24	6	0.87	40	18
Colorado	14050001	Sheriff	9480	40.15	-107.14	40	0.87	40	18
Colorado	14050001	Simon #1	8720	40.17	-107.06	100	0.87	40	18
Colorado	14050001	Stagecoach	7210	40.29	-106.84	780	0.75	38.077	18
Colorado	14050001	Steamboat Springs Wastewater	6480	40.49	-106.91	9	0.75	40	18
Colorado	14050001	Stillwater #1	10255	40.03	-107.12	129	0.87	40	18
Colorado	14050001	Sullivan	7305	40.28	-107.46	4	0.75	40	18
Colorado	14050001	Trull Creek #1	6715	40.54	-106.98	17	0.75	40	18
Colorado	14050001	Upper Robinson	7120	40.40	-106.89	3	0.75	40	18
Colorado	14050001	Upper Stillwater	9760	40.04	-107.07	47	0.87	40	18
Colorado	14050001	Waddle Creek	6960	40.30	-107.52	2	0.75	40	18
Colorado	14050001	Walrod	6500	40.49	-107.20	8	0.75	40	18

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14050001	Whiteley-Nelson	8395	40.20	-106.89	25	0.75	38.852	18
Colorado	14050001	Willow Creek (Wd-58)	8006	40.79	-106.95	1011	0.75	36.897	18
Colorado	14050001	Wolf Mountain	7554	40.57	-107.09	8	0.75	40	18
Colorado	14050001	Yamcolo	9589	40.06	-107.05	188	0.87	40	18
Colorado	14050001	Yoast	7200	40.32	-107.19	2	0.75	40	18
Colorado	14050002	Culverwell	6248	40.48	-107.75	38	0.75	40	18
Colorado	14050002	D.D. & E. Wise	7400	40.18	-107.69	59	0.75	40	18
Colorado	14050002	Ellgen	6160	40.44	-107.70	11	0.75	40	18
Colorado	14050002	Ellgen #2	6150	40.44	-107.70	11	0.75	40	18
Colorado	14050002	Wyman	7040	40.17	-107.73	10	0.75	40	18
Colorado	14050003	B-2	6914	40.96	-107.42	5	0.75	41.3	18
Colorado	14050003	Boyer	8463	40.89	-107.17	15	0.75	40	18
Colorado	14050003	Elk Lake	7652	40.88	-107.46	22	0.75	41.089	18
Colorado	14050003	Lower Cogdill	7400	40.97	-107.33	17	0.75	40.731	18
Colorado	14050003	Martin Cull	7560	40.83	-107.50	12	0.75	40.919	18
Colorado	14050003	Mccargar	7660	40.91	-106.97	12	0.75	37.867	18
Colorado	14050003	Upper Cogdill	7440	40.97	-107.34	7	0.75	40.772	18
Colorado	14050005	Beaver Lake (Wd-43)	7920	39.91	-107.65	8	0.75	40	18
Colorado	14050005	Big Beaver (Wd-43)	7000	39.97	-107.65	263	0.75	40	18
Colorado	14050005	Big Lick Irrigation	7703	40.01	-107.63	4	0.75	40	18
Colorado	14050005	Johnnie Johnson	6550	40.09	-108.21	149	0.75	40	18
Colorado	14050005	Lake Gloria	7600	40.03	-107.51	4	0.75	40	18
Colorado	14050005	Lunney	7131	40.13	-107.76	6	0.75	40	18
Colorado	14050005	Mcginnis Meadows	10158	40.03	-107.21	25	0.87	40	18
Colorado	14050005	Mchatten	6760	40.07	-107.82	7	0.75	40	18
Colorado	14050005	Skinny Fish	10192	40.03	-107.21	37	0.87	40	18
Colorado	14050005	Wilson (Wd-43)	7160	39.92	-107.88	5	0.75	40	18

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14050006	Blowdown Water Storage	6840	39.92	-108.50	4	0.75	40	18
Colorado	14050006	Larson #1	7120	39.74	-107.95	4	0.75	40	18
Colorado	14050006	West Stewart	6900	39.76	-108.20	6	0.75	40	18
Colorado	14050007	Baxter (Wd-43)	7100	39.62	-108.98	20	0.75	40	18
Colorado	14050007	Mark #1	6960	39.68	-108.85	12	0.75	40	18
Colorado	14050007	Taylor Draw	5287	40.11	-108.71	615	0.75	41.115	18
Colorado	14080101	Echo Canyon	7240	37.21	-107.00	118	0.75	42.929	18
Colorado	14080101	Gomez	7400	37.04	-106.93	8	0.75	40.015	18
Colorado	14080101	Harris Brothers And Boone #1	7700	37.14	-106.81	10	0.75	36.412	18
Colorado	14080101	Harris Brothers And Boone #2	7800	37.16	-106.81	39	0.75	36.104	18
Colorado	14080101	Pagosa	7300	37.31	-106.99	3	0.75	40.499	18
Colorado	14080101	Pine River Watershed P. R. 1	8700	37.07	-107.53	8	0.87	49.878	18
Colorado	14080101	Pine River Watershed P. R. 2	6580	37.11	-107.54	12	0.75	48.332	18
Colorado	14080101	Pinon Lake	7500	37.14	-107.07	37	0.75	44.102	18
Colorado	14080101	Sappington	7600	37.09	-106.86	20	0.75	38.432	18
Colorado	14080101	Slesinger	8320	37.20	-106.79	7	0.75	35.177	18
Colorado	14080101	Spence	7500	37.11	-106.86	33	0.75	38.217	18
Colorado	14080101	Wommer #1	8000	37.32	-107.59	17	0.75	41.133	18
Colorado	14080102	Hatcher	7560	37.31	-107.11	133	0.75	40.664	18
Colorado	14080102	Lake Forest	7500	37.26	-107.10	42	0.75	42.887	18
Colorado	14080102	Linn And Clark	7519	37.28	-107.08	106	0.75	42.01	18
Colorado	14080102	Pargin	6600	37.20	-107.26	35	0.75	45	18
Colorado	14080102	Stevens	7520	37.30	-107.08	87	0.75	41.152	18
Colorado	14080102	Town Center	7480	37.26	-107.09	70	0.75	42.679	18
Colorado	14080102	Williams Creek	8241	37.50	-107.22	343	0.87	36.667	18
Colorado	14080104	Charles Lemon R R	6700	37.21	-107.75	4	0.75	47.799	18

