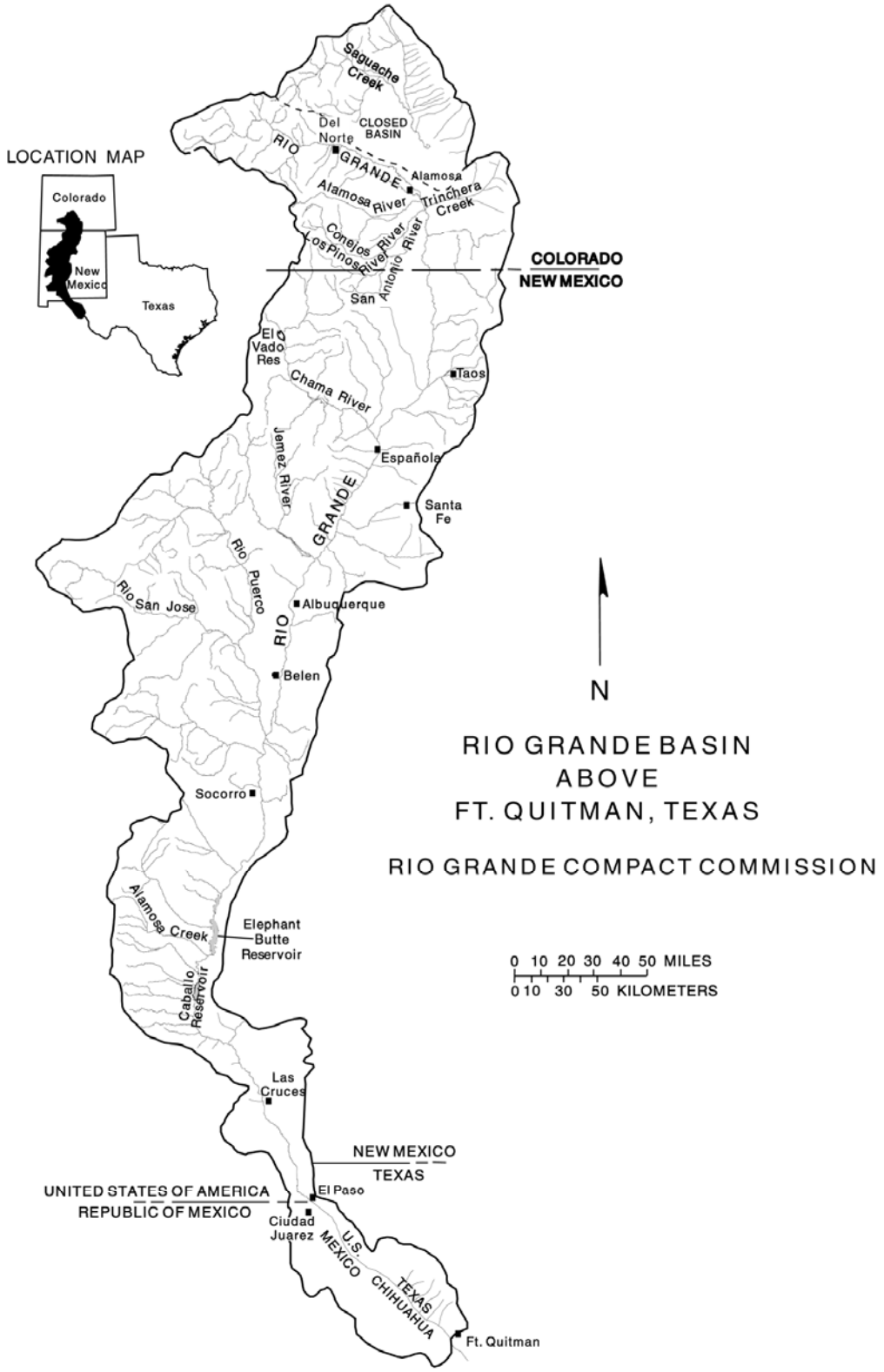
REPORT

of the

RIO GRANDE COMPACT COMMISSION

FOR CALENDAR YEAR 2023

TO THE GOVERNORS OF
Colorado, New Mexico and Texas


LOCATION MAP
Colorado
New Mexico
Texas
Saguache Creek
Del Norte
CLOSED BASIN
RIO GRANDE
Alamosa
Alamosa River
Trinchera Creek
Conejos River
Los Pinos River
San Antonio River
COLORADO
NEW MEXICO
El Vado Res
Chama River
Taos
Jemez River
Española
RIO GRANDE
Santa Fe
Rio Puerco
Rio San Jose
Albuquerque
RIO
Belen
N
RIO GRANDE BASIN
ABOVE
FT. QUITMAN, TEXAS
RIO GRANDE COMPACT COMMISSION
Socorro
Alamosa Creek
Elephant Butte Reservoir
Caballo Reservoir
0 10 20 30 40 50 MILES
0 10 30 50 KILOMETERS
Las Cruces
NEW MEXICO
TEXAS
UNITED STATES OF AMERICA
REPUBLIC OF MEXICO
El Paso
Ciudad Juarez
U.S.
MEXICO
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CHIHUAHUA
Ft. Quitman

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RIO GRANDE COMPACT COMMISSION

COLORADO NEW MEXICO TEXAS

April 26, 2024

The Honorable Greg Abbott
Governor of the State of Texas
Austin, Texas

The Honorable Jared Polis
Governor of the State of Colorado
Denver, Colorado

The Honorable Michelle Lujan Grisham
Governor of the State of New Mexico
Santa Fe, New Mexico

Honorable Governors:

The 85th Annual Meeting of the Rio Grande Compact Commission was held in El Paso, Texas on April 26, 2024. The meeting was held to discuss Rio Grande Compact issues such as compact accounting and administration. Public comment was also received by the Commission.

The Commission reviewed the cost of operation and found that the expenses for the administration of the Rio Grande Compact were $235,187 in the fiscal year ending June 30, 2023. The United States bore $73,468 of this total; the balance of $161,719 was borne equally by the three States party to the Compact.

Upon printing, the Report of the Rio Grande Compact Commission for calendar year 2023 will be provided under separate cover.

Respectfully,

Robert S. Skov, Commissioner for Texas

Jason T. Ullmann, P.E., Commissioner for Colorado

Mike A. Hamman, P.E., Commissioner for New Mexico

REPORT OF THE ENGINEER ADVISERS
TO THE RIO GRANDE COMPACT COMMISSION
FOR CALENDAR YEAR 2023
April 1, 2024

The Engineer Advisers to the Rio Grande Compact Commission met in person from February 26 to March 1, 2024, to:

- Receive reports;
- Prepare the 2023 Compact water accounting;
- Discuss continuing and new issues in preparation for the 2024 annual meeting of the Rio Grande Compact Commission (Commission); and
- Prepare the Engineer Advisers' report.

The Engineer Advisers received the participation of the U.S. Geological Survey (USGS), the U.S. Bureau of Reclamation (Reclamation), the U.S. Army Corps of Engineers (Corps), the U.S. Bureau of Indian Affairs (BIA), the International Boundary and Water Commission (IBWC), and the U.S. Fish and Wildlife Service (Service) at the meetings. The agencies each presented information about their specific water-related activities in the basin during calendar year 2023.

2023 COMPACT ACCOUNTING

The Engineer Advisers reviewed the streamflow and reservoir storage records and other pertinent data for the Upper Rio Grande Basin during calendar year 2023 and reached a consensus on the accounting. As determined by the Engineer Advisers, scheduled and actual deliveries, release of Usable Water for the year 2023, and balances as of January 1, 2024, are as follows:

(a) Deliveries by Colorado at the State Line:	
Balance as of January 1, 2023	200 acre-feet
Scheduled delivery from Conejos River	199,000 acre-feet
Scheduled delivery from Rio Grande	207,300 acre-feet
Actual delivery at Lobatos plus 10,000 acre-feet	405,000 acre-feet
Accrued balance (debit) January 1, 2024	-1,100 acre-feet
(b) Deliveries by New Mexico at Elephant Butte Dam:	
Balance as of January 1, 2023	-93,000 acre-feet
Scheduled delivery	774,900 acre-feet
Actual delivery	745,700 acre-feet
Accrued balance (debit) January 1, 2024	-121,500 acre-feet
(c) Project Storage and Releases:	
Accrued departure (credit) as of January 1, 2023	2,915,800 acre-feet
Actual release of Usable Water	549,200 acre-feet
Normal release for year	790,000 acre-feet
Under Release in excess of 150,000 acre-feet	90,800 acre-feet
Accrued departure (credit) as of January 1, 2024	3,065,800 acre-feet

For calendar year 2023, New Mexico carried an Accrued Debit of 93,000 acre-feet. Article VI of the Rio Grande Compact states in part that, "Within the physical limitations of storage capacity of such reservoirs, New Mexico shall retain water in storage at all times to the extent of its accrued debit." During construction activities at El Vado Reservoir (El Vado), the NMISC was asked to retain 2,500 acre-feet of debit water in El Vado to maintain a minimum pool. Compact debit water was retained beginning June 1, was evacuated by November 13, and incurred 692 acre-feet of net evaporative losses.

The Engineer Advisers jointly prepared the Compact accounting based on information provided and presented by state and federal agencies, which is the best available information at the time of report preparation. The Engineer Advisers' report is considered final upon signature by the three Engineer Advisers.

RIO GRANDE BASIN CONDITIONS

After a slow start, the snowpack and snow-water equivalent (SWE) amounts for most of the headwater areas in both Colorado and New Mexico peaked at above their average maximum values. This resulted in significantly above-average streamflows during the spring and early summer. Below-average precipitation during the summer months, as well as hot and windy conditions, caused the late summer streamflows to drop to below-normal levels. However, the total annual streamflow amounts in most areas remained above the long-term average.

Due to the high snowpack, Platoro Reservoir almost completely filled to the flood pool elevation in late June, which has not happened in many years.

Usable Water in Rio Grande Project (Project) Storage was below the Article VII trigger of 400,000 acre-feet from January 1 to April 14, 2023. Usable Water was above the Article VII trigger from April 15 to September 7, 2023. Usable Water then fell below the Article VII trigger from September 8 until December 9, 2023. Article VII restrictions were not in effect for the remainder of the calendar year.

CONTINUING ISSUES

This section of the report summarizes new information about issues previously addressed by the Engineer Advisers. It reflects information obtained by the Engineer Advisers prior to the writing of the Engineer Advisers' report, including information obtained from the reports of the federal agencies at the 2023 Engineer Advisers' meetings or otherwise reported. The terms "reported" and "indicated" herein reflect information provided by various entities without analysis or approval by the Engineer Advisers.

Middle Rio Grande Endangered Species Collaborative Program

The Middle Rio Grande Endangered Species Collaborative Program (Collaborative Program) was authorized by the Omnibus Appropriations Act of 2009 (P.L. 111-8). The Collaborative Program continues to seek innovative and collaborative ways to support Endangered Species Act (ESA) compliance for listed species while protecting water uses in the Middle Rio Grande (MRG). Reclamation reported that their federal appropriations in the

federal fiscal year (FY) 2023 were $3 million for Collaborative Program activities. Reclamation's FY 2023 funding was spent on projects such as captive propagation of Rio Grande silvery minnow (RGSM), annual monitoring of endangered species, ongoing genetic studies of RGSM, and RGSM rescue and salvage efforts. The Corps reported its FY 2023 collaborative program budget was $1.98 million, which funded water quality and ecosystem projects, monitoring and adaptive management projects, and program management projects.

WildEarth Guardian's Litigation over the 2016 Biological Opinion

On November 30, 2022, WildEarth Guardians filed a lawsuit in U.S. District Court against the Service and Reclamation regarding the 2016 Middle Rio Grande Biological Opinion (2016 BO). The lawsuit claims that the 2016 BO is invalid under the ESA and arbitrary under the Administrative Procedure Act. Numerous stays have been granted for ongoing settlement negotiations. The most recent stay of the lawsuit is granted until March 15, 2024.

Upper Rio Grande Water Operations Model

The Upper Rio Grande Water Operations Model (URGWOM) is a computational model developed through an interagency effort led by the Corps, Reclamation, and the New Mexico Interstate Stream Commission (NMISC). The effort includes regular meetings to discuss modeling outputs for daily water operations and accounting procedures. The Corps reported that during 2023, URGWOM activities included:

- Updating the basin-wide annual operating plan (AOP) in collaboration with USBR and NMISC;
- Updating the database to include data for years up to 2022;
- Developing, calibrating, and implementing aquifer objects into the model;
- Updating the Five-Year Plan;
- Developing/updating the URGWOM documentation;
- Developing a script for modeling Realtime Forecast using National Weather Service (NWS) forecast data (10-Day Forecast); and
- Adding a web map as a base map in the model.

Key objectives for 2024 include:

- Continuing to update the database with available data through 2023;
- Refinement of rulesets/methods for physical and accounting models;
- Script and windowing enhancements (including reservoir operations scripts) and web- map views;
- Updates to master documentation; and
- Investigations into using the NWS' Ensemble Streamflow Prediction (ESP) traces and snowmelt forecasts for AOP forecasting and the Short-term forecast products (10-day forecasts) for real-time modeling.

Compliance by Federal and State Agencies with State Water Law

The NMISC continues to track habitat restoration projects implemented by various federal and state agencies, and to account and report on related depletions in the MRG. The agency coordinates with the New Mexico Office of the State Engineer (NMOSE) to determine if a permit is needed and to ensure any new depletions are offset by the projects' sponsors. The NMISC reported that it continues to coordinate with the Corps on several habitat restoration projects to ensure that those depletions are offset. The NMISC also coordinates with Reclamation in using the State's Strategic Water Reserve for ESA-related water management, including offsetting depletions associated with habitat restoration and river augmentation activities. Above-average snowmelt runoff in 2023 resulted in approximately 250 acre-feet of depletions for habitat restoration projects in the MRG that were offset by New Mexico's Strategic Water Reserve.

Elephant Butte Delta Channel Project

During the 2023 snowmelt runoff, flows in the Elephant Butte Delta Channel (Delta Channel) exceeded the design capacity, resulting in overbanking and erosion of spoil berms. Several breaches in the project spoil berms occurred during the snowmelt runoff and a significant plug formed when the runoff receded. Due to the expected release of flood water from Abiquiu Reservoir in the fall, Reclamation's construction crews provided rapid response to remove the 1.2-mile-long sediment plug, as well as engineering services, environmental compliance, and construction inspection as needed.

Beginning in September of 2023, the NMISC construction contractor conducted regular maintenance on the Delta Channel including five breach repairs, road and berm maintenance, assisting with the sediment plug removal, in-channel debris removal, and island and bar removal. The above-average flows that occurred both during spring runoff and in the fall of 2023 required maintenance activities in the Delta Channel to continue through the end of the calendar year. New Mexico continues to fund construction and maintenance of the Delta Channel and partners with Reclamation, which provides engineering support, environmental compliance, access-road work, and primary maintenance for the project.

Relinquishment Update

The total amount of Accrued Credit relinquished by Colorado since 2013 is 3,000 acre- feet. Colorado did not store any relinquishment credit water in 2023. Between 2013 and 2023, Colorado stored a total of 2,885 acre-feet of relinquishment credit water in Platoro Reservoir, which leaves a balance of 115 acre-feet in Colorado's relinquishment account.

The total amount of Accrued Credit relinquished by New Mexico since 2003 is 380,500 acre-feet. The total amount of relinquishment credit water stored in New Mexico reservoirs during the 2023 calendar year was 1,921 acre-feet. Relinquishment credit water storage to date totals 290,649 acre-feet, leaving a balance of 89,851 acre-feet available to be stored in future years when Article VII storage restrictions are in effect.

Gaging Station and Reservoir Stage Review

The Colorado USGS reviewed the Colorado Division of Water Resources (CDWR) gaging station records for the seven Colorado Compact gages and approved the records for 2023.

For the Compact gages in New Mexico, the USGS reported the following:

- The USGS made a total of 13 measurements at the Rio Grande near Otowi streamflow gage (#08313000) in 2023.
- The USGS made a total of 17 measurements at the Rio Grande below Elephant Butte streamflow gage (#08361000). Aquatic vegetation growth on the streambed at the USGS gaging station section continues to cause a low bias in gaged flow

during certain months, with the shift getting as large as -1.65 feet. For this reason, most measurements were made just below the dam in 2023. USGS also reported that the lower bubbler sensor was replaced due to a malfunction.

Reclamation reported that they reviewed their own streamflow record for the Rio Grande Below Caballo streamflow gage (#08362500) for 2023. Reclamation stated that the reason for this change from having the USGS conduct the review was that the Las Cruces office of the USGS did not have the resources to do the review, and the belief by Reclamation that they had sufficient in-house expertise to do the review. Reclamation did not solicit guidance from the Engineer Advisers prior to making this decision, nor did they reach out to other USGS offices to see if those offices could review the streamflow record.

The Engineer Advisers reviewed the Rules and Regulations for the Administration of the Rio Grande Compact for guidance as to the required method of review of Compact gaging station records. The Rules and Regulations state that "The stream flow records for each compact stream gaging station shall be reviewed annually by the U.S. Geological Survey to ensure accuracy." Therefore, the internal review by Reclamation of its own streamflow record does not meet the requirements of the Commission, nor does it provide the needed level of assurance that the record meets the required accuracy standards.

After discussion of this issue, the Engineer Advisers decided to go forward with the use of the Below Caballo gaging station streamflow record for the 2023 calendar year, as submitted by Reclamation. However, for future years this record must be reviewed by the USGS in order to ensure accuracy and to comply with the Compact Rules and Regulations.