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14080104	Duck Slough	10744	37.73	-107.71	15	0.87	35	18
Colorado	14080104	Duncan	8750	37.63	-107.80	6	0.87	35	18
Colorado	14080104	Durango #1	10917	37.54	-107.60	40	0.87	35	18
Colorado	14080104	Durango Terminal	6949	37.29	-107.83	19	0.87	44.417	18
Colorado	14080104	Granite Dam	7156	37.48	-107.81	2	0.75	38.719	18
Colorado	14080104	Haviland Lake	8106	37.53	-107.81	61	0.87	37.533	18
Colorado	14080104	Henderson Lake	9850	37.51	-107.72	11	0.87	35.382	18
Colorado	14080104	Highland Mary	10500	37.77	-107.57	48	0.87	35	18
Colorado	14080104	Johnson	7320	37.26	-107.97	56	0.75	45.331	18
Colorado	14080104	Keeler	7200	37.48	-107.81	28	0.75	38.736	18
Colorado	14080104	Pastorius	6860	37.20	-107.81	45	0.75	48.519	18
Colorado	14080104	Terminal	8382	37.55	-107.81	839	0.75	37.069	18
Colorado	14080104	Turner	6834	37.37	-107.87	42	0.75	41.489	18
Colorado	14080104	Warner #5	8700	37.50	-107.80	3	0.87	38.126	18
Colorado	14080105	Labato	9000	37.20	-108.07	3	0.87	48.444	18
Colorado	14080105	Red Mesa Ward	6900	37.17	-108.14	59	0.75	50.34	18
Colorado	14080105	Taylor	11560	37.46	-108.03	12	0.87	35.455	18
Colorado	14080107	Bauer Lake #1	7700	37.41	-108.30	32	0.75	43.483	18
Colorado	14080107	Bauer Lake #2	7700	37.38	-108.30	114	0.75	44.379	18
Colorado	14080107	Coppinger #1	7500	37.41	-108.35	6	0.75	44.655	18
Colorado	14080107	Hurst	7400	37.41	-108.36	5	0.75	45.179	18
Colorado	14080107	L.A. Bar	7780	37.43	-108.30	12	0.75	43.057	18
Colorado	14080107	Sellers And Mcclane	7680	37.42	-108.31	12	0.75	43.665	18
Colorado	14080107	Totten	6162	37.06	-108.53	213	0.75	53.535	18
Colorado	14080107	Weber	8000	37.40	-108.23	42	0.75	41.84	18
Colorado	14080202	A. M. Puett	7261	37.42	-108.41	163	0.75	46.16	18
Colorado	14080202	Cortez #1	6420	37.41	-108.54	17	0.75	50.204	18
Colorado	14080202	E. G. Merritt	6700	37.45	-108.68	7	0.75	50.952	18

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Colorado	14080202	L-N Damnation Ranch	6500	37.44	-108.54	2	0.75	49.602	18
Colorado	14080202	Narraguinnep	6687	37.48	-108.63	581	0.75	50.041	18
Colorado	14080203	Dove Creek #1	6700	37.77	-108.90	6	0.75	50	18
Colorado	14080203	Ducks Nest	6670	37.73	-108.99	71	0.75	50	18
NewMexico	14080101	Crowley	5960	36.99	-106.78	17	0.3	37.7	13
NewMexico	14080101	Dulce	7100	36.88	-107.00	65	1	39.8	15
NewMexico	14080101	El Paso	5350	36.75	-108.37	6	1	55.8	15
NewMexico	14080101	La Jara	7300	36.74	-107.00	130	1	42.3	13
NewMexico	14080101	Lower Mundo	7200	36.87	-106.93	49	1	39.5	15
NewMexico	14080104	Farmington Lake	5900	36.79	-108.10	130	1	55.1	15
NewMexico	14080105	Bolack	5800	36.71	-108.16	47	1	55.1	13
NewMexico	14080105	Jackson Lake	5488	36.81	-108.22	40	1	55.1	13
NewMexico	14080106	Captain Toms	6289	36.29	-108.75	73	1	55.7	14
NewMexico	14080106	Long	8945	36.00	-108.83	151	1	49.5	13
NewMexico	14080106	Toadacheene	8770	36.09	-108.88	9	0.7	49.6	13
NewMexico	14080204	Berland		36.12	-108.92	8	0.71	49.7	13
NewMexico		Frank Chee Willetto	5200	36.79	-108.44	50	0.5	56.7	13
NewMexico		Luna	7700	36.82	-106.98	6	0.3	39.5	15
Utah	14030002	Provancha		38.28	-109.24	6	1	46.835	13
Utah	14030004	Pace	8000	38.56	-109.07	58	0.73	45	14
Utah	14030005	Bankhead Lakes	6400	38.30	-109.33	47	1	48.674	12
Utah	14030005	Dugout	5480	38.08	-109.57	40	0.94	49.938	12
Utah	14030005	Foy		37.90	-109.51	3	0.5	45	13
Utah	14030005	Iron Springs	6800	37.97	-109.23	204	0.84	48.526	15
Utah	14030005	Kens Lake		38.48	-109.43	86	0.84	50.19	12
Utah	14030005	Lake Oowah		38.50	-109.27	50	0.8	45	13
Utah	14030005	Moab City - Tusher Canyon		38.57	-109.53	2	0.8	55	12

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Utah	14030005	Moab City - White Canyon		38.57	-109.54	1	0.88	55	12
Utah	14030005	Rattlesnake Ranch No 1	6513	38.29	-109.30	25	0.83	48.188	13
Utah	14030005	Rattlesnake Ranch No.2	6513	38.29	-109.31	31	0.9	48.229	13
Utah	14040106	Beaver Meadow	9800	40.91	-110.06	122	0.7	35	15
Utah	14040106	Browne Lake	9500	40.86	-109.81	65	0.72	35	15
Utah	14040106	Browns Park (Wildlife Ref)	5400	40.89	-109.14	135	0.8	40.151	15
Utah	14040106	Calder (Zelph)	7350	40.73	-109.21	40	1	35	15
Utah	14040106	Crouse	7167	40.72	-109.18	150	0.8	35.159	15
Utah	14040106	Dagget Lake	10500	40.83	-109.97	44	0.8	35	14
Utah	14040106	Hoop Lake	9193	40.92	-110.13	162	0.82	35	16
Utah	14040106	Island Lake (Summit - Burnt Fk)	10768	40.84	-110.14	120	1	35	14
Utah	14040106	Long Park (Daggett)		40.91	-109.87	400	0.94	35	15
Utah	14040106	Matt Warner	7539	40.76	-109.30	304	0.81	35	15
Utah	14040106	Sheep Creek	8200	40.89	-109.84	80	0.83	35	16
Utah	14040106	Spirit Lake	9500	40.85	-110.00	53	0.52	35	15
Utah	14040106	Tamarack Lake	10430	40.84	-110.02	50	0.8	35	14
Utah	14040107	China Lake	9400	40.94	-110.41	65	0.73	35	15
Utah	14040107	Fish Lake - Elizabeth Pass		40.94	-110.65	163	0.58	35	15
Utah	14040107	Graham		41.00	-110.39	9	1	35	15
Utah	14040107	Marsh Lake	9300	40.96	-110.40	70	0.8	35	15
Utah	14050007	White River Shale Retention		39.94	-109.20	10	0.72	43.631	6
Utah	14060001	Brough	5100	40.25	-109.69	128	0.98	43.184	7
Utah	14060001	Ouray (Wildlife Refuge)	4600	40.17	-109.58	1443	0.8	45	6
Utah	14060001	Pelican Lake	4797	40.18	-109.68	1141	0.75	45	6

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Utah	14060001	Stewart Lake	4900	40.33	-109.36	456	0.8	44.282	6
Utah	14060002	Ashely Twin Lakes	10100	40.72	-109.80	70	0.81	35	14
Utah	14060002	East Park	9016	40.78	-109.55	160	0.66	35	14
Utah	14060002	Goose Lakes	10200	40.73	-109.80	130	0.93	35	13
Utah	14060002	Herman-Sadlier		40.39	-109.44	9	0.79	41.172	14
Utah	14060002	Julius Park	9760	40.64	-109.89	23	0.74	35	15
Utah	14060002	Long Park (Uintah)	10000	40.77	-109.76	63	0.82	35	14
Utah	14060002	Oak Park	8700	40.74	-109.62	364	0.68	35	15
Utah	14060003	Atwood Lake	11030	40.75	-110.29	205	0.75	35	13
Utah	14060003	Big Sand Wash	5886	40.29	-110.23	390	0.83	38.741	12
Utah	14060003	Bluebell Lake	10892	40.70	-110.48	48	0.68	35	15
Utah	14060003	Brown Duck	10500	40.59	-110.60	42	0.8	35	15
Utah	14060003	Browns Draw	6000	40.42	-110.12	185	0.88	36.504	9
Utah	14060003	Bullock Draw	5280	40.36	-109.82	70	0.61	39.047	8
Utah	14060003	Cedarview	7900	40.50	-110.17	200	0.8	35	14
Utah	14060003	Chain Lake (Lower)	10602	40.70	-110.24	65	0.83	35	14
Utah	14060003	Chain Lake (Upper)	10602	40.71	-110.26	113	0.83	35	14
Utah	14060003	Chepeta	10561	40.79	-110.02	144	0.97	35	15
Utah	14060003	Clement Lake	10443	40.63	-110.59	85	0.81	35	15
Utah	14060003	Cliff Lake (Duchesne)	10348	40.73	-109.99	64	0.91	35	15
Utah	14060003	Cottonwood	5250	40.35	-109.79	210	0.85	39.25	8
Utah	14060003	Crescent Lake		40.79	-110.16	45	0.86	35	14
Utah	14060003	Deer Lake	10110	40.67	-110.36	21	0.54	35	15
Utah	14060003	Drift Lake	11064	40.70	-110.49	50	0.8	35	15
Utah	14060003	East Timothy	11020	40.71	-110.36	45	0.87	35	14
Utah	14060003	Farmers Lake	10974	40.70	-110.37	100	0.8	35	12
Utah	14060003	Five Point Lake	11010	40.72	-110.48	87	0.77	35	13
Utah	14060003	Fox Lake	10700	40.79	-110.16	102	0.85	35	13

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Utah	14060003	Hansen No. 3 (Grant)		40.24	-110.27	20	0.75	39.34	8
Utah	14060003	Heller Lake	9500	40.61	-110.23	20	0.76	35	14
Utah	14060003	Island Lake (Duchesne)	10200	40.60	-110.60	43	0.85	35	14
Utah	14060003	Jennings		40.15	-109.99	70	1	41.823	8
Utah	14060003	Kidney Lake	10266	40.60	-110.61	202	0.86	35	15
Utah	14060003	Lapoint		40.43	-109.81	65	0.85	37.555	8
Utah	14060003	Midview (Lake Boreham)	5200	40.19	-110.17	402	1	40	8
Utah	14060003	Milk Lake		40.72	-110.39	12	0.1	35	14
Utah	14060003	Moccasin Lake		40.79	-110.01	12	0.8	35	14
Utah	14060003	Montes Creek	5351	40.35	-109.93	105	0.7	38.941	8
Utah	14060003	Ottosen Reservoir		40.35	-109.93	13	1	39.02	8
Utah	14060003	Papoose Lake		40.80	-110.02	15	0.72	35	14
Utah	14060003	Paradise Park	9957	40.67	-109.92	143	0.77	35	14
Utah	14060003	Roosevelt City Golf Course		40.31	-110.02	6	0.6	39.439	8
Utah	14060003	Superior Lake	11163	40.73	-110.47	47	0.8	35	15
Utah	14060003	Twin Pots	7612	40.51	-110.44	217	0.88	35	14
Utah	14060003	Upper Stillwater		40.56	-110.70	334	0.94	35	14
Utah	14060003	Whiterocks	9800	40.78	-109.95	70	0.75	35	15
Utah	14060003	Wigwam	10630	40.80	-110.01	20	0.79	35	15
Utah	14060003	Yellowstone Power Div		40.54	-110.34	7	1	35	14
Utah	14060004	Daniels No. 1		40.39	-111.19	3	1	35	15
Utah	14060004	Daniels No. 3		40.39	-111.22	2	1	35	15
Utah	14060004	Red Creek	7200	40.31	-110.85	184	0.86	35	15
Utah	14060005	Pariette East Dike	4670	40.03	-109.76	276	0.8	45	6
Utah	14060006	Towave	7000	39.75	-109.75	20	0.88	40.116	14
Utah	14060006	Weaver	6300	39.60	-109.62	10	0.67	40	14