The NMISC continued its survey of water-level elevations in Elephant Butte and Caballo reservoirs. NMISC's surveyor performed surveys alongside Reclamation staff in June 2023 and December 2023. Results from both NMISC surveys indicated that Reclamation's reservoir stage elevations were within the agreed-upon threshold criteria of 0.05 feet difference between the surveyed elevation and the stage-discharge recorder (SDR). Reclamation performed routine stage elevation surveys throughout 2023 and adjusted the SDR as needed if the threshold criteria was exceeded. At the end of October, Reclamation noticed some discrepancies in the reported Elephant Butte Reservoir elevation. Field surveys found that the SDR was reading about 0.05 feet less than the surveyed water surface

elevation. Staff at Elephant Butte flushed the stilling well on November 8, 2023, resurveyed, and found that the SDR was within the 0.05-foot threshold criteria.

In 2023, Reclamation continued to measure Elephant Butte Reservoir elevations via the SDR and a bubbler. The bubbler, which is maintained in conjunction with the USGS, shows more scatter, but in general, it more accurately reflects observed elevation when the reservoir is low. NMISC and Reclamation will continue to perform side-by-side surveys at select times during 2024 to ensure the accuracy of the reservoir elevation data.

Gaging Station Costs

The Engineer Advisers and Compact Commissioners continue to express concern, as they have in past years, over the large differences in costs between what Reclamation charges to operate the gage below Caballo Reservoir, as compared to what CDWR and USGS charge for other Compact gages. The three Compact states split the costs of their operations in support of the Compact equally, including operation and maintenance of the Compact gaging stations. Therefore, this high cost from Reclamation affects all three states.

At last year's Commission meeting, the Commissioners directed the Engineer Advisers to investigate the costs submitted by Reclamation for the annual operation and maintenance of the Rio Grande Below Caballo Reservoir gaging station, and whether a different method can or should be used to determine the cost for this gage.

During the Engineer Advisers' meeting, the Engineer Advisers reviewed the past and current charges for the operation and maintenance of the Below Caballo gaging station and discussed this issue with Reclamation. The Engineer Advisers found that the average cost submitted for Compact purposes over the last five years for the operation of this gage was much in excess of the cost charged by either the USGS or the CDWR, with the average charge being 190% of the USGS cost per gage.

Reclamation stated that it was difficult to predict an accurate budget amount because the charge was based upon the number of measurements needed at the gage in a specific year. This difficulty is evidenced by the fact that the actual charges are sometimes much different than the budgeted charges submitted to the Commission.

The Engineer Advisers evaluated alternative methods of determining the cost to be submitted to the Commission for this gage. It was ultimately decided that the Engineer Advisers would use the proposed charge submitted by Reclamation for the fiscal year 2025 budget. This was due mainly to the fact that there will likely be significant changes to the budget in the near future if the Consent Decree is put into place and the El Paso gage is used for Compact purposes. Additional changes to the charges for the Below Caballo gage may be evaluated in the future as part of that larger budget change.

Colorado Groundwater Regulations

The Colorado State Engineer's Rules and Regulations concerning the use of groundwater in the Upper Rio Grande Basin in Colorado went into effect in 2021. As an integral part of these rules, the Rio Grande Decision Support System Model (RGDSS) has been developed, and Phase 7 of that model is nearing completion. This model captures the interaction between surface and groundwater, showing the effect that wells have on senior surface water rights, and is used in the development of response functions for groundwater depletions. Owners of non-exempt wells are required to mitigate those injurious depletions and regulate the use of the confined and unconfined aquifers to maintain a sustainable water supply in each aquifer system. Currently, there are seven groundwater user subdistricts and multiple individual augmentation plans that have been developed as a way for the well owners to comply with the rules. Difficulty meeting the aquifer sustainability requirements in Subdistrict No. 1 led to the development of a new Plan of Water Management (PWM) for that subdistrict. Subdistrict No. 1's new PWM was approved by the Colorado State Engineer in early 2023, but several water user groups objected to that PWM in Water Court. A five-week trial on this PWM is set to begin in January 2025. An individual Plan of Augmentation for the Sustainable Water Augmentation Group (SWAG) has been modified from its first unsuccessful attempt, has received protests by several different water user groups, and is awaiting a trial date.

Aamodt Settlement and Pojoaque Basin Regional Water System

The Aamodt Water Rights Settlement Agreement (Aamodt Settlement) was developed through multi-party negotiations, which began in 2000 between the Pueblos of

Nambé, Pojoaque, Tesuque and San Ildefonso, the State of New Mexico, the United States of America, City of Santa Fe, Santa Fe County, and representatives of non-Pueblo water users, to settle the Pueblos' water right claims in the Pojoaque Basin. The Aamodt Settlement provides for the funding and construction of the Pojoaque Basin Regional Water System to supply treated water to Pueblo and non-Pueblo parties. As expressly stated in the Aamodt Settlement, "Nothing in this agreement shall be construed to limit the authority of the State Engineer to…ensure compliance with the Rio Grande Compact," (Section 6.6.1.6). The Engineer Advisers will continue to evaluate the project as it moves forward, including evaluating potential impacts to the Otowi Index Supply.

Phase 1 of construction started in 2020 and continued through 2023 with work at the intake structure and at the Water Treatment Plant (WTP). In 2024, the schedule includes continuing work at the intake and WTP and expanding to other tank sites and transmission pipelines. Designs for Phase 2 were completed in 2023 and prepared for bidding.

Reclamation's Lower San Acacia Reach Improvements Project

Reclamation reported on their Lower San Acacia Reach Improvements Project (LSARI), which focuses on evaluation of river management options for the lower section of the San Acacia Reach, from Highway 380 bridge to the Elephant Butte Reservoir 'Narrows' area. Deliveries of water and transport of sediment through this area have been historically difficult and costly to address. As delivery efficiencies continue to decline, Reclamation has renewed evaluation of engineering options for this river section. Since 2021, Reclamation has initiated a Value Planning Study, begun an Environmental Impact Statement (EIS) and feasibility study, issued a Notice of Intent (NOI), and conducted public scoping meetings. The draft EIS is expected to be available for review in 2024. By 2026 Reclamation expects to begin phased construction.

The EIS will evaluate two alternatives involving conversion from a two-channel system, consisting of the river channel and Low Flow Conveyance Channel (LFCC), to a single channel.

YEAR 2023 OPERATIONS

Closed Basin Project

The total production of the Closed Basin Project in calendar year 2023 was 10,990 acre- feet. This total includes water that was exchanged for Colorado Parks and Wildlife water to be delivered to the Blanca Wildlife Habitat Area, the Alamosa National Wildlife Refuge, and the San Luis Lakes State Wildlife Area. The amount creditable for Compact purposes from direct delivery and exchange was 7,602 acre-feet. The remainder of the water was delivered to various federal lands along the project to be used as mitigation for the project footprint. All of the water delivered to the Rio Grande in 2023 was of sufficient quality to qualify for credit under the Compact.

The Closed Basin Operating Committee continues to monitor groundwater levels and groundwater production and to adjust project operations pursuant to the enabling legislation.

Reclamation's Middle Rio Grande Supplemental Water Program

Reclamation's supplemental water program is intended to provide additional water, primarily obtained through the voluntary leasing of San Juan Chama Project (SJCP) water, for endangered species' needs and compliance with the 2016 BO. The program originally included water acquisition, reservoir storage, and release of water to support river flows. From 2001 to 2020, it also included operation of a pumping network in the San Acacia Reach to pump water from the LFCC to the river.

In 2023, a total of 14,787 acre-feet of supplemental water was released for endangered species purposes. Of that volume, 5,227 acre-feet was water that Reclamation leased from 2022 SJCP contractor allocations, and 9,560 acre-feet came from 2023 leases. Reclamation reported that the release of supplemental water began on July 13 and continued through October 30.

Reclamation ended 2023 with 2,346 acre-feet of supplemental water in storage: 1,331 acre-feet of water in Heron Reservoir and 1,015 acre-feet of water in Abiquiu Reservoir, all leased from 2023 SJCP contractor allocations. Reclamation is negotiating leases of up to 12,000 acre-feet from SJCP contractor allocations for 2024.

In addition to the water released by Reclamation, four other sources of water were reportedly used to support ESA needs, including New Mexico's Strategic Water Reserve, SJCP water leased by Audubon New Mexico, a May 2019 Settlement and Cooperative Water Agreement, MRGCD's Environmental Water Leasing Program, which is a fallowing program funded by Reclamation.

The Neil Cupp pumping site, now owned and operated by MRGCD, pumped a total of 262 acre-feet to the river in 2023 to maintain river connectivity.

Six Middle Rio Grande Pueblos Prior and Paramount Operations

In 2022, the Commission agreed to allow the Corps to store up to 20,000 acre-feet in Abiquiu Reservoir for Prior and Paramount (P&P) operations due to the repair operations at El Vado Dam. The agreement will be in effect through December 2024.

P&P storage began on January 1, 2023. A total of 14,500 acre-feet of native Rio Grande water was stored in Abiquiu Reservoir for the P&P operations. The irrigation season for the Six Middle Rio Grande Pueblos was defined as March 1 through November 15 based on the updated Operations and Maintenance Agreement between BIA and MRGCD, which was signed on October 26, 2023.

Due to sufficient spring runoff, none of the water stored for P&P operations in 2023 was released for irrigation purposes. The P&P water stored in Abiquiu Reservoir incurred 1,066 acre-feet of evaporative losses, and the remaining 13,434 acre-feet was released downstream by the Corps to Elephant Butte Reservoir from November 1 through 15, 2023.

The required amount of P&P storage is determined by the BIA each year between March and early May. The final P&P storage amount will be the lesser of the calculated May 1 forecast or the Abiquiu 20,000 acre-feet limit. For the 2024 P&P operations, storage began January 1, and as of February 21, 2024, a total of 5,318 acre-feet of native Rio Grande water had been stored in Abiquiu Reservoir. Compact Article VII restrictions were not in place during this time.

The BIA provides funding to the Pueblos to upgrade their irrigation systems. The BIA also provides funds to the MRGCD to perform maintenance work on the systems which serve

Pueblo lands. Examples include improvements to enable the Pueblos to irrigate one acre per hour, to schedule irrigation, and to coordinate with Pueblo farmers for delivery of an adequate water supply.

2023 Rio Chama Water Supply Conditions

Snowpack conditions in the Rio Chama basin were well above average during the late winter and spring of 2023. The March through July native inflow into El Vado Reservoir was 328,595 acre-feet, or approximately 177% of the 30-year median.

From July 2023 to August 2023, flows were sufficient to meet the direct flow irrigation needs of the Rio Chama Acequia Association (RCAA). Beginning in mid-August, flows on the Rio Chama were insufficient to meet the standard RCAA summer demand. RCAA represents 18 acequias on the Rio Chama between Abiquiu Reservoir and the confluence with the Rio Grande that have direct surface flow diversion rights. With insufficient native flows to meet their needs and the absence of sufficient leased SJCP water, the NMOSE curtailed RCAA diversions to the available flow of the river from mid-August to mid-October of 2023.

San Juan Chama Water Loss Rates

In 2023, approximately 11,000 acre-feet of SJCP water was moved from Abiquiu Reservoir to Elephant Butte Reservoir in early November. The Engineer Advisers determined that the river conditions at the time did not meet the guidelines set forth in the Commission-approved resolution for using a pre-determined fixed loss rate. Therefore, a case-specific loss, rather than a fixed-loss rate, was assigned to the movement of the block of SJCP water. The URGWOM was used to determine the actual incremental increased loss that resulted from the block release.

Additionally, it is becoming apparent that the existing Commission-approved fixed-loss rates for SJCP water released from Heron Reservoir into the Rio Chama may be too low when native water flow is low. This may result in native Rio Grande water being impacted. The Engineer Advisers are evaluating the need to reanalyze the fixed-loss rates.

Rio Grande Project Operations

The 2023 Rio Grande Project (Project) water accounting amounts were approved by the respective district boards and Reclamation prior to the 2024 Engineer Advisers' meeting. All accounting information reported by Reclamation for the Project is based on the URGWOM computer model.

On January 1, 2023, there was 277,327 acre-feet of Usable Water in Project Storage (Elephant Butte and Caballo reservoirs combined) which was also the low for Project Storage. Usable Water ended the year at 468,094 acre-feet on December 31, 2023, down from its high of 618,283 acre-feet on July 1.

Mexico was provided a final in-season allocation in May 2023 of 60,000 acre-feet, which is a full allocation. The final Project allocation was 734,125 acre-feet, including Mexico's allocation. The final calculated charges were: 225,495 acre-feet to EP No. 1; 189,551 acre-feet to EBID; and 46,119 acre-feet to Mexico. A total of 461,165 acre-feet of water deliveries were charged to the Project water users.

Reclamation reported that the final 2023 allocation balances carried over to 2024 were 175,801 acre-feet and 83,277 acre-feet for EP No. 1 and EBID, respectively.

Reclamation reported final 2023 releases from Caballo Reservoir for Project accounting during the irrigation season of 547,721 acre-feet for all three Project water users: EP No. 1, EBID, and Mexico. Releases from Caballo Reservoir began on May 1 and ended on October 13, 2023. EP No. 1 and Mexico began the irrigation season with coordinated orders and diversions on May 12. EBID ended their surface water diversions on August 19, Mexico ended on September 30, and EP No. 1 ended diversions on October 17.

During 2023, Reclamation's report indicates drainage flows into Hudspeth County Conservation and Reclamation District No. 1 (HCCRD) during March through September were 22,500 acre-feet. The calendar year total flow data for HCCRD was 35,191 acre-feet. Additionally, 1,146 acre-feet were delivered from Caballo Reservoir through the Bonita Lateral during calendar year 2023. The Texas Engineer Adviser is concerned that any water taken from Caballo Reservoir for the Bonita Lateral is not a delivery of Compact water to Texas because Bonita water is delivered to lands outside the Rio Grande Project.

The USGS reported that the total flow volume at the gage below Elephant Butte Dam was 511,487 acre-feet during the release season from May 1 through October 11. There was a total of 548,082 acre-feet measured at the Below Caballo gage, which is the amount used in Compact accounting for the calendar year.

For 2024 Project operations, Reclamation determined that the initial 2024 allocation to Mexico is 21,993 acre-feet (37% of full) based on the December 1, 2023, data. Reclamation provided the initial 2024 allocation to EBID and EP No. 1 using data from January 15, 2024. Including the carryover from 2023, the current allocation to EBID and EP No. 1 is 104,662 acre-feet and 267,780 acre-feet, respectively. Reclamation will continue to evaluate and update the allocations monthly as water is delivered to Elephant Butte Reservoir.

The 2024 irrigation releases from Caballo Reservoir are set to begin on March 8 and end around October for EP No. 1 and Mexico. Releases for EBID are expected to begin in early May and last until August. The length of the irrigation season will depend on the snowpack and runoff conditions.

ADDITIONAL FEDERAL AGENCY REPORTED INFORMATION

Representatives for Reclamation, Corps, USGS, Service, and IBWC presented additional information to the Engineer Advisers as summarized below:

U. S. Geological Survey

The Engineer Advisers received reports from the USGS on their Rio Grande Basin studies. The USGS, in cooperation with Reclamation, has developed a model of the transboundary aquifers and interconnected surface waters of the Palomas and Mesilla basins in New Mexico and Texas and the Conejos-Médanos Basin of northern Mexico, known as the Rio Grande Transboundary Integrated Hydrologic Model (RGTIHM). An updated Scientific Investigations Report was published in 2022. The USGS is currently extending the simulation period of the historical calibration through 2023 and incorporating processes to allow dynamic simulation of Rio Grande Project operations, data from OpenET, and state databases. The USGS also reported on the Rio San Jose Integrated Hydrologic Model, turbidity monitoring in the upper Rio Grande, and a new project for Bosque del Apache

National Wildlife Refuge to estimate their groundwater return flows and general water balance.

The USGS listed, but did not give details on, many other New Mexico Water Science Center projects and activities in the Rio Grande Basin, such as the Transboundary Aquifer Assessment Program, the Mesilla Basin Monitoring Program, URGWOM support, and other groundwater and surface water monitoring programs.

U.S. Army Corps of Engineers Civil Works Projects

The Corps reported on the status of Civil Works projects under the Water Resources Development Act of 2020 (WRDA 2020), which provided reauthorization for the Rio Grande Environmental Management Program in Colorado, New Mexico, and Texas. Authorization for this program was extended through federal FY 2029. Current projects undergoing either a feasibility study, higher-level planning, or construction include: Acequia Irrigation System Rehabilitation, Española Valley Ecosystem Restoration, Hatch Dam, Abiquiu Reservoir legislation, Bernalillo to Belen Levee Project, and Sandia to Isleta ecosystem restoration.

Legislation related to Abiquiu Reservoir in WRDA 2020 changed the storage limit of SJCP and native Rio Grande water in Abiquiu Reservoir from a total volume of 200,000 acre-feet to an elevation of 6,230 feet MSL (229,199 acre-feet) and to allow concurrent storage of Rio Grande and SJCP water in Abiquiu Reservoir. This would not impact flood control operations at Abiquiu Reservoir. Therefore, the Water Control Manual must be updated and environmental compliance completed, with a target date of Spring 2024. Additionally, future storage easements must be acquired. The Texas Engineer Adviser continues to be concerned about the increase in storage of native Rio Grande water in Abiquiu Reservoir without unanimous consent of the Commission. The Texas Commissioner has also objected to additional storage of native Rio Grande water in Abiquiu Reservoir without consent of the Commission per Section 337(f)(1) of WRDA 2020.

The Española Valley Ecosystem Restoration design agreements were signed in November 2022, and the design completion is scheduled for 2027. The Bernalillo to Belen

Levees project reached a design agreement signed in June 2023, with the first phase of construction set to be the Mountain View segment. The Hatch Dam feasibility phase was completed, the design phase is in progress, and construction is contingent on funding.