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Utah	14060007	Anderson (E.)	6050	39.65	-110.64	70	0.87	38.859	10
Utah	14060007	Benches Pond		39.66	-111.30	4	0.8	38.874	15
Utah	14060007	Desert Lake - Alkali Lake		39.36	-110.79	92	1	40.858	8
Utah	14060007	Desert Lake - Desert Lake Dike		39.37	-110.78	202	1	40.854	8
Utah	14060007	Desert Lake - Fawn Lake		39.36	-110.77	62	1	41	8
Utah	14060007	Desert Lake - Homestead Lake		39.36	-110.78	59	1	40.881	8
Utah	14060007	Desert Lake - Old Desert Lake		39.36	-110.77	22	1	40.978	8
Utah	14060007	Desert Lake - Tamarisk Lake		39.36	-110.80	99	1	40.725	8
Utah	14060007	Desert Lake - Wash Lake		39.37	-110.78	30	1	40.845	8
Utah	14060007	Fairview Lakes	8974	39.64	-111.31	150	0.89	39.081	15
Utah	14060007	Gooseberry (Lower)	8424	39.72	-111.29	40	0.8	38.607	15
Utah	14060007	Grassy Trail	8000	39.62	-110.39	40	0.79	40	14
Utah	14060007	Millerton	6530	39.50	-110.94	15	0.73	40	11
Utah	14060007	Olsen	5300	39.46	-110.70	80	0.75	40.433	8
Utah	14060007	South	5920	39.62	-110.56	25	0.65	39.607	10
Utah	14060008	Cresent Wash	5000	38.98	-109.82	15	0.8	40	10
Utah	14060008	Horse Bench	4250	38.85	-110.22	40	0.8	50.014	6
Utah	14060008	Valley City	5400	38.88	-109.79	80	0.8	43.091	8
Utah	14060009	Buckhorn		39.24	-110.82	75	0.8	41.105	14
Utah	14060009	Castle Valley - Orangeville		39.23	-111.07	2	1	40	14
Utah	14060009	Clevland	8812	39.58	-111.24	300	0.89	39.836	14
Utah	14060009	Duck Fork	9300	39.17	-111.45	48	0.83	40	15
Utah	14060009	Electric Lake	8576	39.60	-111.22	425	0.89	39.378	15
Utah	14060009	Ferron	9700	39.14	-111.45	200	0.79	40	13

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Utah	14060009	Ferron Debris Basin No. 1		39.05	-111.14	28	0.56	40	14
Utah	14060009	Ferron Debris Basin No. 2		39.05	-111.14	11	0.32	40	14
Utah	14060009	Ferron Debris Basin No. 3		39.07	-111.16	70	0.58	40	14
Utah	14060009	Ferron Debris Basin No. 4		39.10	-111.18	8	0.72	40	14
Utah	14060009	Ferron Debris Basin No. 5		39.11	-111.15	14	0.53	40	14
Utah	14060009	Grassy Lake	8938	39.32	-111.33	40	0.8	40	15
Utah	14060009	Huntington	9012	39.59	-111.26	250	0.88	39.785	15
Utah	14060009	Miller Flat	8461	39.54	-111.24	275	0.87	40	14
Utah	14060009	Millsite	6211	39.10	-111.19	455	0.9	40	10
Utah	14060009	Nielson (John)		39.35	-110.98	8	0.78	40	14
Utah	14060009	Potters Pond No 1		39.49	-111.27	10	0.8	40	14
Utah	14060009	Potters Pond No 2		39.49	-111.27	11	0.8	40	14
Utah	14060009	Provo-Orem L. D. S. Camp		39.68	-111.26	3	0.71	38.483	14
Utah	14060009	Rolfson	8858	39.56	-111.26	40	0.78	40	14
Utah	14060009	U. P. & L. - Hunter Irrig.		39.17	-111.02	40	1	40	14
Utah	14060009	U. P. & L. - Hunter Snow Lake		39.17	-111.01	88	0.71	40	14
Utah	14060009	U. P. & L. - Huntington Irr.		39.38	-111.06	46	0.84	40	14
Utah	14060009	Wilberg #1 (Northern)		39.27	-110.97	6	0.7	40	14
Utah	14060009	Wilberg #2 (Old Dam)		39.26	-110.99	7	0.8	40	14
Utah	14060009	Wilberg #3 (New Dam)		39.25	-110.99	8	0.83	40	14
Utah	14060009	Willow Lake	9700	39.14	-111.39	40	0.53	40	14
Utah	14060009	Wrigley Springs	8940	39.09	-111.30	40	0.77	40	14
Utah	14070001	Trachyte		37.94	-110.62	8	0.61	45.637	14

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Utah	14070002	Brush	9000	39.07	-111.43	40	0.8	40	15
Utah	14070002	Castle Valley - Emery (Lower)		38.94	-111.26	2	1	40	15
Utah	14070002	Castle Valley - Emery (Upper)		38.94	-111.26	1	1	40	15
Utah	14070002	Emery		39.10	-111.47	16	0.69	40	15
Utah	14070002	Henningson	10000	39.06	-111.49	50	0.79	40	15
Utah	14070002	Johnson Oak Ranch		38.77	-111.40	3	1	40	15
Utah	14070002	Julius Flat	8400	39.05	-111.46	125	0.77	40	15
Utah	14070002	Sheep Valley	9200	38.72	-111.54	126	1	40	15
Utah	14070002	Solomon		38.54	-111.45	10	0.8	40	15
Utah	14070002	Spinners	9000	39.09	-111.45	51	0.78	40	15
Utah	14070003	Bowns (Lower)	7400	38.11	-111.27	140	0.88	40	15
Utah	14070003	Donkey Lakes	10100	38.20	-111.48	40	0.73	40	15
Utah	14070003	Fish Creek	9200	38.16	-111.44	40	0.93	40	15
Utah	14070003	Forsyth	8000	38.52	-111.53	210	0.64	40	14
Utah	14070003	Johnson	8819	38.62	-111.64	1330	0.68	40	14
Utah	14070003	Mill Meadow	7700	38.50	-111.57	156	0.76	40	14
Utah	14070003	Neffs		38.43	-111.50	10	0.63	40	14
Utah	14070003	Oak Creek	10100	38.08	-111.37	40	0.92	40	14
Utah	14070003	Pollywog Lake		38.10	-111.79	30	0.63	41.403	14
Utah	14070003	Teasdale Dam A		38.26	-111.45	7	1	40	14
Utah	14070003	Teasdale Dam B		38.26	-111.45	12	1	40	14
Utah	14070005	East Fork Diversion		38.03	-111.45	5	0.44	40	15
Utah	14070005	Flake		37.91	-111.43	8	1	41.717	15
Utah	14070005	Jacobs Valley	10069	38.04	-111.61	359	0.84	40	16
Utah	14070005	North Creek	6950	37.84	-111.76	28	0.89	40.49	15
Utah	14070005	Round Willow Bottom	9500	37.91	-111.84	15	0.8	40	15
Utah	14070005	Roundy	9900	38.04	-111.68	65	0.79	40	15