The Tribal Partnership Program is currently underway for San Felipe, Santa Ana, Zia, and Santo Domingo pueblos. These projects include watershed assessments, drought resilience planning, and feasibility studies for irrigation infrastructure. Five watershed assessments have been completed. The Pueblo of Santo Domingo's drought resiliency plan was completed in 2023.

Rio Grande Silvery Minnow

The Service reported on the 2023 monitoring results for the endangered Rio Grande silvery minnow (RGSM) using the October Catch per Unit Effort (CPUE) data used to report long-term trends in relative abundance.

The Service has adopted the use of 30 sites for evaluating RGSM take instead of the standard 20 sites. The 2023 October fish monitoring estimated an RGSM density of 5.0 fish/100 square meters (m^2) for 30 sites, compared to 0.17 fish/100 m^2 in 2022. High spring runoff years in 2017 and 2019 resulted in October RGSM densities of 23.2 and 3.4 fish/100 m^2.

Hydrologic conditions in 2023 resulted in a successful spawn, but RGSM egg collection to supply the three propagation facilities was limited because of high runoff conditions. However, some larval fish were collected by the Service. The Service reported that in November of 2023, 46,484 hatchery-reared RGSM were augmented to the MRG, as compared with 129,497 in 2022, 208,772 in 2021, and 310,634 in 2020. Fish were provided by the City of Albuquerque's BioPark, the Service's Southwestern Native Aquatic Resources and Recovery Center located in Dexter, New Mexico, and the NMISC's Los Lunas Silvery Minnow Refugium.

The Service stated that over the last 5 years CPUE hovered around their critical threshold of 0.3 fish/100 m^2 in low-flow years (in 2020, 2021, and 2022) but increased with larger spring flows (in 2019 and 2023). The Service is anticipating a moderately-low year

for silvery minnows in 2024 given preliminary runoff projections.

In 2023, fish rescue activities occurred in the 16 miles of unique drying within the San Acacia and Isleta reaches, and 3,621 RGSM were collected and transported to perennial stretches of the river.

El Vado Dam Repairs

Reclamation previously reported that substantial degradation of the steel lining system and service spillway had occurred at El Vado Dam. Corrective action studies determined that construction and repair work need to be conducted at the dam. The El Vado Safety of Dams Project is occurring in two phases: 1) installation of a synthetic liner system across the entire face plate of the existing dam to reduce embankment seepage, and 2) repair and refurbishment of the spillway.

Reclamation reported that very high runoff delayed the continuation of Phase 1 work until May 2023. During the 2023 construction season, Reclamation and the contractor continued repairs to the steel face plate, to prepare for foundation grouting by installing the grout cap along the left abutment, and continued grouting beneath the face plate. Phase 1 construction is expected to extend beyond the baseline schedule and Reclamation is working with the contractor to ensure completion by the end of 2025.

Reclamation reported that the El Vado Spillway Replacement, Phase 2 final designs are complete. Phase 2 may include repairs to, or replacement of, the El Vado stilling basin.

During both phases of construction, there will be restrictions on storage of water in El Vado Reservoir. The Corps reported that a deviation from the Abiquiu Dam Water Control Plan was needed to store 16,795 acre-feet of Prior and Paramount water in Abiquiu Dam during El Vado Construction in 2023. The deviation from normal operations at Abiquiu Dam was approved by the Commission in 2022 and is valid through the 2024 calendar year. If the El Vado Dam repairs are not complete within that timeframe, and assuming the Abiquiu Dam Water Control Plan has not been updated, an additional deviation request and approval would be required, but no additional regulatory compliance would be necessary.

Middle Rio Grande Project Channel Maintenance

Reclamation's report indicates that it is pursuing work at 17 active priority sites along the Middle Rio Grande Project reach where bank erosion or reduced channel capacity could cause levee failure.

Reclamation reported on adaptive management activities at the Bosque del Apache River Realignment Downstream Phase, formerly the Bosque del Apache National Wildlife Refuge (BDANWR) Pilot Realignment project, which was completed in April 2021. Adaptive maintenance activities in 2023 focused on implementing additional mechanical adjustment of bed slope, which was completed in February 2023. Reclamation reported that the BDA Upper Realignment Project is approaching 90-percent design completion. NEPA work is ongoing with an expected Environmental Assessment (EA) in April 2024. Construction is planned to start in September 2024.

Reclamation reported that the River Mile 60 Project re-established a more direct outfall to the river channel at the terminus of the LFCC at River Mile 60. This project fulfills one of the 2016 BO conservation measures and has an intended goal of improving water delivery to Elephant Butte Reservoir, while avoiding negative impacts to southwestern willow flycatcher (flycatcher) habitat nearby. Construction was completed in 2023. Experimental operations and adaptive management plans were developed in 2023, and experimental operations began in January 2024. The River Mile 60 Project is being monitored with 10 shallow groundwater wells, 6 discharge measurement locations for monthly data, 10 new surface water loggers, and an additional pond elevation gage.

Reclamation's Los Lunas River Mile 163 Project addresses the increasing water surface elevation from channel narrowing in this reach of the Rio Grande. This project has an intended goal of improving water conveyance through the Los Lunas subreach while improving habitat for silvery minnow. The project will include removing sediment within the new inset floodplain to restore channel capacity. Clean Water Act (CWA) compliance, including wetland mitigation requirements, is pending.

The Lower San Acacia Reach Improvements Project has the intended goals of improving water delivery to Elephant Butte Reservoir, enhancing ecosystem health, and

optimizing long-term operation and maintenance activities. The EIS NOI was published, and public scoping was held in 2023. A feasibility-level study will be completed in 2024, and the preferred alternative will be identified. Reclamation plans to draft the EIS in 2025, to plan construction in 2025, to finalize the EIS, Record of Decision (ROD), and CWA compliance in 2026, and to conduct phased construction from 2026 through 2028.

Vegetation Management at Elephant Butte and Caballo Reservoirs

Reclamation reported that it performed vegetation maintenance at Caballo Reservoir during 2023 and cleared approximately 1,000 acres of phreatophytic vegetation.

The Engineer Advisers remain concerned about the lack of vegetation management activities by Reclamation at Elephant Butte Reservoir. The State of New Mexico would support vegetation management efforts at Elephant Butte Reservoir through the existing Technical Services Agreement and encourages Reclamation to work with staff to implement vegetation management projects at Elephant Butte in 2024.

Southwestern Willow Flycatcher and Western Yellow-billed Cuckoo

Reclamation conducts surveys and nest monitoring for the flycatcher and the western yellow-billed cuckoo (cuckoo) during the spring and summer months south of Albuquerque, New Mexico to El Paso, Texas. In 2023, surveys were concentrated on areas of most concern due to staffing shortages. A total of 467 total flycatcher territories were found, with 363 territories documented in the MRG and 104 territories in the LRG. As usual, most of the flycatcher territories were in the San Marcial and Elephant Butte Reservoir areas. In 2023, greater survey efforts in the Upper Rio Grande and San Luis Valley management units in Colorado resulted in the identification of 43 flycatcher territories. The 5-year species review will be completed in 2025.

Reclamation conducted surveys for the cuckoo from south of Albuquerque, New Mexico to El Paso, Texas. In 2023, 145 cuckoo territories were observed in the surveyed area, with 114 in the MRG and 31 in the LRG. In late 2021, the Service began a Species Status Assessment (SSA), which is still in progress, to inform the future recovery plan. In 2023, there was only one detection in the Upper Rio Grande and San Luis Valley management units in Colorado.

The tamarisk leaf beetle continues to be found in most of the Rio Grande area, and defoliation of salt cedar in occupied territories may result in impacts to nesting success. Although numbers of tamarisk beetles in the MRG have been declining in the past few years, this may be cyclical, and it is uncertain if there is a long-term trend.

Additional Listing Information Provided by the Service

In 2016, the Service found that listing the Rio Grande chub and the Rio Grande sucker may be warranted. A Conservation Agreement was signed in September 2018 between the Service and the states of New Mexico, Colorado, and Texas, the Jicarilla Apache Nation, the Pueblo of Santa Ana, several counties in Colorado, the U.S. Forest Service, BLM, and the National Park Service to reduce the threats to these fish species. The Service completed an SSA in 2023 and is in the process of conducting a 12-month review, which will be completed by June 15, 2024.

The Service conducts photographic monitoring of the New Mexico meadow jumping mouse (jumping mouse) at BDANWR. Due to limited resources the Service is still processing data from 2023, and they have found seven unique photo detections at six camera locations to date. The total number of detections for 2023 is anticipated to increase once all the data are processed.

International Boundary and Water Commission Activities

The IBWC provided a report of its activities along the Rio Grande in New Mexico and Texas during 2023 and their projected activities for 2024. The items discussed included their canalization levee rehabilitation work and Federal Emergency Management Agency (FEMA) status, the American Canal rehabilitation work, the status of their hydraulic

modeling, habitat restoration, environmental water transaction program, participation in the Drought Resilience Team, flood control issues and activities, sediment removal activities, water accounting operations, and border barrier projects.

The canalization levee rehabilitation projects discussed were the revegetation of Sunland Park West Levee, the Sunland Park East Levee rehabilitation project scheduled to be completed in 2025, and the Zaragoza Levee with a completion date in September 2024. Upon construction completion of the levees, the design and as-built construction drawings will be submitted to FEMA for levee accreditation.

A construction contract for the American Canal rehabilitation was awarded in August 2023, with an estimated completion by June 2027. Onsite work is expected to begin at the end of the 2024 irrigation season.

The IBWC reported that the hydraulic models for the reaches between Percha Dam and American Dam achieved the 60% design in April 2022, but that additional model calibration is necessary. Contract modifications are underway to complete the project.

The IBWC habitat restoration work has shifted to long-term monitoring and maintenance. Under their environmental water transaction program, the IBWC has acquired 47 acres of EBID surface water rights. In 2023, the IBWC conducted 14 irrigation events across all five sites and continued logistical efforts to acquire additional water rights to meet its ROD commitments.

The IBWC participated in stakeholder meetings for the Rio Grande Project Area Drought Resilience Team and stated its commitment to providing technical assistance as needed.

The IBWC reported there were no major issues in the Canalization project area in 2023. The Rectification project area continues to experience saturated floodplains in Hudspeth County. In 2023, IBWC in-house work crews were able to remove about 350,000 cubic yards of sediment. Projects in 2024 will include sediment removal, sediment disposal, and levee repairs at both the Canalization and Rectification project areas.

All resources from the IBWC's three field offices will be focused on sediment removal in the Canalization area until irrigation water releases start in March 2024. The Chamizal Project had 20,000 cubic yards of sediment removed in 2023 and has no work scheduled for 2024. Estimated sediment removal for 2024 is 140,000 cubic yards in the Canalization area and 210,000 cubic yards in the Rectification area.

The IBWC reported that the 2023 allocation to Mexico for the Convention of 1906 was 60,000 acre-feet, which was 100 percent of a full allocation. The final delivery charged to Mexico was 46,119 acre-feet. A preliminary January allocation for 2024 to Mexico was reported to be 31,968 acre-feet, which is 53.3 percent of a full allocation. The irrigation season is scheduled to begin in March.

After being suspended in 2021, work on Customs and Border Protection (CBP) border wall projects resumed in 2022 to remediate the negative impacts from previous CBP and Texas border wall construction.

ENGINEER ADVISER RECOMMENDATIONS

There are no new recommendations proposed by the Engineer Advisers at this time.

BUDGET

The Engineer Advisers reviewed the budgeted cost of operation for the fiscal year ending June 30, 2023, and the budget for the fiscal year ending June 30, 2025.

The Engineer Advisers found that the budgeted costs for gaging stations and administration of the Compact for the year ending June 30, 2023, were $235,187. The U.S. federal government bore $73,468 of this total, with the balance of $161,719 borne equally by the three states.

The Engineer Advisers found that the proposed budget for the fiscal year ending June 30, 2025, indicates that a total of $266,174 will be spent for gaging and administration, with a proposed contribution by the U.S. federal government of $95,443 and the balance of $170,731 borne equally by the three states.

Craig W. Cotten, P.E.

Engineer Adviser for Colorado

Page Pegram

Engineer Adviser for New Mexico

Suzy Valentine, P.E.

Engineer Adviser for Texas

RIO GRANDE COMPACT - DELIVERIES BY COLORADO AT STATE LINE
YEAR 2023

Quantities in thousands of acre feet to nearest hundred

MONTH	CONEJOS INDEX SUPPLY										RIO GRANDE INDEX SUPPLY								DELIVERIES			
	MEASURED FLOW				ADJUSTMENTS				SUPPLY			ADJUSTMENTS					SUPPLY					
	CONEJOS AT MOGOTE	LOS PINOS NEAR ORTIZ	SAN ANTONIO AT ORTIZ	TOTAL	STORAGE AT END OF MONTH [c]	CHANGE IN STORAGE	OTHER ADJUSTMENTS [a]	NET ADJUSTMENTS	SUPPLY IN MONTH	ACCUMULATED TOTAL	RECORDED FLOW NEAR DEL NORTE	STORAGE AT END OF MONTH	CHANGE IN STORAGE	TRANSMOUNTIAN DIVERSIONS [b]	OTHER ADJUSTMENTS [a]	NET ADJUSTMENTS	SUPPLY IN MONTH	ACCUMULATED TOTAL	CONEJOS RIVER AT MOUTH NEAR LASAUCES	RIO GRANDE LESS CONEJOS RIVER	RIO GRANDE AT LOBATOS	ACCUMULATED TOTAL AT LOBATOS
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	---------	---------	---------	---------	8.4	---------	---------	---------	---------	0.0	---------	0.2	---------	---------	---------	---------	---------	0.0	---------	---------	---------	0.0
JAN	3.3	---------	---------	3.3	8.7	0.3		0.3	3.6	3.6	10.2	0.2	0.0			0.0	10.2	10.2	4.1	11.9	16.0	16.0
FEB	3.0	---------	---------	3.0	8.7	0.0		0.0	3.0	6.6	9.0	0.2	0.0			0.0	9.0	19.2	4.0	11.2	15.2	31.2
MAR	4.4	---------	---------	4.4	8.8	0.1		0.1	4.5	11.1	12.4	0.2	0.0			0.0	12.4	31.6	6.4	15.1	21.5	52.7
APR	22.1	13.0	7.9	43.0	8.6	-0.2		-0.2	42.8	53.9	67.1	0.2	0.0			0.0	67.1	98.7	14.8	13.7	28.5	81.2
MAY	90.4	64.1	13.7	168.2	27.0	18.4	0.1	18.5	186.7	240.6	274.3	0.2	0.0			0.0	274.3	373.0	79.4	63.6	143.0	224.2
JUN	77.3	23.0	1.2	101.5	46.0	19.0	0.2	19.2	120.7	361.3	203.8	0.2	0.0			0.0	203.8	576.8	54.3	51.9	106.2	330.4
JUL	32.8	2.7	0.0	35.4	38.9	-7.1	0.2	-6.9	28.5	389.8	56.7	0.2	0.0	-1.6	0.2	-1.4	55.3	632.1	12.7	15.7	28.4	358.8
AUG	12.3	1.0	0.0	13.3	32.8	-6.1	0.1	-6.0	7.3	397.1	21.5	0.2	0.0			0.0	21.5	653.6	3.8	4.6	8.4	367.2
SEPT	6.6	1.0	0.1	7.7	30.2	-2.6	0.1	-2.5	5.2	402.3	16.1	0.2	0.0			0.0	16.1	669.7	2.2	2.0	4.2	371.4
OCT	5.9	0.9	0.1	7.0	27.8	-2.4	0.1	-2.3	4.7	407.0	17.5	0.2	0.0			0.0	17.5	687.2	1.6	3.2	4.8	376.2
NOV	3.0	---------	---------	3.0	27.5	-0.3	0.1	-0.2	2.8	409.8	10.8	0.2	0.0			0.0	10.8	698.0	2.5	2.9	5.4	381.6
DEC	2.8	---------	---------	2.8	27.4	-0.1	0.0	-0.1	2.7	412.5	8.5	0.3	0.1			0.1	8.6	706.6	3.1	10.3	13.4	395.0
YEAR	263.9	105.7	23.0	392.6	---------	19.0	0.9	19.9	412.5	---------	707.9	---------	0.1	-1.6	0.2	-1.3	706.6	---------	188.9	206.1	395.0	---------

Remarks: Cols. 6 and 13 do not include transmountain water.

[a] Evaporation loss post-compact reservoirs; as reported by the Engineer Adviser for Colorado.

[b] Deductions for transmountain water passing the upper index gage equals 1,795 ac-ft minus 243 ac-ft pre-compact; as reported by the Engineer Adviser for Colorado.

[c] 0 ac-ft relinquishment credit stored in 2023. Storage of relinquished credit to date has totaled 2,885 acre-feet; balance remaining is 115 acre-feet.

SUMMARY OF DEBITS AND CREDITS

	ITEM	DEBIT	CREDIT	BALANCE
C1	Balance at Beginning of Year	---------	---------	Cr. 0.2
C2	Scheduled Delivery from Conejos River	199.0	---------	Dr. 198.8
C3	Scheduled Delivery from Rio Grande	207.3	---------	Dr. 406.1
C4	Actual Delivery at Lobatos plus 10,000 acre-feet	---------	405.0	Dr. 1.1
C5	Reduction of Debits a/c Evaporation	---------		
C6	Reduction of Credits a/c Evaporation	0.0	---------	
C7				
C8	Balance at End of Year	---------	---------	Dr. 1.1

APPROVED:
Engineer Adviser for Colorado ANC Date: 3/1/2024 Engineer Adviser for New Mexico RLP Date: 3/1/24 Engineer Adviser for Texas SV Date: 3/1/24

Updated 02/28/202

RIO GRANDE COMPACT - DELIVERIES BY NEW MEXICO AT ELEPHANT BUTTE
YEAR 2023

Quantities in thousands of acre feet to nearest hundred

MONTH	OTOWI INDEX SUPPLY									Total Water Stored in New Mexico Above San Marcial at End of Month[a]	ELEPHANT BUTTE EFFECTIVE SUPPLY				
		ADJUSTMENTS						INDEX SUPPLY			STORAGE IN ELEPHANT BUTTE RESERVOIR			Effective Supply	
		RESERVOIRS: LOBATOS TO OTOWI													
	Recorded Flow at Otowi Bridge	Storage End of Month[a]	Change in Storage	Reservoir Evaporation	Other Adjustments	Trans-mountain Diversions	Net Adjustments	During Month	Accumulated Total		End of Month[a]	Change Gain (+) Loss (-)	Recorded Flow Below Elephant Butte Dam	During Month	Accumulated Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	---------	0.5	---------	---------	---------	---------	---------	---------	---------	0.4	225.1	---------	---------	---------	---------
JAN	40.7	4.1	3.6	0.0		-4.7	-1.0	39.7	39.7	4.4	260.6	35.5	0.0	35.5	35.5
FEB	38.7	7.8	3.7	0.0		-2.4	1.3	40.0	79.7	8.6	286.7	26.1	0.0	26.1	61.6
MAR	64.0	16.5	8.7	0.2		-6.8	2.1	66.1	145.8	17.6	326.0	39.3	0.0	39.3	100.9
APR	155.4	31.2	14.7	0.2		-1.9	13.0	168.4	314.2	32.9	418.8	92.8	0.3	93.1	194.0
MAY	355.7	146.4	115.2	0.8		0.0	116.0	471.7	785.9	201.4	519.7	100.9	97.6	198.5	392.5
JUN	222.4	136.3	-10.1	1.4		0.0	-8.7	213.7	999.6	137.1	569.8	50.1	140.1	190.2	582.7
JUL	72.9	133.4	-2.9	2.1		-18.7	-19.5	53.4	1053.0	135.4	455.3	-114.5	145.4	30.9	613.6
AUG	47.9	125.4	-8.0	1.4		-18.9	-25.5	22.4	1075.4	133.8	384.2	-71.1	75.3	4.2	617.8
SEPT	72.2	73.7	-51.7	0.9		-5.0	-55.9	16.3	1091.7	123.4	345.2	-39.0	43.7	4.7	622.5
OCT	87.8	15.4	-58.3	0.4		-8.1	-66.0	21.8	1113.5	107.8	334.2	-11.0	9.4	-1.6	620.9
NOV	60.3	0.0	-15.4	0.0		-19.9	-35.3	25.0	1138.5	58.3	364.6	30.4	0.1	30.5	651.4
DEC	34.5	0.5	0.5	0.0		-0.5	0.0	34.5	1173.0	0.1	458.8	94.2	0.1	94.3	745.7
YEAR	1252.5	---------	0.0	7.4		-86.9	-79.5	1173.0	---------	---------	---------	233.7	512.0	745.7	---------

Remarks: Cols. 3, 11, and 12 do not include transmountain water.

[a] In 2023, 1,921 acre-feet of relinquishment credit under previous reliquishment agreement was stored in New Mexico reservoirs. Storage of relinquished credit to date has totaled 290,649 acre-feet; balance remaining is 89,851 acre-feet.

SUMMARY OF DEBITS AND CREDITS

	ITEM	DEBIT	CREDIT	BALANCE
NM1	Balance at Beginning of Year	---------	---------	Dr. 93.0
NM2	Scheduled Delivery at Elephant Butte	774.9	---------	Dr. 867.9
NM3	Actual Elephant Butte Effective Supply	---------	745.7	Dr. 122.2
NM4	Reduction of Debits a/c Evaporation		0.7	Dr. 121.5
NM5	Reduction of Credits a/c Evaporation and Spill	---------	---------	
NM6				
NM7				
NM8	Balance at End of Year	---------	---------	Dr. 121.5

APPROVED:
Engineer Adviser for Colorado CWC Date: 3/1/2024 Engineer Adviser for New Mexico PLP Date: 3/1/24 Engineer Adviser for Texas [signature] Date: 3/1/24 Updated: 02/28/2024

RIO GRANDE COMPACT - RELEASE AND SPILL FROM PROJECT STORAGE

YEAR 2023

Quantities in thousands of acre feet to nearest hundred

MONTH	Total Project Storage Capacity Available at End of Month[a]	USABLE WATER IN STORAGE			Unfilled Capacity of Project Storage at End of Month	CREDIT WATER IN STORAGE			Flood Water in Storage in Caballo Reservoir at End of Month	Total Water in Project Storage at End of Month	RIO GRANDE BELOW CABALLO DAM							
														SPILL FROM STORAGE			USABLE RELEASE	
		Elephant Butte Reservoir	Caballo Reservoir	Total at End of Month		Colorado Credit Water	New Mexico Credit Water	Total at End of Month			Measured Flow at Caballo Gaging Station	Intervening Diversions to Canals	Total Release and Spill	Caballo Flood Water	Credit Water	Usable Water	Net During Month	Accumulated Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	---	---	---	---	---	0.2[b]	0.0[b]	0.2[b]		---	---	---	---	---	---	---	---	---
JAN	2,210.4	260.4	52.2	312.6	1,897.8	0.2	0.0	0.2		312.8	0.1	0.1	0.2				0.2	0.2
FEB	2,210.4	286.5	53.1	339.6	1,870.8	0.2	0.0	0.2		339.8	0.1	0.0	0.1				0.1	0.3
MAR	2,210.4	325.8	55.4	381.2	1,829.2	0.2	0.0	0.2		381.4	0.1	0.1	0.2				0.2	0.5
APR	2,185.4	418.6	55.0	473.6	1,711.8	0.2	0.0	0.2		473.8	0.1	0.2	0.3				0.3	0.8
MAY	2,185.4	519.5	51.8	571.3	1,614.1	0.2	0.0	0.2		571.5	96.9	0.1	97.0				97.0	97.8
JUN	2,185.4	569.6	47.8	618.4	1,567.0	0.2	0.0	0.2		618.6	139.8	0.3	140.1				140.1	237.9
JUL	2,185.4	455.1	49.6	504.7	1,680.7	0.2	0.0	0.2		504.9	137.3	0.1	137.4				137.4	375.3
AUG	2,185.4	384.0	31.1	415.1	1,770.3	0.2	0.0	0.2		415.3	93.6	0.1	93.7				93.7	469.0
SEPT	2,185.4	345.0	12.3	357.3	1,828.1	0.2	0.0	0.2		357.5	63.2	0.0	63.2				63.2	532.2
OCT	2,210.4	334.0	7.1	341.1	1,869.3	0.2	0.0	0.2		341.3	16.9	0.1	17.0				17.0	549.2
NOV	2,210.4	364.4	8.4	372.8	1,837.6	0.2	0.0	0.2		373.0	0.0	0.0	-				0.0	549.2
DEC	2,210.4	458.6	10.0	468.6	1,741.8	0.2	0.0	0.2		468.8	0.0	0.0	-				0.0	549.2
YEAR	---	---	---	---	---	---	---	---	---	---	548.1	1.1	549.2	0.0	0.0	0.0	549.2	---

Remarks:

[a] Total Project Storage Capacity is 2,185,400 acre-feet (April through September) and 2,210,400 acre-feet (October through March) which accounts for flood control storage reservation at Caballo Reservoir of 100,000 acre-feet and at Elephant Butte Reservoir of 50,000 acre-feet from April through September and 25,000 acre-feet from October through March.

[b] Balance at Beginning of Year.

ACCRUED DEPARTURE FROM NORMAL RELEASE

	ITEM	DEBIT	CREDIT	BALANCE
P1	Accrued Departure at Beginning of Year	---	---	Cr. 2915.8
P2	Actual Release during Year	549.2	---	Cr. 2366.6
P3	Normal Release for Year	---	790.0	Cr. 3156.6
P4	Under Release in Excess of 150.0	90.8	---	
P5		---		
P6				
P7	Accrued Departure at End of Year	---	---	Cr. 3065.8

TIME OF HYPOTHETICAL SPILL Did not occur

APPROVED:
Engineer Adviser for Colorado EHC Date: 3/1/2024 Engineer Adviser for New Mexico PLP Date: 3/1/24 Engineer Adviser for Texas [signature] Date: 3/1/24 Updated:02/28/2024

BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2023 (FY-2023)

Item	Total Cost	Borne by United States	Borne by Colorado	Borne by New Mexico	Borne by Texas
GAGING STATIONS					
In Colorado	$93,792		$93,792		
In New Mexico, above Caballo Reservoir	$86,274	$61,040		$25,234	
In New Mexico, Caballo Reservoir and below	$30,011	$6,002			$24,009
Subtotal	$210,077	$67,042	$93,792	$25,234	$24,009
ADMINISTRATION					
U.S.G.S. Technical Services	$22,110	$6,426	$5,228	$5,228	$5,228
Other expenses[1]	$3,000		$1,000	$1,000	$1,000
Subtotal	$25,110	$6,426	$6,228	$6,228	$6,228
GRAND TOTAL	$235,187	$73,468	$100,020	$31,462	$30,237
EQUAL SHARES			$53,906	$53,906	$53,906

[1]Includes estimated cost of court reporter.

BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2025 (FY-2025)

Item	Total Cost	Borne by United States	Borne by Colorado	Borne by New Mexico	Borne by Texas
GAGING STATIONS					
In Colorado	$99,859		$99,859		
In New Mexico, above Caballo Reservoir	$90,922	$63,951		$26,971	
In New Mexico, Caballo Reservoir and below	$49,329	$25,066			$24,263
Subtotal	$240,110	$89,017	$99,859	$26,971	$24,263
ADMINISTRATION					
U.S.G.S. Technical Services	$23,064	$6,426	$5,546	$5,546	$5,546
Other expenses[1]	$3,000		$1,000	$1,000	$1,000
Subtotal	$26,064	$6,426	$6,546	$6,546	$6,546
GRAND TOTAL	$266,174	$95,443	$106,405	$33,517	$30,809
EQUAL SHARES			$56,910	$56,910	$56,910

[1]Includes estimated cost of court reporter.

Resolution of the Rio Grande Compact Commission
Honoring Kevin G. Rein

April 26, 2024

WHEREAS, *Kevin G. Rein, P.E., served the people of the State of Colorado and the Rio Grande Basin as an employee of the Colorado Division of Water Resources for over 25 years, and as Colorado's Rio Grande Compact Commissioner and Colorado State Engineer for 6 years; and*

WHEREAS, *during that time Mr. Rein did faithfully serve the interests of the citizens of Colorado and of the Rio Grande Basin in his actions; and*

WHEREAS, *in all his associations with this Commission, he did faithfully and fairly discharge his appointed duties; and*

WHEREAS, *as a result of his professional conduct in addressing numerous matters regarding administration and management of the Rio Grande Compact, including the ongoing U.S. Supreme Court case on the Rio Grande Compact, his fellow Commissioners, their advisers and staff developed great respect, admiration, and appreciation of Mr. Rein during his tenure;*

NOW, THEREFORE, BE IT RESOLVED, *that the Rio Grande Compact Commission, at its 85th Annual Meeting held in El Paso, Texas on April 26, 2024, does hereby express its gratitude and appreciation for the untiring service and counsel rendered by Kevin G. Rein, P.E., in addressing the many technical, legal, and political water resource problems that have been confronted during his service to the Rio Grande Compact Commission.*

BE IT FURTHER RESOLVED, *that the Rio Grande Compact Commission, its advisers and staff sincerely wish Kevin Rein, his wife Robin, and their family the best of health, happiness and prosperity in their future endeavors, and*

BE IT FURTHER RESOLVED, *that the Colorado Engineer Adviser of the Rio Grande Compact Commission is hereby directed to furnish copies of this unanimously adopted resolution to Kevin G. Rein, P.E., and to cause said resolution to be included in the Minutes of the 85th Annual Meeting of the Rio Grande Compact Commission.*

Hal Simpson
Federal Chairman

Jason T. Ullmann
Commissioner for Colorado

Mike A. Hamman
Commissioner for New Mexico

Robert S. Skov
Commissioner for Texas

RESOLUTION OF THE RIO GRANDE COMPACT COMMISSION
HONORING PRISCILLA M. HUBENAK
April 26, 2024

WHEREAS, *Priscilla M. Hubenak served as Legal Advisor for Texas to the Rio Grande Compact Commission during her decades of service to the Office of the Attorney General of Texas; and*

WHEREAS, *during that time, Ms. Hubenak did faithfully and conscientiously carry out her responsibilities to the overall benefit of the State of Texas and the Rio Grande Compact Commission;*

WHEREAS, *during her tenure as Legal Advisor, Ms. Hubenak demonstrated incisive legal knowledge of the issues associated with administration of the Rio Grande River Compact, including during the ongoing United States Supreme Court litigation involving the Compact, and providing steadfast legal counsel to Commissioners, their advisers, and staff during her tenure;*

NOW, THEREFORE, BE IT RESOLVED, *that the Rio Grande Compact Commission, at its 85th Annual Meeting held in El Paso, Texas on April 26, 2024, does hereby acknowledge the service of Ms. Hubenak to the people of the State of Texas and the Rio Grande Basin, and expresses its sincere gratitude and appreciation for her dedicated service and counsel during her service as the Legal Advisor to Texas;*

BE IT FURTHER RESOLVED, *that the Rio Grande Compact Commission, its advisers, and staff wish Priscilla Hubenak and her family best wishes for a prosperous, healthy, and happy future; and*

BE IT FURTHER RESOLVED, *that the Texas Engineer Advisor of the Rio Grande Compact Commission is hereby directed to furnish copies of this unanimously adopted resolution to Priscilla M. Hubenak, and to cause said resolution to be included in the Minutes of the 85th Annual Meeting of the Rio Grande Compact Commission.*

Hal Simpson
Chairman and Commissioner
For the United States of America

Robert S. Skov
Commissioner for Texas

Mike A. Hamman
Commissioner for New Mexico

Jason T. Ullmann
Commissioner for Colorado

RESOLUTION OF THE RIO GRANDE COMPACT COMMISSION

Honoring Chris Stageman

April 26, 2024

WHEREAS, *Chris Stageman was for many years the Assistant to the New Mexico Engineer Adviser to the Rio Grande Compact Commission; and*

AND WHEREAS, *during that time Mr. Stageman performed faithfully and exceptionally in that role representing the New Mexico Interstate Stream Commission; and*

AND WHEREAS, *during his tenure, the commissioners of the states of Texas and of Colorado did develop great admiration and respect for Mr. Stageman; and*

NOW THEREFORE, BE IT RESOLVED *that the Rio Grande Compact Commission assembled in its 85th annual meeting held in El Paso, Texas acknowledges the devoted service of Chris Stageman to the people of the Rio Grande basin, and the Rio Grande Compact Commission; and*

BE IT FURTHER RESOLVED, *that the Rio Grande Compact Commission, its advisers and staff sincerely wish Mr. Stageman and his wife Ann the best of all health, happiness and prosperity in their retirement and all their future endeavors; and*

BE IT FURTHER RESOLVED, *that the New Mexico Engineer Adviser of the Rio Grande Compact Commission is hereby directed to furnish copies of this unanimously adopted resolution to Chris Stageman, and to cause said resolution to be included in the Minutes of the 85th annual meeting of the Rio Grande Compact Commission.*

In witness whereof, we do hereby cause our signatures to be affixed hereon this 26th day of April 2024, El Paso, Texas.

Mike A. Hamman, P.E.
Commissioner for New Mexico

Robert S. Skov
Commissioner for Texas

Jason T. Ullmann, P.E.
Commissioner for Colorado

Hal Simpson, P.E.
Chairman and Commissioner for the United States of America

OPA Approval: 2022RG-12317
Agreement No: 24RGJFA12
Customer No:
6000001029/6000001775/6000000631
Project No: RG00GVC
Tax ID: 84-0644739 (CO)
85-6000565 (NM)
74-1694284 (TX)
Fixed-price agreement

COOPERATIVE AGREEMENT
FOR
INVESTIGATION OF WATER RESOURCES

THIS AGREEMENT, entered into this 1st day of July, 2024 by and between the United States Geological Survey, party of the first part, and each of the Commissioners Representing the three signatory states and the Representative of the United States, constituting the Rio Grande Compact Commission, party of the second part.

In consideration of the mutual promises and agreements herein contained, it is agreed by and between the parties hereto as follows:

1. The parties agree that, subject to the availability of appropriations and in accordance with their respective authorities, there shall be maintained a cooperative program for duties as stated in the attached Statement of Work, for the Rio Grande Compact Commission within and among the three states in accordance with the terms of the Rio Grande Compact, incorporated herein by reference.

The parties further agree that this agreement shall in no manner affect any other agreement between the United States Geological Survey and any of the three states of the basin concerning the collection of hydrologic data, but in each case where there is or may be another agreement covering the collection of such data, the duty of the United States Geological Survey as provided here, shall be to compile, correlate, and present hydrographic data that has been collected under such agreements.

2. The parties agree to contribute to this program in the amounts specified or as are from time to time agreed upon in writing, funds needed and available to cover all the cost of the necessary field and office work directly related to the program, excluding any general administrative or accounting work in the office of any of the parties, and excluding the costs of publication by any of the parties of the results of the program.