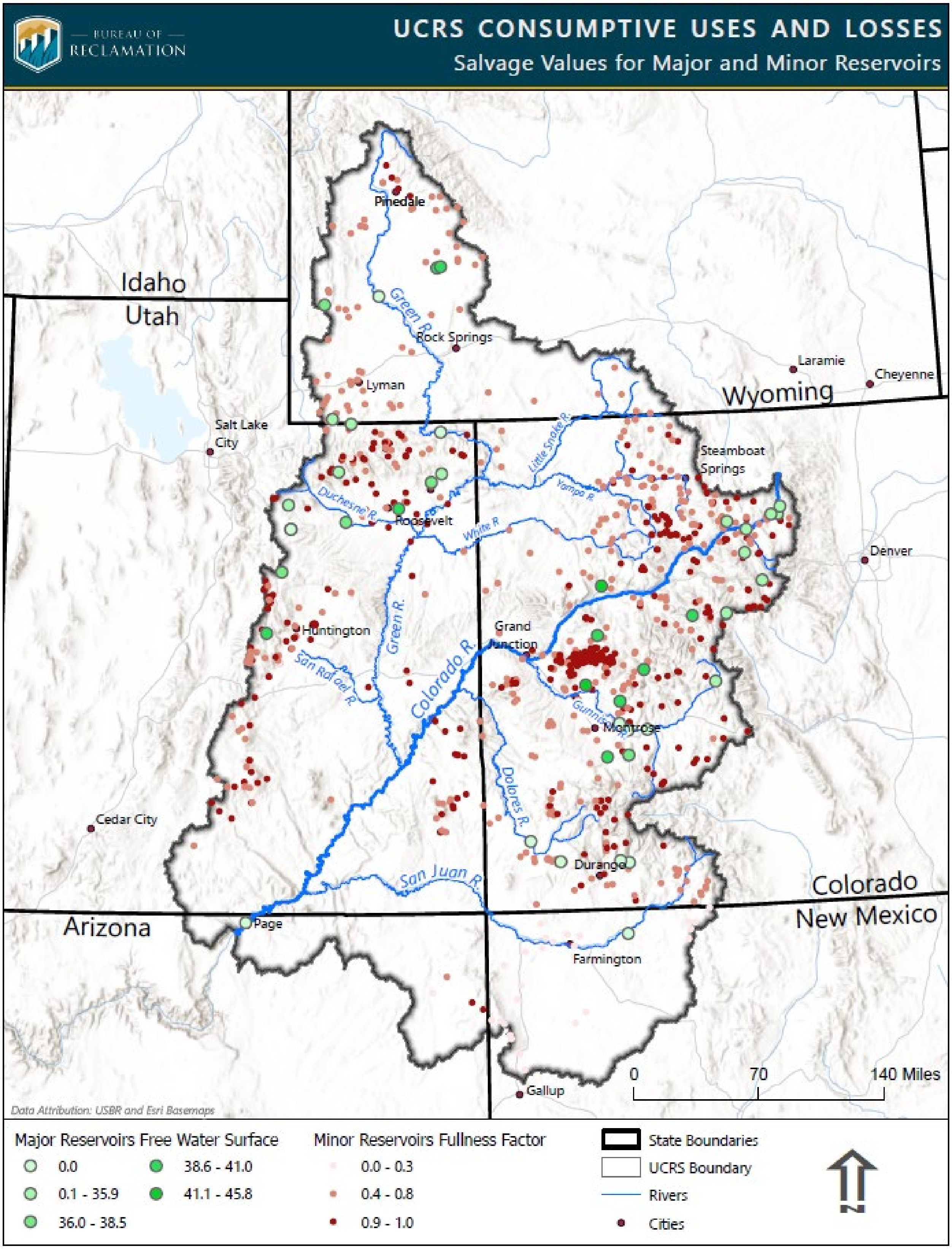
State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Utah	14070005	Shurtliff-Behunin		37.91	-111.42	21	0.59	41.798	15
Utah	14070005	Spectacle Lake	10800	38.08	-111.51	250	0.93	40	13
Utah	14070005	West Fork Diversion		38.04	-111.50	2	0.46	40	15
Utah	14070005	Wide Hollow	6700	37.78	-111.63	150	0.94	42.414	12
Utah	14070007	Johnson Storage		37.56	-112.02	5	0.68	42.682	12
Utah	14080201	Blanding City No. 3	6280	37.67	-109.49	10	1	47.754	12
Utah	14080201	Blanding City No. 4	6280	37.66	-109.50	32	0.8	47.857	12
Utah	14080201	Camp Jackson		37.81	-109.48	5	0.86	45	12
Utah	14080201	Dry Wash #2	7720	37.78	-109.54	15	0.76	45	15
Utah	14080201	Recapture Creek		37.66	-109.44	265	0.58	48.173	12
Utah	14080201	Starvation Canyon		37.68	-109.48	33	0.69	47.589	12
Utah	14080203	Bailey (Upper)		37.93	-109.39	40	0.77	45	15
Utah	14080203	Gordon	7500	37.91	-109.39	17	0.78	45	15
Utah	14080203	Keller	6890	37.94	-109.32	40	0.9	45	15
Utah	14080203	Loyds Lake (Monticello)		37.86	-109.36	95	0.81	45	15
Utah	14080203	Monticello City #1	7320	37.88	-109.36	2	0.93	45	15
Utah	14080203	Monticello Lake	8600	37.90	-109.47	15	0.44	45	15
Utah	14080203	Snyder No 2		37.88	-109.05	15	0.75	50	15
Wyoming	14040101	Joe Budd	7234	42.65	-110.22	18	0.6	38.85	14
Wyoming	14040101	Mcninch No.1	7200	42.60	-110.26	107	0.6	38.95	14
Wyoming	14040101	Mcninch No.2		42.60	-110.26	43	0.6	38.96	14
Wyoming	14040101	Middle Piney	11100	42.60	-110.57	200	0.6	37.75	15
Wyoming	14040101	Sixty Seven	7200	42.59	-110.21	371	0.6	39.18	14
Wyoming	14040101	Sphaeralcea		42.54	-110.37	14	0.6	38.82	14
Wyoming	14040102	Black Joe Lake	10100	42.74	-109.68	102	0.6	36.17	14
Wyoming	14040102	Boulder Lake	7290	42.84	-109.71	136	1	35.34	13
Wyoming	14040102	Boulter	9900	42.73	-109.31	42	0.6	35	14