3. The United States Geological Survey and state members of the Rio Grande Compact agree to contribute to the program during the period from July 1, 2024 to June 30, 2025, the following amounts:

(a)	U.S. Geological Survey	$6,426
(b)	State of Colorado	$5,546
(c)	State of New Mexico	$5,546
(d)	State of Texas	$5,546

4. So far as may be mutually agreed, all expenses shall be paid in the first instance by the United States Geological Survey with appropriate reimbursement thereafter by the other parties hereto. Each of the parties shall furnish to each of the other parties such statements or reports of expenditures as may be needed to satisfy fiscal requirements.

5. Unless previously terminated by the parties hereto, this agreement shall terminate on June 30, 2025, provided it may be renewed by the mutual agreement of the United States Geological Survey and each of the Commissioners representing the three signatory states to the Rio Grande Compact, as the voting members of the Rio Grande Compact Commission, on or before June 30, 2025, for a period of 1 year, and may be renewed in a like manner on or before June 30th of any year thereafter for a similar period. Any party may terminate this agreement by providing 60 day's written notice to the other party. When an accepted agreement is terminated by the State members of the Rio Grande Compact Commission, the USGS is authorized to collect costs incurred prior to the effective date of termination of the agreement plus any termination cost.

6. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other parties.

7. The maps, records or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records or reports normally will be published by the party of the first part. However, the parties of the second part reserve the right to publish the results of this program, and if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at cost, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records or reports published by either party shall contain a statement of the cooperative relations between the parties. The parties acknowledge that scientific information and data developed as a result of the Scope of Work (SOW) are subject to applicable USGS review, approval, and release requirements, which are available on the USGS Fundamental Science Practices website (https://www.usgs.gov/office-of-science-quality-and-integrity/fundamental-science-practices).

8. In the event this Agreement is renewed as herein provided, the amounts to be contributed by the parties for each renewal period may be determined by mutual agreement and set forth by exchange of letters between the parties at or near the beginning of each such period.

9. Billing for this agreement will be rendered semi-annually in January 2025 and July 2025. Payments of bills are due within 60 days after the billing date. If not paid by the due date, interest will be charged at the current Treasury rate for each 30-day period, or portion thereof, that the payment is delayed beyond the due date. (31 USC 3717, Comptroller General File-B212222, August 23, 1983.)

10. The Legal authorities for the U.S. Geological Survey to enter into this Agreement are 43 USC 36C; 43 USC 50; and 43 USC50b.

UNITED STATES GEOLOGICAL SURVEY

MEGHAN ROUSSEL

Digitally signed by MEGHAN ROUSSEL
Date: 2024.04.17 11:31:26 -05'00'

Meghan Roussel 4/17/2024
Acting Director, New Mexico Water Science Center
6700 Edith Blvd. NE Bldg. B
Albuquerque, NM 87113
Phone: 512-927-3503
Email: mroussel@usgs.gov

RIO GRANDE COMPACT COMMISSION

4/26/24

Name: Jason Ullmann Date
Commissioner for Colorado
1313 Sherman Street, Room 821
Denver, CO 80203
Phone: 303-866-3311
Email: Jason.Ullmann@state.co.us

4/26/24

Name: Mike A. Hamman Date
Commissioner for New Mexico
P.O. Box 25102
Santa Fe, NM 87504-5102
Phone: 505-827-6091
Email: mike.hamman@ose.nm.gov

Name: Robert S. Skov Date
Commissioner for Texas
401 E. Franklin Avenue, Suite 560
El Paso, TX 79901-1212
Phone: 915-526-2869
Email: bobby@texasrgcc.com

Name: Hal Simpson Date
Federal Commissioner for Rio Grande Compact Commission
5967 S. Birch Way
Centennial, CO 80121
Phone: 303-916-1093
Email: halsimpson28@msn.com

Statement of Work
for
24RGJFA12

The duties of the United States Geological Survey are as follows:

1. Obtain data for yearly accounting from U.S. Geological Survey in New Mexico and Colorado as well as U.S. Bureau of Reclamation, Albuquerque and El Paso Offices, and Colorado Division of Water Resources.

2. Prepare and submit provisional water accounting reports on the deliveries of the Rio Grande water.

3. Compile Rio Grande Compact Commission water accounting from the data supplied by various agencies. Present annual accounting at the Engineer Advisor's Meeting. Obtain signature of Engineer Advisors on approved accounting sheets.

WATER RESOURCES DATA
ACKNOWLEDGMENTS

This report was prepared by the U.S. Geological Survey, technical adviser to the Rio Grande Compact Commission. The water-supply data contained in this report have been provided by various Federal and State agencies.

The office of the State Engineer of Colorado provided records of transmountain diversions and of storage for the following:

Squaw Lake
Rito Hondo Reservoir
Hermit Lakes Reservoir No. 3
Troutvale No. 2 Reservoir
Jumper Creek Reservoir
Big Meadows Reservoir
Alberta Park Reservoir
Shaw Lake Enlargement
Mill Creek Reservoir
Fuchs Reservoir
Platoro Reservoir
Trujillo Meadows Reservoir

The office of the State Engineer of Colorado provided records of discharge for the following:

Rio Grande near Del Norte, Colo.
Conejos River below Platoro Reservoir, Colo.
Conejos River near Mogote, Colo
San Antonio River at Ortiz, Colo
Los Pinos River near Ortiz, Colo.
Conejos River near Lasauses, Colo.
Rio Grande near Lobatos, Colo.

The U.S. Bureau of Reclamation, Albuquerque, N. Mex., provided the following records:

Azotea Tunnel at Outlet, near Chama, N. Mex.
Willow Creek above Heron Res., near Los Ojos, N. Mex.
Storage in Heron Reservoir near Los Ojos, N. Mex
Willow Creek below Heron Dam, N. Mex.
Storage in El Vado Reservoir near Tierra Amarilla, N. Mex.

The U.S. Geological Survey, in cooperation with the U.S. Bureau of Reclamation, Albuquerque, N. Mex, provided the following records:

Storage in Nambe Falls Reservoir near Nambe, N. Mex.
Rio Nambe below Nambe Falls Dam, near Nambe, N. Mex.

The U.S. Geological Survey supplied the record for Rio Grande below Elephant Butte Dam, and in cooperation with the New Mexico Interstate Stream Commission, also provided the following:

Rio Chama below El Vado Dam, N. Mex.
Rio Grande at Otowi Bridge, near San Ildefonso, N. Mex.
Storage in McClure Reservoir near Santa Fe, N. Mex.
Santa Fe River near Santa Fe, N. Mex.
Storage in Nichols Reservoir near Santa Fe, N. Mex.

The U.S. Geological Survey, in cooperation with the Corps of Engineers, Albuquerque, N. Mex., also provided the following records:

Rio Chama below Abiquiu Dam, N. Mex.
Rio Grande below Cochiti Dam, N. Mex.
Galisteo Creek below Galisteo Dam, N. Mex.
Jemez River Outlet below Jemez Canyon Dam, N. Mex.

The Corps of Engineers, Albuquerque, N. Mex., provided the following records of storage:

Abiquiu Reservoir.
Galisteo Reservoir.
Jemez Canyon Reservoir.
Cochiti Lake.

The Bureau of Indian Affairs, Albuquerque, N. Mex., provided the records of storage in Seama Reservoir.

The U.S. Bureau of Reclamation, El Paso, Texas, provided the following records:

Storage in Elephant Butte Reservoir at Elephant Butte, N. Mex.
Storage in Caballo Reservoir near Arrey, N. Mex.
Rio Grande below Caballo Dam, N. Mex.
Bonito ditch below Caballo Dam, N. Mex.

The Rio Grande Compact Commission gratefully acknowledges the cooperation received from the agencies listed above.

ACCURACY OF RECORDS

The Rules and Regulations of the Commission state that the equipment, method, and frequency of measurement at each gaging station shall be sufficient to obtain records at least equal in accuracy to those classified as "good" by the U.S. Geological Survey. Within the physical limitations of stream gaging, the agencies obtaining the records at Compact gaging stations have complied with these regulations.

The accuracy of streamflow records depends primarily on (1) the stability of the stage- discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description states the degree of accuracy attributed to the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent of the true value; "good" within 10 percent; and "fair" within 15 percent. Records that do not meet the criteria mentioned are rated "poor." Different accuracies may be attributed to different parts of a given record. The probable error in a monthly or annual mean discharge depends more on the distribution of the daily errors between the limits than it does on the limits themselves. For this reason, monthly and annual records are more accurate than most daily records.

Rio Grande near Del Norte, Colo

Location. -- Water-stage recorder with satellite telemetry, lat 37°41'19.0", long 106°27'35.5", in NW1/4 NW 1/4 sec. 29, T. 40 N R. 5 E., on right bank, 40 ft downstream from county highway bridge, 6.0 mi west of Del Norte, and 5.0 mi upstream from Pi Creek. Datum of gage is 7,980.25 ft above National Geodetic Vertical Datum of 1929. Prior to May 16, 1908, nonrecording gage at site 4 mi downstream at different datum. Records are equivalent.

Drainage area. -- 1,320 sq mi, approximately.

Average discharge. -- 134 years (1890-2023), 881 ft^3/s (638,100 acre-ft per year).

Extremes. -- 1889-2023: Maximum discharge, 18,000 ft^3/s Oct. 5, 1911 (gage height, 6.80 ft), from rating curve extended above 12,900 ft^3/s; minimum daily, 74 ft^3/s Nov. 16, 1956.

Remarks. -- Records good except for estimated for estimated daily discharges, which are poor. Natural flow of stream affected storage reservoirs, transmountain diversions from Colorado River Basin, diversions for irrigation and municipal use, groundw withdrawals, return flows from irrigated areas, and flows from sewage-treatment plants. Flow regulated by four reservoirs, total capacity 126,100 acre-ft, and by several smaller ones.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	5,170	190	145	167	10,255
February	4,535	175	135	162	8,995
March	6,228	235	175	201	12,353
April	33,847	2,390	196	1,128	67,136
May	138,300	5,360	3,120	4,461	274,318
June	102,750	4,820	2,100	3,425	203,805
July	28,581	2,040	444	922	56,690
August	10,863	502	249	350	21,547
September	8,121	379	204	271	16,108
October	8,818	461	223	284	17,491
November	5,426	249	125	181	10,762
December	4,270	160	120	138	8,470
Calendar year 2023	356,909	5,360	120	974	707,929

Conejos River below Platoro Reservoir, Colo.

Location. -- Water-stage recorder with satellite telemetry and concrete control, lat 37°21'17.65", long 106°32'39", in SW 1/4 NW 1/4 sec. 22, T. 36 N., R. 4 E., on left bank 1,100 ft downstream from valvehouse for Platoro Reservoir, and 0.7 mi northwest Platoro. Datum of gage is 9,866.60 ft above National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation).

Drainage area. -- 40 sq mi, approximately.

Average discharge. -- 71 years (1952-2023), 91 ft^3/s (65,700 acre-ft per year).

Extremes. -- 1952-2023: Maximum discharge, 1,160 ft^3/s Nov. 1, 1957; maximum gage height, 4.29 ft June 15, 1958; no flow Oct. 16-20, 1955.

Remarks. -- Records fair except for the periods Nov. 19 to Apr. 15, and estimated daily discharges, which are poor. Flow completely regulated by Platoro Reservoir (0.2 mi upstream) since Nov. 7, 1951.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	289	11	8	9	572
February	314	12	11	11	623
March	413	28	12	13	819
April	2,067	143	11	69	4,100
May	5,289	408	33	171	10,491
June	9,185	722	36	306	18,218
July	10,064	565	158	325	19,962
August	4,146	180	84	134	8,224
September	1,654	106	32	55	3,281
October	1,486	79	15	48	2,947
November	326	11	9	11	647
December	321	11	10	10	637
Calendar year 2023	35,554	722	8	90	70,521

Conejos River near Mogote, Colo

Location. -- Water-stage recorder with satellite telemetry, lat 37°03'14", long 106°11'13", in SE 1/4SE 1/4 sec. 34, T. 33 N., R. 7 E., on left bank 75 ft downstream from bridge on State Highway 174, 0.4 mi downstream from Fox Creek, and 5.3 mi west of Mogote, and 10 mi west of Antonito. Datum of gage is 8,269.39 ft above National Geodetic Vertical Datum of 1929.
Drainage area. -- 282 sq mi.
Average discharge. -- 113 years (1904, 1912-2023), 315 ft^3/s (228,600 acre-ft per year).
Extremes. -- 1903-1905, 1911-2023: Maximum discharge, 9,000 ft^3/s Oct. 5, 1911 (gage height, 8.50 ft), from rating curve extended above 3,100 ft^3/s; minimum daily determined, 10 ft^3/s July 18, 1904, also occurred Aug. 19, 2002.
Remarks. -- Records good except for estimated daily discharges, which are poor. Natural flow of stream affected by diversions for irrigation and return flows from irrigated areas. Some regulation by Platoro Reservoir (about 59 mi upstream) since Nov.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	1,676	68	41	54	3,324
February	1,496	62	43	53	2,967
March	2,221	102	52	72	4,405
April	11,159	732	68	372	22,134
May	45,594	1,910	934	1,471	90,436
June	38,990	1,570	1,120	1,300	77,337
July	16,515	1,000	255	533	32,758
August	6,205	283	144	200	12,308
September	3,322	155	73	111	6,589
October	2,979	124	67	96	5,909
November	1,504	60	33	50	2,983
December	1,387	52	36	45	2,751
Calendar year 2023	133,048	1,910	33	363	263,901

San Antonio River at Ortiz, Colo

Location. -- Water-stage recorder with satellite telemetry, lat 36°59'35", long 106°02'17", in New Mexico in NE 1/4 SE 1/4, sec. 24, T. 32 N., R. 8 E., on left bank 800 ft south of New Mexico-Colorado State line, 0.4 mi southeast of Ortiz, and 0.4 mi upstream from Los Pinos River. Altitude of gage is 7,970 ft above National Geodetic Vertical Datum of 1929.
Drainage area. -- 110 sq mi, approximately.
Average discharge. -- 83 years (1941-2023), 24 ft^3/s (17,030 acre-ft per year).
Extremes. -- 1920, 1925-2023: Maximum discharge, 1,750 ft^3/s Apr. 15, 1937 (gage height, 5.38 ft), from rating curve extended above 1,100 ft^3/s; no flow at times.
Remarks. -- Records fair except for flows below 1 ft^3/s, and estimated daily discharges, which are poor. Natural flow of stream affected by diversions for irrigation and return flows from irrigated areas.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	97	4	2	3	193
February	100	5	2	4	199
March	239	13	4	8	473
April	3,979	302	9	133	7,892
May	6,892	401	47	222	13,670
June	631	66	4	21	1,251
July	25	3	0	1	49
August	13	3	0	0	26
September	36	5	0	1	71
October	36	2	1	1	72
November	55	3	1	2	109
December	57	2	1	2	113
Calendar year 2023	12,159	401	0	33	24,117

Los Pinos River near Ortiz, Colo

Location. -- Water-stage recorder with satellite telemetry, lat 36°58'56", long 106°04'23", in New Mexico on line between secs. 26 and 27, T. 32 N., R. 8 E., on left bank 0.9 mi south of New Mexico-Colorado State line, 2.1 mi southwest of Ortiz, and 2.9 mi upstream from mouth. Altitude of gage is 8,040 ft above National Geodetic Vertical Datum of 1929.

Drainage area. -- 167 sq mi.

Average discharge. -- 105 years (1915-1921, 1925-2023), 115 ft^3/s (83,050 acre-ft per year).

Extremes. -- 1915-1920, 1925-2023: Maximum discharge, 3,160 ft^3/s May 12, 1941 (gage height, 5.77 ft, site and datum then in use), from rating curve extended above 1,600 ft^3/s; minimum observed, 1.7 ft^3/s Aug. 27, 2002.

Remarks. -- Records good except for those below 10 ft^3/s, which are fair, and estimated daily discharges, which are poor. Natural flow of stream affected by diversions for irrigation and return flows from irrigated areas.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	501	20	14	16	994
February	450	18	13	16	893
March	719	30	15	23	1,426
April	6,545	595	27	218	12,982
May	32,332	1,310	746	1,043	64,131
June	11,595	879	116	387	22,999
July	1,333	105	17	43	2,644
August	519	44	11	17	1,029
September	510	43	8	17	1,011
October	432	23	12	14	857
November	393	16	11	13	780
December	426	17	11	14	845
Calendar year 2023	55,755	1,310	8	152	110,590

Conejos River near Lasauses, Colo

Location. -- Two water-stage recorders with satellite telemetry, lat 37°18'01", long 105°44'47", in SW 1/4 SW 1/4 sec. 2, T. 35 R. 11 E., on left bank of main channel 125 ft downstream from bridge on State Highway 158, 2.1 mi north of Lasauses, and on left bank of secondary channel 1,550 ft upstream from bridge, 1.0 mi upstream from mouth, and 1.5 mi north of Lasauses. Datum of gage on main (north) channel is 7,495.02 ft above National Geodetic Vertical Datum of 1929, and on secondary (south) channel is 7,499.86 ft above National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation).

Drainage area. -- 887 sq mi.

Average discharge. -- 102 years (1922-2023), 168 ft^3/s (121,600 acre-ft per year).

Extremes. -- 1921-2023: Maximum discharge, 3,890 ft^3/s May 15, 1941; no flow at times in some years.