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Wyoming	14040102	Divide Lake	10200	42.83	-109.47	133	0.6	35	15
Wyoming	14040102	Fremont	7600	42.90	-109.84	234	1	35	15
Wyoming	14040102	J-J No.3		42.72	-109.43	8	0.6	35	14
Wyoming	14040102	Kitchen	7500	42.95	-110.01	17	0.6	35.9	15
Wyoming	14040102	New Fork Lake	7800	43.09	-109.97	120	1	35	16
Wyoming	14040102	Silver Lake	10000	42.83	-109.38	180	0.6	35	17
Wyoming	14040102	Soda Lake Wetlands (1989)		42.97	-109.85	24	0.6	35	14
Wyoming	14040102	Sunset	7398	42.95	-110.01	12	0.6	35.86	13
Wyoming	14040102	Ward Ball	7000	42.73	-109.70	53	0.6	36.35	13
Wyoming	14040102	Willow Lake	7698	42.99	-109.91	158	1	35.03	15
Wyoming	14040103	Elias		41.92	-110.43	7	0.6	39.56	14
Wyoming	14040103	Graham No.2	6800	41.94	-110.30	23	0.6	40.12	14
Wyoming	14040103	Kovach (1988)		41.87	-109.50	37	0.6	43.56	14
Wyoming	14040104	Clear Lake	10013	42.74	-109.19	46	0.6	35	14
Wyoming	14040104	Elkhorn (Little Sandy)		42.62	-109.13	145	0.6	35	15
Wyoming	14040104	Erramouspe	7000	42.38	-109.43	26	0.6	40	15
Wyoming	14040104	Pacific No.1	7200	42.33	-108.93	27	0.6	36.63	15
Wyoming	14040104	Pacific No.2 (Hay Meadow)	7011	42.27	-109.01	258	0.6	38.98	15
Wyoming	14040104	Prospect No.1	7200	42.42	-109.21	45	0.6	38.44	12
Wyoming	14040104	Sublette (Juel)	6693	42.30	-109.55	55	0.6	40	15
Wyoming	14040104	Williams No.2		42.32	-109.20	16	0.6	40	15
Wyoming	14040104	Williams No.3		42.30	-109.20	21	0.6	40	15
Wyoming	14040104	Zemba		42.53	-109.29	18	0.6	36.67	15
Wyoming	14040105	Fifteen Mill Knoll	6637	41.91	-109.19	40	0.6	41.51	14
Wyoming	14040105	Uncapher		41.23	-108.90	39	0.6	43	14
Wyoming	14040106	Fosdick		41.12	-109.93	20	0.6	40.14	14
Wyoming	14040106	Stoffer Ridge	6790	41.14	-109.85	17	0.6	41.49	14

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Wyoming	14040107	Byrne1	7500	41.08	-110.54	15	0.6	35.41	14
Wyoming	14040107	Clifford F. Graham	6500	41.26	-110.25	59	0.6	40.17	14
Wyoming	14040107	Colleti No.2		41.93	-110.51	6	0.6	39.23	14
Wyoming	14040107	Cottonwood	6800	41.26	-110.48	76	0.6	38.54	14
Wyoming	14040107	Coyote		41.33	-110.37	14	0.6	40.29	14
Wyoming	14040107	Davis No.1		42.08	-110.62	18	0.6	38.47	14
Wyoming	14040107	Enlargement Of The No. 3		41.57	-109.72	280	0.6	47.16	14
Wyoming	14040107	Erickson	7700	41.31	-110.38	21	0.6	39.96	14
Wyoming	14040107	Franklin	7100	41.86	-110.40	31	0.6	39.82	10
Wyoming	14040107	Graham		41.00	-110.39	9	1	35	15
Wyoming	14040107	Hickey		41.14	-110.42	7	0.6	36.98	14
Wyoming	14040107	Isom (Austin)		41.42	-110.29	268	0.6	41.6	14
Wyoming	14040107	Kemmerer	7200	41.94	-110.65	183	0.6	38.63	15
Wyoming	14040107	Lake Viva Naughton	7300	41.96	-110.66	2200	0.6	38.54	14
Wyoming	14040107	Lower Snake Draw Reservoir		41.61	-109.82	1139	0.6	45.19	14
Wyoming	14040107	Paterson Lake (Rollins)	6900	41.35	-110.31	200	0.6	41.02	9
Wyoming	14040107	Philip	7900	42.06	-110.61	5	0.6	38.51	9
Wyoming	14040107	Powers Stock		41.41	-110.26	42	0.6	41.82	14
Wyoming	14040107	Reed	7400	41.15	-110.23	104	0.6	38.12	10
Wyoming	14040107	Tipperary (Murray)	8200	41.10	-110.40	27	0.6	36.48	14
Wyoming	14040107	Wall Development Company Dam	7200	41.34	-110.39	112	0.6	40.26	10
Wyoming	14040107	Wasatch (Ringdahl)	7800	41.15	-109.96	16	0.6	40.68	14
Wyoming	14040108	Broadbent No.2	7500	41.34	-110.75	16	0.6	38.11	14
Wyoming	14040108	Byrne2	8400	41.15	-110.68	24	0.6	36.04	14
Wyoming	14040108	Davis No.2	8000	41.39	-110.63	25	0.6	39.2	14
Wyoming	14040108	Guild	7500	41.16	-110.67	42	0.6	36.17	14

State	HUC8	Site Name	Elevation [feet]	Latitude [dd]	Longitude [dd]	Surface Area [acres]	Fullness Factor [%]	Free Water Surface Annual Evaporation [inches/year]	Potential Pre-Reservoir Evaporation Rate (Salvage) [inches/year]
Wyoming	14040108	Guild & Dean	7400	41.21	-110.63	89	0.6	37.03	14
Wyoming	14040108	Moslander	8000	41.09	-110.72	26	0.6	35.17	14
Wyoming	14040108	Piedmont	7400	41.18	-110.65	55	0.6	36.58	14
Wyoming	14040108	Skull Point		41.68	-110.62	5	0.6	39.04	14
Wyoming	14040108	Vacher (Vantassel)	9000	41.02	-110.63	4	0.6	35	13
Wyoming	14040109	Cow Creek (1987)		41.15	-108.41	93	0.6	43.18	14
Wyoming	14050003	Beavers	7800	41.18	-107.47	27	0.6	42.24	14
Wyoming	14050003	Highline	7100	41.04	-107.32	45	0.6	40.83	14
Wyoming	14050003	Sheep Mountain	7200	41.02	-107.17	35	0.6	40	14
Wyoming	14050004	J. O.	7200	41.40	-107.53	11	0.6	43.69	14
Wyoming	14050004	Little Robber	6560	41.19	-107.72	34	0.6	43.63	15