Remarks. -- Records good except for flows below 1.0 ft^3/s, and estimated daily discharges, which are poor. Natural flow of stre affected by diversions for irrigation, groundwater withdrawals, and return flows from irrigated areas. Flow regulated to some extent by Platoro Reservoir (about 83 mi upstream) since Nov. 7, 1951.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	2,066	87	56	67	4,098
February	2,013	93	63	72	3,993
March	3,235	146	73	104	6,417
April	7,468	544	34	249	14,813
May	40,045	1,930	675	1,292	79,429
June	27,344	1,570	471	911	54,237
July	6,411	499	101	207	12,716
August	1,916	130	31	62	3,800
September	1,097	70	9	37	2,176
October	812	47	4	26	1,611
November	1,276	49	27	43	2,531
December	1,571	64	41	51	3,116
Calendar year 2023	95,254	1,930	4	260	188,937

Rio Grande near Lobatos, Colo

Location. -- Water-stage recorder with satellite telemetry, lat 37°04'43", long 105°45'25", in NE 1/4 NW 1/4 sec. 27, T. 33 N., R. 11 E., on right bank at highway bridge, 5.7 mi north of Colorado-New Mexico State line, 11 mi east of Lobatos, and 14 mi east of Antonito. Datum of gage is 7,427.63 ft above National Geodetic Vertical Datum of 1929.

Drainage area. -- 7,700 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley).

Average discharge. -- 31 years (1900-1930), 846 ft^3/s (612,900 acre-ft per year); 93 years (1931-2023) 422 ft^3/s (305,800) acre-ft per year).

Extremes. -- 1899-2023: Maximum discharge observed, 13,200 ft^3/s June 8, 1905 (gage height, 9.1 ft); from rating curve extended above 8,000 ft^3/s; no flow at times in 1950-51, 1956.

Remarks. -- Records good except for flows below 20 ft^3/s, which are fair, and estimated daily discharges, which are poor. Natural flow of stream affected by storage reservoirs, transmountain diversions, diversions for irrigation and municipal use, groundwater withdrawals, return flows from irrigated areas, and flows from sewage-treatment plants.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	8,085	261	325	220	16,037
February	7,675	274	335	135	15,223
March	10,836	350	411	308	21,493
April	14,339	478	793	153	28,441
May	72,098	2,326	3,660	988	143,006
June	53,540	1,785	2,930	980	106,197
July	14,326	462	1,110	234	28,416
August	4,253	137	258	72	8,436
September	2,119	71	132	34	4,203
October	2,408	78	113	42	4,776
November	2,732	91	140	75	5,419
December	6,740	217	285	150	13,369
Calendar year 2023	199,151	2,326	113	283	395,016

Willow Creek above Heron Reservoir, near Los Ojos, N. Mex.

Location. -- Water-stage recorder, lat 36°44'33", long 106°37'34", in Tierra Amarilla Grant, on right bank 200 ft downstream from bridge, 0.2 mi downstream from Iron Spring Creek, 3.3 mi west of Los Ojos, and at mi 9.7. Datum of gage is 7,196.29 ft above mean sea level. Prior to Apr. 1, 1971, at site 900 ft downsteam.

Drainage area. -- 112 sq mi.

Average discharge. -- 7 years (1963-1969), 11.5 ft^3/s (8,330 acre-ft per year) prior to completion of Azotea tunnel; 54 years (1970-2023) 133 ft^3/s (96,080 acre-ft per year) subsequent to completion of Azotea tunnel.

Extremes. -- 1963-2023: Maximum discharge, 1,610 ft^3/s Mar. 12, 1985 (gage height, 6.65 ft); 2003-2021: Maximum daily discharge, 1,030 ft^3/s Apr. 4, 2005; no flow at times.

Remarks. -- Subsequent to Nov. 16, 1970, flow affected by transmountain diversions through Azotea tunnel. Flow in Rutheron Drain included prior to Apr. 1, 1971.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	0	0	0	0	0
February	0	0	0	0	0
March	1,980	310	0	64	3,928
April	13,521	884	58	451	26,818
May	29,794	1,100	757	961	59,095
June	24,814	1,069	459	827	49,218
July	6,311	516	49	204	12,517
August	391	57	0	13	776
September	11	1	0	0	21
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 2023	76,822	1,100	0	210	152,373

Horse Lake Creek above Heron Reservoir, near Los Ojos, N. Mex.

Location. -- Water-stage recorder, lat 36°42'24", long 106°44'42", in Tierra Amarilla Grant, on right bank 3.7 mi northwest of Heron Dam, 7.8 mi downstream from Horse Lake, and 9.9 mi west of Los Ojos. Datum of gage is 7,188.85 ft above National Geodetic Vertical Datum of 1929. Prior to July 1, 1971, at site 1,100 ft upstream.

Drainage area. -- 45 sq mi, approximately.

Average discharge. -- 12 years (1963-1973,1986), 1.17 ft^3/s (848 acre-ft per year).

Extremes. -- 1963-2011: Maximum discharge, 3,960 ft^3/s July 30, 1968 (gage height, 4.9 ft); no flow most of time.

Remarks. -- Records good for period of record. Diversions above station for irrigation of meadows and for off-channel stock tanks. Seasonal gage discontinued in 2011.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	---	---	---	---	---
February	---	---	---	---	---
March	---	---	---	---	---
April	---	---	---	---	---
May	---	---	---	---	---
June	---	---	---	---	---
July	---	---	---	---	---
August	---	---	---	---	---
September	---	---	---	---	---
October	---	---	---	---	---
November	---	---	---	---	---
December	---	---	---	---	---
Calendar year 2018	---	---	---	---	---

Willow Creek below Heron Dam, N. Mex.

Location. -- Totalizing flowmeters, lat 36°39'46", long 106°42'20", in Tierra Amarilla Grant, in outlet conduits at Heron Dam, 0.2 mi upstream from Rio Chama, 5.1 mi northeast of El Vado Dam, and 8.7 mi southwest of Los Ojos.

Drainage area. -- 193 sq mi.

Average discharge. -- 53 years (1971-2023), 129 ft^3/s (93,490 acre-ft per year).

Extremes. -- 1971-2023: Maximum daily discharge, 2,780 ft^3/s Dec. 18, 19, 1982; no flow at times each year.

Remarks. -- Flow completely regulated by Heron Dam.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	1,386	122	40	45	2,749
February	1,138	58	40	41	2,257
March	2,308	200	0	74	4,578
April	2,606	350	0	87	5,169
May	0	0	0	0	0
June	313	251	0	10	621
July	8,514	425	37	275	16,887
August	13,662	500	358	441	27,097
September	4,919	480	14	164	9,756
October	2,020	103	40	65	4,006
November	4,508	570	0	150	8,942
December	1,846	102	40	60	3,661
Calendar year 2023	43,219	570	0	118	85,723

Rio Chama below El Vado Dam, N. Mex

Location. -- Water-stage recorder with satellite telemetry, lat 36°34'49.38", long 106°43'29.16", in Tierra Amarilla Grant, on lef bank 1.5 mi downstream from El Vado Dam, 2.8 mi upstream from Rio Nutrias, and 13 mi southwest of Tierra Amarilla. Datum of gage is 6,696.12 ft above National Geodetic Vertical Datum of 1929. Prior to October 1935, at site 1.5 mi upstream at different datum. October 1935 to September 1938, at site 1.1 mi upstream at datum 30.34 ft higher.

Drainage area. -- 877 sq mi of which about 100 sq mi is probably noncontributing.

Average discharge. -- 4 years (1914, 1921-1923), 448 ft^3/s (324,600 acre-ft per year), prior to completion of El Vado Dam; 35 years (1936-1970), 373 ft^3/s (270,200 acre-feet per year), prior to release of transmountain water; 53 years (1971-2023) 450 ft^3/s (326,100 acre-feet per year).

Extremes. -- 1914-1916, 1920-1924, 1936-2023; Maximum discharge observed, 9,000 ft^3/s May 22, 1920 (gage height, 12 ft); r flow Mar. 25, 26, 31, 1955.

Remarks. -- Records good except for estimated discharges, which are fair. Flow regulated by El Vado Reservoir since 1935. Flow affected by release of transmountain water from Heron Reservoir since May 1971. Diversions for irrigation of about 10,600 acres upstream from station.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	3,121	104	95	101	6,190
February	2,745	100	96	98	5,445
March	6,323	525	100	204	12,542
April	29,466	1,800	219	982	58,446
May	97,070	4,170	2,030	3,131	192,538
June	26,549	2,210	295	885	52,660
July	12,025	555	168	388	23,852
August	15,430	521	452	498	30,605
September	6,486	523	97	216	12,865
October	3,313	112	91	107	6,572
November	6,024	593	92	201	11,948
December	3,125	102	100	101	6,199
Calendar year 2023	211,677	4,170	91	576	419,861

Rio Chama below Abiquiu Dam, N. Mex.

Location. -- Water-stage recorder with satellite telemetry, lat 36°14'14", long 106°25'02.7", on right bank 0.8 mi downstream from Abiquiu Dam and 5.9 mi northwest of Abiquiu. Altitude of gage is 6,040 ft above National Geodetic Vertical Datum of 1929 (from river-profile map and topographic map).

Drainage area. -- 2,147 sq mi, of which about 100 sq mi is probably noncontributing.

Average discharge. -- 9 years (1962-1970), 384 ft^3/s (278,200 acre-ft per year), prior to release of transmountain water; 53 years (1971-2023), 495 ft^3/s (358,400 acre-feet per year).

Extremes. -- 1961-2023; Maximum discharge, 2,990 ft^3/s July 1, 1965 (gage height, 6.69 ft); minimum, about 0.5 ft^3/s Mar. 17, 1966, Jan. 28, 1972.

Remarks. -- Records good except for estimated discharges, which are poor. Flow regulated by El Vado and Abiquiu reservoirs since Feb. 1963. Since May 1971, flow affected by release of transmountain water from Heron Reservoir. Diversions for irrigation of about 17,600 acres upstream from station.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	3,063	109	75	99	6,076
February	2,091	76	72	75	4,148
March	8,072	494	72	260	16,010
April	34,360	1,710	214	1,145	68,153
May	46,880	1,570	1,310	1,512	92,986
June	30,551	1,570	441	1,018	60,598
July	14,443	641	256	466	28,648
August	13,992	784	110	451	27,753
September	30,154	1,280	111	1,005	59,810
October	35,299	1,270	974	1,139	70,016
November	18,806	1,170	73	627	37,302
December	2,086	155	37	67	4,138
Calendar year 2023	239,798	1,710	37	655	475,640

Rio Nambe below Nambe Falls Dam, near Nambe, N. Mex.

Location. -- Water-stage recorder with satellite telemetry, lat 35°50'46", long 105°54'35", on Nambe Indian Reservation, in outlet conduits at Nambe Falls Dam, 300 ft upstream from Nambe Falls, 2.6 mi upstream from confluence of Rio Nambe and Rio En Medio, 4.4 mi southeast of Nambe Pueblo, and 5.4 mi southeast of Nambe. Datum of gage is 6,840 ft above National Geodetic Vertical Datum of 1929, from topographic map.

Drainage area. -- 34.1 sq mi.

Average discharge. -- -- 45 years (1979-2023), 12.4 ft^3/s (8,990 acre-feet per year).

Extremes. -- 1979-2023; Maximum discharge, 312 ft^3/s June 9, 1979 at site 1,100 ft downstream; no flow December 31, 1993.

Remarks. -- Records fair except for estimated discharges, which are poor. Flow completely regulated by Nambe Falls Reservoi

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	182	11	1	6	362
February	163	11	5	6	324
March	389	21	7	13	772
April	1,276	69	19	43	2,531
May	1,944	77	49	63	3,856
June	1,218	63	22	41	2,417
July	576	31	14	19	1,143
August	326	20	0	11	647
September	90	6	0	3	179
October	99	3	2	3	196
November	33	3	1	1	65
December	26	1	1	1	52
Calendar year 2023	6,324	77	0	17	12,543

Rio Grande at Otowi Bridge, near San Ildefonso, N. Mex.

Location. -- Water-stage recorder with satellite telemetry, lat 35°52'28.2", long 106°08'32.8", in San Ildefonso Pueblo Grant, 400 ft downstream from bridge on State Highway 502, 1.8 mi southwest of San Ildefonso Pueblo, 2.5 mi downstream from Pojoaque River, and 6.8 mi west of Pojoaque. Datum of gage is 5,491.66 ft above North American Vertical Datum of 1988, from global navigation satellite system survey. Prior to May 19, 1904, and July 25 to Oct 1, 1904, staff gage at site 180 ft upstream at datum 2.02 ft lower.

Drainage area. -- 14,300 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Average discharge. -- 124 years (1896-1905, 1910-2023), 1,462 ft^3/s (1,059,000 acre-feet per year).

Extremes. -- 1895-1905, 1910-2023; Maximum discharge, 24,400 ft^3/s May 23, 1920 (gage height, 14.1 ft); minimum daily, 195 ft^3/s Aug. 4, 1977.

Remarks. -- Records good except for estimated discharges, which are poor. Considerable regulation by Heron, El Vado, and Abiquiu reservoirs on Rio Chama. Flow affected by release of transmountain water from Heron Reservoir since May 1971. Diversions upstream from station for irrigation of about 620,000 acres in Colorado and 75,000 acres in New Mexico.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	20,506	779	570	661	40,674
February	19,510	790	529	697	38,698
March	32,275	1,390	736	1,041	64,017
April	78,328	3,670	988	2,611	155,364
May	179,340	7,520	3,860	5,785	355,721
June	112,120	6,050	1,790	3,737	222,390
July	36,778	2,030	940	1,186	72,949
August	24,135	1,050	373	779	47,872
September	36,415	1,540	290	1,214	72,229
October	44,270	1,550	1,270	1,428	87,810
November	30,395	1,570	364	1,013	60,288
December	17,383	670	472	561	34,479
Calendar year 2023	631,455	7,520	290	1,726	1,252,491

Santa Fe River near Santa Fe, N. Mex.

Location. -- Water-stage recorder with satellite telemetry and concrete control, lat 35°41'11.2", long 105°50'37", in Santa Fe National Forest, on left bank 0.4 mi downstream from McClure Dam, and 5.3 mi east of Santa Fe at mile 36.6. Altitude of gage is 7,720 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Nov. 4, 1930, at site 1.5 mi downstream, and Apr. 11, 1931 to Sept. 30, 1947, at site 0.3 mi upstream, each at different datum.

Drainage area. -- 18.2 sq mi.

Average discharge. -- 111 years (1913-2023), 7.7 ft^3/s (5,600 acre-feet per year).

Extremes. -- 1913-2023; Maximum discharge, 1,500 ft^3/s Aug. 14, 1921 (gage height, 5.17 ft); from rating curve extended above 150 ft^3/s; no flow at times.

Remarks. -- Records good. Flow regulated by McClure Reservoir, completed in 1926, raised in 1935, 1947 and again in 1989.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	144	6	4	5	286
February	151	6	5	5	300
March	184	10	2	6	364
April	374	22	2	12	743
May	690	25	17	22	1,368
June	418	21	10	14	829
July	323	12	5	10	640
August	324	11	10	10	642
September	291	11	9	10	576
October	269	9	5	9	534
November	177	11	5	6	352
December	175	6	5	6	347
Calendar year 2023	3,520	25	2	10	6,981

Rio Grande below Cochiti Dam, N. Mex.

Location. -- Water-stage recorder with satellite telemetry, lat 35°37'04.8", long 106°19'26.2", in Pueblo de Cochiti Grant, 320 ft upstream from bridge on State Highway 22, 700 ft downstream from Cochiti Dam, and 1.4 mi northeast of Cochiti Pueblo, and at mile 1,587.6. Datum of gage is 5,229.01 ft above North American Vertical Datum of 1988. Prior to Nov. 14, 1973, at site 2.4 mi downstream at altitude 5,210 ft, from topographic map. Nov. 14, 1973 to Jan. 8, 1976, at site 320 ft downstream at datum 1.79 ft lower.

Drainage area. -- 14,900 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Average discharge. -- 53 years (1971-2023), 1,247 ft^3/s (903,000 acre-feet per year).

Extremes. -- 1971-2023; Maximum discharge, 10,300 ft^3/s July 26, 1971 (gage height, 7.90 ft) at site 2.4 mi downstream prior to closure of Cochiti Dam; from rating curve extended above 2,600 ft^3/s; minimum discharge 0.51 ft^3/s Aug. 3-5, 1977, Aug. 27-28, 1978.

Remarks. -- Records good except for estimated discharges, which are poor. Discharges include flow of Santa Fe River, which is intercepted by Cochiti Dam and released through the combined outlet works. Flow regulated by Cochiti Dam since Nov. 12, 1973. Diversions upstream from station for irrigation of about 620,000 acres in Colorado and about 81,000 acres in New Mexico. Cochiti Eastside Main canal, on left bank, and Sili Main canal, on right bank, head at Cochiti Dam and bypass gage for irrigation of about 6,000 acres downstream from station.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	20,236	1,030	502	653	40,138
February	18,031	713	537	644	35,764
March	32,056	1,450	545	1,034	63,583
April	76,418	3,730	892	2,547	151,575
May	150,420	5,370	3,590	4,852	298,358
June	140,170	5,280	2,160	4,672	278,027
July	32,692	1,770	795	1,055	64,845
August	16,148	795	301	521	32,030
September	7,539	306	190	251	14,954
October	8,353	311	207	269	16,568
November	43,650	2,020	217	1,455	86,580
December	51,587	2,330	544	1,664	102,323
Calendar year 2023	597,300	5,370	190	1,635	1,184,745

Galisteo Creek below Galisteo Dam, N. Mex.

Location. -- Water-stage recorder with satellite telemetry, lat 35°27'52.75", long 106°12'48.2", in Mesita de Juana Lopez Grant, on right bank 0.4 mi downstream from Galisteo Dam, 5.3 mi northwest of Cerrillos, and at mile 11.4. Elevation of gage is 5,450 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Dec. 21, 1981, at site 1,200 ft downstream at different datum.

Drainage area. -- 596 sq mi.

Average discharge. -- 53 years (1971-2023), 4.7 ft^3/s (3,392 acre-feet per year).

Extremes. -- 1970-2023; Maximum discharge, 3,460 ft^3/s Aug. 24, 1997 (gage height, 5.57 ft); no flow many days each year.

Remarks. -- Records fair. Flow regulated by Galisteo Reservoir 0.4 mi upstream. Diversions for irrigation of about 50 acres above reservoir.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	0	0	0	0	0
February	0	0	0	0	0
March	42	17	0	1	83
April	0	0	0	0	0
May	0	0	0	0	0
June	6	3	0	0	12
July	1	0	0	0	2
August	1	0	0	0	1
September	1	0	0	0	1
October	0	0	0	0	1
November	1	1	0	0	1
December	1	0	0	0	2
Calendar year 2023	52	17	0	0	104

Jemez River Outlet below Jemez Canyon Dam, N. Mex.

Location. -- Water-stage recorder with satellite telemetry, lat 35°23'41", long 106°32'41", in NE1/4 SW1/4 SW1/4 sec. 32, T. 14 N., R. 4 E., gage located at outlet pipe for Jemez Canyon Dam, 0.7 mi upstream from prior gage location. Elevation of gage is 5,162 ft above National Geodetic Vertical Datum of 1929, from topographic map. Gage replaces Jemez River below Jemez Canyon Dam. Discharge records for two gages are comparable except the period 2002-2009, when original gage was affected by siltation.

Drainage area. -- 1,034 sq mi.

Average discharge. -- 14 years (2010-2023), 36.2 ft^3/s (26,230 acre-feet per year).

Extremes. -- 2010-2023; Maximum discharge, 1,420 cfs Jul. 27, 2013 (gage height, 4.82); no flow many days each year.

Remarks. -- Records fair except for estimated discharges, which are poor. Flow regulated by Jemez Canyon Dam since October 1953. Diversions for irrigation of about 3,000 acres above station.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	499	31	9	16	990
February	541	28	14	19	1,074
March	2,678	276	18	86	5,313
April	16,898	1,460	109	563	33,517
May	10,317	608	95	333	20,464
June	1,096	143	0	37	2,174
July	0	0	0	0	0
August	37	22	0	1	72
September	0	0	0	0	0
October	0	0	0	0	0
November	17	5	0	1	33
December	129	19	0	4	256
Calendar year 2023	32,212	1,460	0	88	63,892

Rio Grande below Elephant Butte Dam, N. Mex.

Location. -- Water-stage recorder with satellite telemetry, lat 33°08'54.64", long 107°12'24.42", in Pedro Armendariz Grant, on left bank 1.0 mi downstream from dam, 1.5 mi upstream from Cuchillo Negro River. Datum of gage is 4,243.22 ft above North American Vertical Datum of 1988. Prior to Mar. 24, 1980, at datum 1.0 ft higher. Prior to April 24, 1942, at several different sites and datums.

Drainage area. -- 29,450 sq mi approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Average discharge. -- 109 years (1915-2023), 947 ft^3/s (686,100 acre-feet per year).

Extremes. -- 1915-2023; Maximum daily discharge, 8,220 ft^3/s May 22, 1942; no flow at times.

Remarks. -- Records good except for estimated discharges, which are poor. Flow regulated by Elephant Butte Reservoir. Diversions for irrigation of about 800,000 acres above station.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	5	0	0	0	10
February	3	0	0	0	6
March	7	0	0	0	14
April	137	27	0	5	272
May	49,225	2,230	225	1,588	97,638
June	70,650	2,430	2,220	2,355	140,134
July	73,290	2,420	2,230	2,364	145,371
August	37,967	2,140	395	1,225	75,308
September	22,044	1,450	394	735	43,724
October	4,728	591	0	153	9,379
November	37	1	1	1	72
December	25	2	0	1	50
Calendar year 2023	258,119	2,430	0	702	511,979

Rio Grande below Caballo Dam, N. Mex.

Location. -- Water-stage recorder, lat 32°53'05.68", long 107°17'33.71", on left bank 2,000 ft upstream from Interstate Highway 25, 4,200 ft downstream from Caballo Dam, 1.2 mi downstream from Apache Canyon 1.3 mi upstream from Percha diversion dam, and 3 mi northeast of Arrey. Datum of gage is 4,133.19 ft above North American Vertical Datum of 1988. October 13, 1938 to December 31, 1945, at datum 5.0 ft higher.

Drainage area. -- 30,700 sq mi, approximately (includes 2,940 sq mi in closed basin in San Luis Valley, Colo.).

Average discharge. -- 86 years (1938-2023), 873 ft^3/s (632,400 acre-feet per year).

Extremes. -- 1938-2023; Maximum daily discharge, 7,650 ft^3/s May 20, 1942; minimum daily, 0.0 ft^3/s May 9-15, 2012 and Oct 3, 2012.

Remarks. -- Records good. Flow regulated by Elephant Butte Reservoir and Caballo Reservoirs. Diversions for irrigation of about 800,000 acres above station.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	28	1	1	1	56
February	26	1	1	1	51
March	29	1	1	1	57
April	28	1	1	1	55
May	48,843	2,603	192	1,576	96,880
June	70,500	2,628	2,136	2,350	139,837
July	69,206	2,398	1,868	2,232	137,270
August	47,201	2,044	883	1,523	93,623
September	31,878	1,302	758	1,063	63,230
October	8,539	843	1	275	16,938
November	20	1	1	1	39
December	20	1	1	1	40
Calendar year 2023	276,317	2,628	1	752	548,076

Bonito Ditch below Caballo Dam, N. Mex.

Records available. -- January 1938 to current year. Published as supplementary data with Rio Grande below Caballo Dam in USGS Water-Supply Papers and Water-Data Reports from October 1947 until September, 2005.

Remarks. -- Ditch diverts directly from Caballo Reservoir for irrigation of lands on right bank of river. The total release from Project Storage, as used in computations of Compact Commission, is the combined flow of this ditch and Rio Grande below Caballo Dam.

	Diversion, in acre-ft
January	57.0
February	29.0
March	68.0
April	162.0
May	57.0
June	323.0
July	149.0
August	92.0
September	45.0
October	71.0
November	54.0
December	40.0
Calendar year 2023	1,146.0

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in Colorado
(constructed or enlarged since 1937)

Squaw Lake. – Staff gage in sec. 12, T. 39 N., R. 4 W., on tributary to Squaw Creek. Completed in 1938; capacity, 162 acre-ft by 1953 survey. Water is used for irrigation below gaging station on Rio Grande near Del Norte.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2023

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	-
Contents	162	162	162	162	162	162	162	162	162	162	162	162	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

Rito Hondo Reservoir. – Staff gage in sec. 22, T. 42 N., R. 3 W., on Rito Hondo (Deep Creek) tributary to Clear Creek. Completed in 1957; capacity, 561 acre-ft. Originally filled during May and June 1958 with transmountain water; storage is not in debit status. Water is used for fish culture.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2023

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	0	0	0	0	0	0	0	6.5	11.2	0	0	0	-
Contents	0	0	0	0	0	0	0	20	70	0	0	0	-
Change	0	0	0	0	0	0	0	20	50	-70	0	0	0

Hermit Lakes Reservoir No.3. – In sec. 25, T. 41 N., R. 4 W., on South Clear Creek. Completed prior to 1960; capacity, 192 acre-ft. Capacity table based on elevation above bottom of outlet. Water is used for fish culture. Includes 169 acre-feet of transmountain water by exchange in 1984 and 23 acre-ft of transmountain water by exchange in 1985.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2023

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	-
Contents	192	192	192	192	192	192	192	192	192	192	192	192	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

Troutvale No. 2 Reservoir. – Staff gage in E1/2 sec. 10, T. 41 N., R. 3 W., on South Clear Creek. Completed in 1940; capacity, 435 acre-ft. Condition of spillway limited storage to 168 acre-ft after May 1942. Repairs to spillway in 1947 increased capacity to 257 acre-ft. Water is used for fish culture with only occasional sale for irrigation. Storage omitted from accounting by action of Commission on Feb. 15, 1962.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2023

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	-
Contents	213	213	213	213	213	213	213	213	213	213	213	213	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

Reservoirs in Rio Grande Basin in Colorado
(constructed or enlarged since 1937)

Jumper Creek Reservoir. – In sec. 5, T. 39 N., R. 2 W., on Jumper Creek, tributary to Trout Creek. Completed in 1951; capacity, 38 acre-ft. Capacity table based on elevation above bottom of outlet. Storage omitted from accounting by action of Commission on Feb. 15, 1962.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2023

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	-
Contents	38	38	38	38	38	38	38	38	38	38	38	38	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

Big Meadows Reservoir. – In NW1/4 sec. 17, T. 38 N., R. 2 E., on South Fork about 0.9 mi upstream from Hope Creek. Completed in 1967; capacity, 2,437 acre-ft. Capacity table based on elevation above outlet. Water is used for fish culture. Includes 140 acre-ft of transmountain water, by exchange, in 1967; 838 acre-ft, by exchange, in 1968; 347 acre-ft, by exchange, in 1969; and 1,112 acre-ft, by exchange, in 1983, for a total of 2,437 acre-ft.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2023

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	-
Contents	2,437	2,437	2,437	2,437	2,437	2,437	2,437	2,437	2,437	2,437	2,437	2,437	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

Alberta Park Reservoir. – In sec. 34, T. 38 N., R. 2 E., on Pass Creek. Completed in 1953; capacity, 598 acre-ft. Capacity table based on elevation above bottom of outlet. Storage prior to June 30, 1983 included 244 acre-ft of transmountain water imported in 1963. By a 1983 resolution of the Rio Grande Compact Commission, the reservoir was drained for repairs in July 1983; recovery was completed in 1984. The reservoir also contains 100 acre-ft of transmountain water stored by exchange in 1983 and 254 acre-ft of transmountain water stored in 1984.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2023

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	0	0	0	0	0	0	0	0	0	0	0	9.1	-
Contents	0	0	0	0	0	0	0	0	0	0	0	108	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	108

Shaw Lake Enlargement. – sec. 5, T. 38 N., R. 2 E., on tributary to Lake Creek. Capacity, 638 acre-ft by 1916 decree; enlarged in 1955 to 681 acre-ft. Only the storage in excess of 638 acre-ft is subject to terms of Rio Grande Compact. Includes 42 acre-ft of transmountain water imported in 1965.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2023

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	-	-	-	-	-	-	-	-	-	-	-	-	-
Contents	42	42	42	42	42	42	42	42	42	42	42	42	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in Colorado
(constructed or enlarged since 1937)

Mill Creek Reservoir. – In sec. 16, T. 39 N., R. 3 E., on Mill Creek. Completed in 1953; capacity, 43 acre-ft. Capacity based on elevation above bottom of outlet. Includes 43 acre-ft of transmountain water, by exchange, in 1976.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2023

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	14.5	14.5	14.5	14.5	14.1	8.2	8.2	8.2	8.2	8.2	8.2	8.2	-
Contents	41	41	41	41	39	15	15	15	15	15	15	15	-
Change	0	0	0	0	-2	-24	0	0	0	0	0	0	-26

Fuchs Reservoir. – Staff gage in sec. 2, T. 37 N., R. 4 E., on East Pinos Creek. Completed in 1939; capacity, 237 acre-ft with 2 ft of flash boards in spillway. Prior to calendar year 1999, contents reported as 238 acre-ft were actually 237 acre-ft. Pinos Creek enters Rio Grande below station near Del Norte.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2023

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	14	15.5	17.2	17.2	17.2	17.2	17.2	15.1	9.3	7.5	7.5	9.1	-
Contents	167	200	237	237	237	237	237	191	83	58	58	80	-
Change	+37	+33	+37	0	0	0	0	-46	-108	-25	0	+22	-50

Platoro Reservoir. – Water-stage recorder in NW1/4 sec. 22, T. 36 N., R. 4 E., on Conejos River. Completed in 1951; capacity, 59,570 acre-ft at crest of spillway. Reservoir is used for irrigation and flood control. Storage affects Conejos Index Supply. Contents include 3,000 acre-ft of transmountain water stored by exchange in April 1985 on behalf of the Colorado Division of Wildlife.

Month-end elevation, in feet, and contents, in acre-feet

Date	Elevation	Contents	Change in contents
December 31, 2022	9,971.40	13,902	-
January 31, 2023	9,971.84	14,122	+220
February 28	9,971.76	14,080	-42
March 31	9,971.82	14,109	+29
April 30	9,971.30	13,854	-255
May 31	10,001.77	32,238	+18384
June 30	10,025.06	51,284	+19046
July 31	10,016.93	44,154	-7130
August 31	10,009.72	38,262	-5892
September 30	10,006.77	35,968	-2294
October 31	10,003.78	33,716	-2252
November 30	10,003.32	33,374	-342
December 31, 2023	10,003.06	33,184	-190
Calendar year 2023	-	-	+19282

Trujillo Meadows Reservoir. – In sec. 5, T. 32 N., R. 5 E., on Los Pinos River. Completed in 1957; capacity, 869 acre-ft, effective Jan. 1, 1999. Water is used for fish culture. Storage is transmountain water, by exchange, in 1959.

Month-end gage height, in feet, and contents, in acre-feet

Calendar Year 2023

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	-
Contents	869	869	869	869	869	869	869	869	869	869	869	869	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in New Mexico
(constructed or enlarged since 1929)

Heron Reservoir. – Water-stage recorder with satellite telemetry, lat 36°39'56", long 106°42'13", on Willow Creek. Storage began in October 1970. Capacity, 401,300 acre-ft at elevation 7,186.1 ft (low point on crest of spillway); dead storage, 1,340 acre-ft at elevation 7,003.0 ft. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Used for storage of transmountain water.

Month-end elevation, in feet, and contents, in acre-feet

Date	Elevation	Contents	Change in contents
December 31, 2022	7,078.56	41,195	-
January 31, 2023	7,076.34	38,788	-2,407
February 28	7,074.35	36,722	-2,066
March 31	7,076.22	38,661	+1939
April 30	7,094.34	61,815	+23,154
May 31	7,121.94	120,134	+58,319
June 30	7,136.14	164,807	+44,673
July 31	7,133.90	157,079	-7,728
August 31	7,125.19	129,470	-27,609
September 30	7,121.37	118,551	-10,919
October 31	7,119.43	113,290	-5,261
November 30	7,115.64	103,584	-9,706
December 31, 2023	7,114.02	99,662	-3,922
Calendar year 2023	-	-	+58,467

El Vado Reservoir. – Water-stage recorder and surface follower, lat 36°35'39", long 106°44'00", on Rio Chama. Storage began in January 1935. Capacity, 186,250 acre-ft at gage height 6,902.0 ft (crest of spillway); dead storage, 480 acre-ft, below gage height 6,775.0 ft (invert of outlet works), as determined by survey in 1984. Datum of gage is 8.21 ft above National Geodetic Vertical Datum of 1929. Storage includes both Rio Grande and transmountain water.

Month-end gage height, in feet, and contents, in acre-feet

Date	Gage Height	Contents	Change in contents	Transmountain water
December 31, 2022	6,785.95	2,262	-	2,277
January 31, 2023	6,785.73	2,179	-83	2,111
February 28	6,784.64	1,787	-392	2,071
March 31	6,785.15	1,966	+179	2,026
April 30	6,790.65	4,316	+2,350	1,419
May 31	6,794.28	6,161	+1,845	1,408
June 30	6,785.36	2,042	-4,119	0
July 31	6,783.78	1,505	-537	0
August 31	6,785.97	2,270	+765	589
September 30	6,785.95	2,262	-8	676
October 31	6,785.35	2,038	-224	458
November 30	6,783.89	1,539	-499	1,457
December 31, 2022	6,785.07	1,937	+398	1,937
Calendar year 2023	-	-	-325	-

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in New Mexico
(constructed or enlarged since 1929)

Abiquiu Reservoir. -- Water-stage recorder, lat 36°14'24", long l06°25'44", on Rio Chama. Completed in February 1963; capacity, 1,192,800 acre-ft at elevation 6,350 feet (crest of spillway) by 1998 survey. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Reservoir is operated by Corps of Engineers for flood control and sediment storage. A resolution granting permission to store transmountain waters was approved by Rio Grande Compact Commission on May 3, 1974. Storage includes both Rio Grande and transmountain water.

Month-end elevation, in feet, and contents, in acre-feet

Date	Elevation	Contents	Change in contents	Transmountain water
December 31, 2022	6,196.20	100,112	-	99,422
January 31, 2023	6,196.61	101,330	+371	97,151
February 28	6,197.77	104,824	+2,973	96,596
March 31	6,198.34	106,562	+1,262	89,783
April 30	6,201.40	116,135	-1,603	87,560
May 31	6,230.08	229,574	+10,246	87,053
June 30	6,228.70	223,142	-2,344	87,933
July 31	6,226.46	212,895	+8,886	80,056
August 31	6,226.09	211,227	+7,829	86,482
September 30	6,214.71	163,339	+17,673	90,226
October 31	6,196.12	99,875	-692	85,606
November 30	6,186.45	73,652	-14,002	72,708
December 31, 2023	6,187.65	76,629	-8,391	75,096
Calendar year 2023	-	-	-23,483	-

Nambe Falls Reservoir. – Water-stage recorder, lat 35°50'46", long 105°54'17", in NE1/4SW1/4 sec. 29, T. 19 N., R. 10 E., in Nambe Indian Reservation, on Rio Nambe. Completed in 1976; capacity 1,920 acre-ft at elevation 6,826.6 feet (crest of spillway) by 2004 survey, dead storage 121 acre-ft at elevation 6,760.9 ft. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Storage is transmountain water by exchange (see resolution adopted March 27, 1975).