7.3.3. Map of salvage values for major (method2) and minor reservoirs



7.4. Thermal Electric Power

7.4.1. Summary table of thermal power plants

State	HUC8	Site Name	Latitude [dd]	Longitude [dd]	Operational Status	Latest Data Source
Arizona	14070006	Navajo Generating Station	36.9	-111.39	Retired in 2019	Letter from Salt River Project
Colorado	14010005	Cameo	39.15	-108.32	Retired in 2010	Do not have source information
Colorado	14030003	Nucla	38.24	-108.51	Retired in 2019	https://dwr.state.co.us/Tools/Structures/6000723, https://dwr.state.co.us/Tools/Structures/6000828
Colorado	14050001	Craig	40.46	-107.59	Operational	https://dwr.state.co.us/Tools/Structures/4400522
Colorado	14050001	Hayden	40.49	-107.19	Operational	https://dwr.state.co.us/Tools/Structures/5700512
New Mexico	14080104	Four Corners	36.69	-108.48	Operational	Reported by NM
New Mexico	14080105	San Juan	36.8	-108.44	Retired in 2022	Reported by NM
Utah	14050007	Bonanza	40.45	-109.54	Operational	https://www.waterrights.utah.gov/asp_apps/viewEditIND/indView.asp?SYSTEM_ID=2710
Utah	14060007	Carbon	39.73	-110.86	Retired in 2015	https://waterrights.utah.gov/asp_apps/viewEditIND/indView.asp?SYSTEM_ID=2721
Utah	14060009	Hunter	39.17	-111.03	Operational	https://waterrights.utah.gov/asp_apps/viewEditIND/indView.asp?SYSTEM_ID=2720
Utah	14060009	Huntington	39.38	-111.08	Operational	https://waterrights.utah.gov/asp_apps/viewEditIND/indView.asp?SYSTEM_ID=11095
Wyoming	14040105	Jim Bridger	41.74	-108.79	Operational	Reported by WY SEO
Wyoming	14040107	Naughton	41.76	-110.6	Operational	Reported by WY SEO

7.5. Transbasin Diversion

7.5.1. Summary table of transbasin diversion exports to basins outside the Colorado River System

State	HUC8	Site Name	CWCB Station no.	CWCB structure no.	USGS gauge no.	Operational Status	Latest Data Source	Source Type
Colorado	14010001	Alva B. Adams Tunnel	ADANETCO	04 4634	9013000	Operational	ADANETCO	State
Colorado	14010001	Berthoud Pass Ditch (Berthoud Canal Tunnel)	BERDITCO	51 4625	9021500	Operational	BERDITCO	State
Colorado	14010001	Grand River Ditch	GRNDRDCO	03 4601	9010000	Operational	GRNDRDCO	State
Colorado	14010001	Gumlick/Jones Pass Tunnel	GUMCLRCO	70 4650	NA	Operational	704650	State

State	HUC8	Site Name	CWCB Station no.	CWCB structure no.	USGS gauge no.	Operational Status	Latest Data Source	Source Type
Colorado	14010001	Moffat Water Tunnel	MOFTUNCO	06 4655	9022500	Operational	MOFTUNCO	State
Colorado	14010002	Boreas Pass Ditch	BORDITCO	07 4611	9046000	Operational	BORDITCO	State
Colorado	14010002	Harold Roberts Tunnel (Blue River Diversion Project)	ROBTUNCO	80 0653	9050590	Operational	ROBTUNCO	State
Colorado	14010002	Hoosier Pass Tunnel	HSPTUNCO	23 4612	9042000	Operational	HSPTUNCO	State
Colorado	14010002	Straight Creek Tunnel	STCTUNCO	07 4682	NA	Operational	STCTUNCO	State
Colorado	14010002	Vidler Tunnel	VIDTUNCO	36 4656	9047300	Operational	VIDTUNCO	State
Colorado	14010003	Columbine Ditch	COLDITCO	11 4616	9061500	Operational	COLDITCO	State
Colorado	14010003	Ewing Ditch	EWIDITCO	11 0500	9062000	Operational	EWIDITCO	State
Colorado	14010003	Homestake Tunnel	HOMTUNCO	11 4613 & 4614	9063700	Operational	HOMTUNCO	State
Colorado	14010003	Larkspur Ditch	LARDITCO	28 4655	9115000	Operational	LARDITCO	State
Colorado	14010003	Wurtz Ditch	WURDITCO	11 0501	9062500	Operational	WURDITCO	State
Colorado	14010004	Busk-Ivanhoe	BUSTUNCO	11 4612	9077500	Operational	BUSTUNCO	State
Colorado	14010004	Charles H. Bousted	BOUTUNCO	11 4615	9077160	Operational	BOUTUNCO	State
Colorado	14010004	Twin Lakes Tunnel	TWITUNCO	11 4617	9073000	Operational	TWITUNCO	State
Colorado	14020002	Tabor Ditch	TABDITCO	20 0920	9121000	Operational	TABDITCO	State
Colorado	14020003	Tarbell Ditch	TARBELCO	26 0702	9118200	Operational	TARBELCO	State
Colorado	14080101	Pine River - Weminuche Ditch (Fuchs Ditch)	PRWDITCO	20 0919	9351000	Operational	PRWDITCO	State
Colorado	14080101	Treasure Pass Ditch	TREDITCO	20 0921	9341000	Operational	TREDITCO	State
Colorado	14080101	Weminuche Pass Ditch (Raber-Lohr Ditch)	WEMDITCO	20 0922	9351500	Operational	WEMDITCO	State
Colorado	14080102	Don LaFont Ditch	DLFCMBCO	78 4670 & 4671	9347000 (Ditch 2 only)	Operational	2000917 and 2000918 (structures) for as far back as possible, DLFDT1CO + DLFDT2CO (stations) for before then	State
Colorado	14080102	Williams Cr Sq Pass Divr	WCSDITCO	20 0923	9348000	Operational	WCSDITCO	State
New Mexico	14080101	Azotea Tunnel	NA	NA	8284160	Operational	Composite: Oso: OSODIVCO Little Oso: LOSODVCO Blanco: BLADIVCO	State
Utah	14060003	Duchesne Tunnel	NA	NA	9272500	Operational	PRWCD	Non-state

State	HUC8	Site Name	CWCB Station no.	CWCB structure no.	USGS gauge no.	Operational Status	Latest Data Source	Source Type
Utah	14060004	Hobble Creek Ditch	NA	NA	9281500	Out of Service	Out of Service	No Longer Collected
Utah	14060004	Strawberry - Willow Cr	NA	NA	9280000	Out of Service	Out of Service	No Longer Collected
Utah	14060004	Strawberry Tunnel	NA	NA	9282000	Out of Service	Out of Service	No Longer Collected
Utah	14060004	Syar Tunnel (CUP)	NA	NA	10149000	Operational	CUWCD	Non-state
Utah	14060004	Syar Tunnel (SWU)	NA	NA	NA	Operational	CUWCD	Non-state
Utah	14060007	Fairview Tunnel	NA	NA	9309600	Operational	Fairview Tunnel Near Fairview, UT - 09309600	USGS
Utah	14060007	Lucy Fork	NA	NA	NA	Operational	Estimated data, awaiting documentation from UCRC	Estimated
Utah	14060007	Twin Creek Tunnel	NA	NA	9321500	Operational	Estimated data, formal collection ended in 1959.	Estimated
Utah	14060009	Black Canyon Ditch	NA	NA	9322000	Operational	Estimated data, formal collection ended in 1959.	Estimated
Utah	14060009	Candland Ditch	NA	NA	9317500	Operational	Estimated data, formal collection ended in 1959.	Estimated
Utah	14060009	Cedar Creek Tunnel	NA	NA	9322500	Operational	Estimated data, formal collection ended in 1959.	Estimated
Utah	14060009	Coal Fork Ditch	NA	NA	9321000	Operational	Estimated data, formal collection ended in 1959.	Estimated
Utah	14060009	Ephraim Tunnel	NA	NA	9319000	Operational	Ephraim Tunnel Near Ephraim, UT - 09319000	USGS
Utah	14060009	Horseshoe Tunnel	NA	NA	9320000	Operational	Estimated data, formal collection ended in 1959.	Estimated
Utah	14060009	John August Ditch	NA	NA	9325500	Operational	Estimated data, formal collection ended in 1959.	Estimated
Utah	14060009	Larsen Tunnel	NA	NA	9320500	Operational	Estimated data, formal collection ended in 1959.	Estimated
Utah	14060009	Madsen Ditch	NA	NA	9326000	Operational	Estimated data, formal collection ended in 1959.	Estimated
Utah	14060009	Reeder Ditch	NA	NA	9323500	Operational	Estimated data, formal collection ended in 1959.	Estimated
Utah	14060009	Spring City Tunnel	NA	NA	9323000	Operational	Horseshoe Irrigation District via UCRC	Non-state
Wyoming	14040104	Continental Divide	NA	NA	NA	Operational	Estimated data, formal collection ended in 1959.	Estimated
Wyoming	14040107	Broadbent Suppy Ditch	NA	NA	NA	Operational	Charlie Ferrantelli - charlie.ferrantelli@wyo.gov	State

State	HUC8	Site Name	CWCB Station no.	CWCB structure no.	USGS gauge no.	Operational Status	Latest Data Source	Source Type
Wyoming	14050003	Hog Park/City of Cheyenne Diversion	NA	NA	NA	Operational	Charlie Ferrantelli - charlie.ferrantelli@wyo.gov	State
Wyoming	14050003	Ranger Ditch	NA	NA	NA	Operational	Estimated data, formal collection ended in 1959.	Estimated

7.5.2. Summary table of transbasin diversion exports between basins in the Colorado River System

State	HUC8	Site Name	CWCB Station no.	CWCB structure no.	USGS gauge no.	Operational Status	Latest Data Source	Source Type
Colorado	14030002	Dolores Tunnel	DOLTUNCO	32 4675 (pre1986 71 4673)	NA	Operational	7104675	State
Colorado	14030002	Dove Canal	NA	32 2006	NA	Operational	3202006	State
Colorado	14030002	Great Cut Dike	NA	71 4676 (pre1986 32 4676)	NA	Operational	7104676	State
Colorado	14030002	Summit Ditch	NA	71 0609	NA	Operational	7100609	State
Colorado	14030002	Turkey Creek Ditch	NA	71 0618	NA	Operational	7100618	State
Colorado	14050001	Dome Creek Ditch	NA	53 4716	NA	Operational	5304716	State
Colorado	14050001	Sarvis Ditch	NA	58 4684	NA	Operational	5804684	State
Colorado	14050001	Stillwater Ditch	NA	53 4715	NA	Operational	5304715	State
Colorado	14080104	Carbon Lake Ditch	NA	30 4660	NA	Out of Service	Out of Service	NA
Colorado	14080104	Mineral Point Ditch	NA	30 4661	NA	Operational	3004661	State
Colorado	14080104	Red Mountain Ditch	NA	30 4662	NA	Operational	3004662	State

7.5.3. Summary table of transbasin diversion imports

State	HUC8	Site Name	Operational Status	Latest Data Source	Source Type
Colorado	14010001	Dome Creek Ditch	Operational	5304716	State
Colorado	14010001	Sarvis Ditch	Operational	5804684	State
Colorado	14010001	Stillwater Ditch	Operational	5304715	State
Colorado	14020006	Carbon Lake Ditch	Out of Service	Out of Service	No Longer Collected
Colorado	14020006	Mineral Point Ditch	Operational	3004661	State
Colorado	14020006	Red Mountain Ditch	Operational	3004662	State
Colorado	14080202	Dolores Tunnel	Operational	7104675	State
Colorado	14080202	Dove Canal	Operational	3202006	State
Colorado	14080202	Great Cut Dike	Operational	7104676	State
Colorado	14080202	Summit Ditch	Operational	7100609	State
Colorado	14080202	Turkey Creek Ditch	Operational	7100618	State
Utah	14070007	Tropic & East Fork Canal[1]	Operational	Estimated	Estimated

[1] Tropic & East Fork Canal is the only diversion that imports water from outside the Colorado River System. All other diversions import water from basins within the Colorado River System.