Month-end elevation, in feet, and contents, in acre-feet

Date	Elevation	Contents	Change in contents
December 31, 2022	6,825.29	1,657	-
January 31, 2023	6,824.91	1,636	+125
February 28	6,824.94	1,638	-16
March 31	6,826.72	1,736	+51
April 30	6,826.79	1,740	-52
May 31	6,826.86	1,744	-388
June 30	6,826.53	1,725	+291
July 31	6,816.36	1,214	+173
August 31	6,806.99	839	-8
September 30	6,808.22	882	-42
October 31	6,808.71	900	-16
November 30	6,813.03	1,069	14
December 31, 2023	6,817.74	1,277	-16
Calendar year 2023	-	-	-380

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in New Mexico
(constructed or enlarged since 1929)

McClure (Granite Point) Reservoir. – Water-stage recorder, lat 35°41'18", long l05°50'06", in NE1/4SW1/4 sec. 24, T. 17 N., R. 10 E., on Santa Fe River. Original reservoir completed in 1926, capacity, 561 acre-ft; in 1935, permanent flash boards were installed in spillway increasing capacity to 650 acre-ft; in 1947 both dam and spillway were reconstructed increasing capacity to 2,615 acre-ft (gage height, 96.6 ft, crest of spillway). In 1953 spillway was equipped with radial gates that opened automatically, increasing capacity to over 3,000 acre-ft. In 1972, radial gates were removed decreasing capacity to 2,615 acre-ft. In 1989, modifications to the dam and spillway increased capacity to 2,813 acre-ft. In 1995, modification to the dam and spillway increased capacity to 3,257 acre-ft. No dead storage. Elevation of gage is 7,800 ft above North American Vertical Datum of 1988 (levels by City of Santa Fe). Water is for municipal use in Santa Fe. Storage includes both Rio Grande water and transmountain water by exchange. Capacity includes 561 acre-ft for pre-Compact storage and additional capacity as may be available to accomodate up to a total of 1,061 acre-feet of pre-Compact storage in McClure and Nichols Reservoirs combined.

Month-end gage height, in feet, and contents, in acre-feet

Date	Gage height	Contents	Change in contents	Pre-Compact water	Transmountain water
December 31, 2022	7,855.77	1,124	-	614	510
January 31, 2023	7,853.88	1,039	-85	384	538
February 28	7,854.73	1,077	+38	238	593
March 31	7,864.06	1,545	+468	188	541
April 30	7,879.09	2,496	+951	233	625
May 31	7,885.96	3,000	+504	825	600
June 30	7,887.70	3,134	+134	881	608
July 31	7,881.54	2,672	462	470	608
August 31	7,872.28	2,039	-633	0	582
September 30	7,861.43	1,401	-638	0	535
October 31	7,850.83	912	-489	0	478
November 30	7,842.41	618	-194	0	410
December 31, 2023	7,831.89	348	-270	0	278
Calendar year 2023	-		-776		

Nichols Reservoir. – Water-stage recorder, lat 35°41'24", long l05°52'46", in SE1/4NE1/4 sec. 21, T. 17 N., R. 10 E., on Santa Fe River. Completed in 1942; capacity, 685 acre-ft at gage height 167.0 feet (crest of spillway), dead storage, 14 acre-ft at gage height 121.1 feet. Datum of gage is 7,400 ft above North American Vertical Datum of 1988 (levels by City of Santa Fe). Water is for municipal use in Santa Fe. Storage includes both Rio Grande water and transmountain water by exchange. Capacity may include pre-Compact storage such that total pre-Compact storage in McClure and Nichols Reservoirs combined does not exceed 1,061 acre-ft.

Month-end gage height, in feet, and contents, in acre-feet

Date	Gage height	Contents	Change in contents	Pre-Compact water	Transmountain water
December 31, 2022	7,840.37	489	-	267	222
January 31, 2023	7,475.39	374	-115	138	194
February 28	7,468.77	253	-121	56	139
March 31	7,482.53	547	+293	67	191
April 30	7,477.85	430	-117	40	108
May 31	7,486.58	660	+231	182	132
June 30	7,485.94	641	-20	180	124
July 31	7,482.53	547	-94	96	124
August 31	7,481.75	526	-21	0	150
September 30	7,481.34	515	-12	0	197
October 31	7,480.26	486	-29	0	254
November 30	7,480.30	487	+2	0	323
December 31, 2023	7,480.48	492	+5	0	393
Calendar year 2023	-		+3		

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in New Mexico
(constructed or enlarged since 1929)

Cochiti Lake. – Water-stage recorder with satellite telemetry, lat 35°37'01", long l06°18'58", in NW1/4SW1/4 sec. 16, T. 16 N., R. 6 E., in Pueblo de Cochiti Grant, on Rio Grande. Completed in l975; capacity 491,259 acre-ft at elevation 5,450.0 ft (crest of service spillway); zero storage at elevation 5,255.0 from 1998 survey. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by the U.S. Army Corps of Engineers). A 50,000 acre-foot permanent pool was authorized by Public Law 88-293, 88th Congress, March 26, 1964. Reservoir is operated by Corps of Engineers for flood control, sediment storage, and recreation. Storage began Nov. 12, 1973.

Month-end elevation, in feet, and contents, in acre-feet

Date	Elevation	Contents	Change in contents	Transmountain water
December 31, 2022	5,342.17	40,597	-	40,234
January 31, 2023	5,344.50	43,005	+2,408	42,377
February 28	5,345.28	43,902	+897	42,861
March 31	5,344.59	43,106	-796	42,631
April 30	5,344.28	42,761	-345	42,269
May 31	5,371.31	96,093	+53,332	41,858
June 30	5,343.05	41,459	-54,634	41,325
July 31	5,343.73	42,166	+707	40,741
August 31	5,348.61	48,173	+6,007	40,294
September 30	5,369.01	89,887	+41,714	40,026
October 31	5,384.51	136,196	+46,309	42,513
November 30	5,373.84	103,201	-32,995	43,850
December 31, 2023	5,345.87	44,612	-58,589	43,832
Calendar year 2023	-	-	+4,015	-

Galisteo Reservoir. – Water-stage recorder above elevation 5,500.3 ft, nonrecording below, lat 35°27'44", long 106°12'30", in NW1/4 sec. 9, T. 14 N., R. 7 E., on Galisteo Creek. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Storage records begin in October 1970. Capacity 88,990 acre-ft at elevation 5,608.0 ft (crest of spillway). No dead storage. Reservoir is operated by Corps of Engineers for flood control and sediment storage.

Month-end contents, in acre-feet

Calendar Year 2023

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Contents	0	0	0	0	0	0	0	0	0	0	0	0	0
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in New Mexico
(constructed or enlarged since 1929)

Jemez Canyon Reservoir. – Water-stage recorder, lat 35°23’40", long l06°32’50", in SW1/4SW1/4 sec. 32, T. 14 N., R. 4 E., on Jemez River. Completed in 1953; capacity, 259,423 acre-ft at elevation 5,271.20 ft. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Maximum controlled capacity at elevation 5,232.0 ft (floor of spillway) is 97,425 acre-ft by 1998 survey. Reservoir is operated by Corps of Engineers for flood control and sediment storage. A sediment pool of about 2,000 acre-ft of transmountain water has been maintained since August l979.

Month-end elevation, in feet, and contents, in acre-feet

Date	Elevation	Contents	Change in contents	Transmountain water
December 31, 2022	5,133.00	0	-	0
January 31, 2023	5,133.00	0	0	0
February 28	5,133.00	0	0	0
March 31	5,133.00	0	0	0
April 30	5,133.00	0	0	0
May 31	5,133.00	0	0	0
June 30	5,133.00	0	0	0
July 31	5,133.00	0	0	0
August 31	5,133.00	0	0	0
September 30	5,133.00	0	0	0
October 31	5,133.00	0	0	0
November 30	5,133.00	0	0	0
December 31, 2023	5,133.00	0	0	0
Calendar year 2023	-	-	0	-

Acomita Reservoir. – Staff gage in SE1/4 sec. 29, T. 10 N., R. 7 W., on San Fidel Arroyo; water for reservoir is diverted from Rio San Jose. Completed in 1938; original capacity, 850 acre-ft; present capacity 650 acre-ft on basis of 1956 sediment survey. Water is used for irrigation on Acoma Indian Reservation. Storage omitted from accounting by action of Commission on March 23, 2000.

Month-end contents, in acre-feet

Calendar Year 2023

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Contents	-	-	-	-	-	-	-	-	-	-	-	-	-
Change	-	-	-	-	-	-	-	-	-	-	-	-	-

Seama Reservoir. – In sec. 36, T. 10 N., R. 7 W., off channel from Rio San Jose. Completed in October 1980; capacity approximately 400 acre-ft. Water is used for irrigation on Laguna Indian Reservation.

No storage during 2023.

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in New Mexico
(project storage)

Elephant Butte Reservoir. – Water-stage recorder, lat 33°09'15", long l07°11'28", in NW1/4 sec. 30, T. 13 S., R. 3 W., on Rio Grande. Storage began Jan. 6, 1915; capacity, 2,023,400 acre-ft at gage height 4,407.0 ft (crest of spillway), by survey of 1999 with flood control storage reservation of 50,000 acre-ft from April through September and 25,000 acre-ft from October through March in accordance with Sept. 9, 1998 resolution of the Rio Grande Compact Commission. Datum of gage is 43.3 ft above National Geodetic Vertical Datum of 1929. Water is used for power development and irrigation in New Mexico and Texas. Records furnished by Bureau of Reclamation. Delivery of transmountain water for minimum recreation pool was initiated in December 1975. Beginning Jan. 1, 1977 gage readings are midnight readings.

Month-end gage height, in feet, and contents, in acre-feet

Date	Gage Height	Contents	Change in contents	Transmountain water
December 31, 2022	4,316.26	226,050	-	994
January 31, 2023	4,320.36	261,584	+35,534	989
February 28	4,323.16	287,647	+26,063	982
March 31	4,327.48	330,827	+43,180	4,779
April 30	4,335.65	422,931	+92,104	4,151
May 31	4,343.15	520,806	+97,875	1,076
June 30	4,346.61	569,818	+49,012	0
July 31	4,338.24	455,263	-114,555	0
August 31	4,332.35	384,188	-71,075	0
September 30	4,328.83	345,166	-39,022	0
October 31	4,327.80	334,191	-10,975	0
November 30	4,331.49	374,437	+40,246	9,866
December 31, 2023	4,339.10	466,360	+91,923	7,517
Calendar year 2023	-	-	+240,310	-

Caballo Reservoir. – Water-stage recorder, lat 32°53'47", long l07°17'30", in SE1/4SW1/4 sec. 19, T. 16 S., R. 4 W., on Rio Grande. Storage began Feb. 8, 1938; capacity, 326,700 acre-ft (by 1999 resurvey), at gage height 4,182.0 ft (above which spillway gates open automatically). Datum of gage is 43.3 ft above National Geodetic Vertical Datum of 1929.

Month-end gage height, in feet, and contents, in acre-feet

Date	Gage height	Contents	Change in contents
December 31, 2022	4,146.77	50,902	-
January 31, 2023	4,147.10	52,246	+1,344
February 28	4,147.30	53,073	+827
March 31	4,147.85	55,396	+2,323
April 30	4,147.75	54,968	-428
May 31	4,146.98	51,754	-3,214
June 30	4,145.97	47,751	-4,003
July 31	4,146.45	49,623	+1,872
August 31	4,140.97	31,114	-18,509
September 30	4,132.84	12,314	-18,800
October 31	4,129.49	7,052	-5,262
November 30	4,130.42	8,377	+1,325
December 31, 2023	4,131.45	9,964	+1,587
Calendar year 2023	-	-	-40,938

STORAGE IN RESERVOIRS

Reservoirs in Rio Grande Basin in New Mexico
(project storage)

Project storage. – The combined total storage in Elephant Butte and Caballo Reservoirs.

Month-end contents, in acre-feet

Date	Contents	Change in contents
December 31, 2022	276,952	-
January 31, 2023	313,830	+28,378
February 28	340,720	+22,733
March 31	386,223	+21,614
April 30	477,899	+16,237
May 31	572,560	+25,716
June 30	617,569	-120,057
July 31	504,886	-75,849
August 31	415,302	+27,124
September 30	357,480	+16,224
October 31	341,243	+44,611
November 30	382,814	+39,015
December 31, 2023	476,324	+48,395
Calendar year 2023	-	+94,141

NOTE.-- Values of combined contents may not agree with sum of individual values because of rounding.

Pine River - Weminuche Pass ditch (Fuchs ditch).-- Water-stage recorder and 3-ft Parshall flume in sec. 33, T. 40 N., R. 4 W., at Weminuche Pass in Colorado. Diversion is from North Fork Los Pinos River in San Juan River Basin into Weminuche Creek in Rio Grande Basin. Second enlargement was completed in 1936. Diversion for irrigation is from Rio Grande above the Del Norte gaging station.

Weminuche Pass ditch (Raber-Lohr ditch).-- Water-stage recorder and 4-ft rectangular flume in sec. 33, T. 40 N., R. 4 W., at Weminuche Pass in Colorado. Diversion is from Rincon la Vaca Creek in San Juan River Basin into Weminuche Creek in Rio Grande Basin. Second enlargement was completed in 1936. Diversion for irrigation is from Rio Grande above the Del Norte gaging station.

Williams Creek - Squaw Pass ditch.-- Water-stage recorder and 2-ft Parshall flume in sec. 21, T. 39 N., R. 3 W., at Squaw Pass in Colorado. Diversion is from Williams Creek in San Juan River Basin into Squaw Creek in Rio Grande Basin. Constructed in 1938. Diversion for irrigation is from Rio Grande below Del Norte gaging station.

Tabor ditch.-- Water-stage recorder and 3-ft Parshall flume in sec. 35, T. 43 N., R. 3 W., at Spring Creek Pass in Colorado. Diversion is from Cebolla Creek in Gunnison River Basin into tributary of Clear Creek in Rio Grande Basin. Completed in 1910 or 1911. Diversion for irrigation is from Rio Grande below Del Norte gaging station.

Don La Font No. 1 & 2 ditches (Piedra Pass ditch).-- Water-stage recorder and 2-ft Parshall flume in sec. 4, T. 38 N., R. 1 W., at Piedra Pass in Colorado. Diversion is from tributaries of Piedra River in San Juan River Basin to South River in Rio Grande Basin. Original ditch completed in l938, first enlargement completed in 1940. Water is imported by Colorado Game and Fish Department, beginning in 1959, to offset losses from fish culture reservoirs.

Treasure Pass diversion ditch.-- Water-stage recorder and 2-ft Parshall flume in sec. 31, T. 38 N., R. 2 E., at Wolf Creek Pass in Colorado. Diversion is from Wolf Creek in San Juan River Basin to a tributary of South Fork Rio Grande. Completed in 1923 or 1924. Water is diverted for irrigation from Rio Grande above the Del Norte gaging station, beginning in 1959. Prior to 1959 it was diverted below gaging station.

Azotea tunnel.-- Water-stage recorder and 10-ft Parshall flume, lat 36°51’12", long 106°40’18", at south portal of Azotea tunnel, San Juan-Chama Project. Diversion is from Rio Blanco, Little Navajo River, and Navajo River in Colorado and discharge is into Azotea in New Mexico. Construction completed in 1970.

Imported quantities, in acre-feet, 2023

Month	Pine River-Weminuche Pass ditch	Weminuche Pass ditch	Williams Creek-Squaw Pass ditch	Tabor ditch	Don La Font ditches	Treasure Pass diversion ditch	Azotea tunnel
January	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0
March	0	0	0	0	0	0	124
April	0	0	0	11	0	0	23,658
May	0	317	0	201	0	133	59,443
June	429	980	42	250	228	300	47,359
July	68	230	156	147	174	32	10,905
August	0	0	7	67	47	0	885
September	0	0	0	45	0	0	37
October	0	0	0	38	0	0	0
November	0	0	0	4	0	0	0
December	0	0	0	0	0	0	0
Calendar year	497	1,527	205	763	449	465	142,411

EVAPORATION AND PRECIPITATION

The last paragraph of Article VI of the Compact states, in part, --- "such credits and debits shall be reduced annually to compensate for evaporation losses in the proportion that such credits or debits bear to the total amount of water in such reservoirs during the year."

To provide the data needed for the computation of such evaporation losses, the Commission has encouraged the establishment and operation of evaporation stations near each major reservoir in the basin and at other selected locations.

Evaporation and other climatological data collected at the several stations in Colorado and New Mexico are tabulated on the next page. At some of the stations, it was not possible to obtain evaporation records throughout the winter period.

The measurements of evaporation were made in accordance with standard practice for the type of pan in use. Measurements of precipitation were made in standard 8-inch rain gages, which were supplemented at some of the stations by recording rain gages.

Records for the evaporation stations at the State University, Elephant Butte Dam, and El Vado Dam antedated the creation of the Commission; the stations at Abiquiu Dam, Cochiti Dam, and Jemez Canyon Dam were established by the Corps of Engineers. All others were established at the request of the Commission.

The Rio Grande Compact Commission gratefully acknowledges the cooperation of the National Oceanic and Atmospheric Administration, U.S. Army Corps of Engineers, and U.S. Bureau of Reclamation for furnishing the climatological records contained in this report.

Alamosa Airport.--Lat 37°27', long 105°52', in Alamosa County at airport near Alamosa, Colo. Standard class A pan, anemometer maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 7,536 ft.

Platoro Dam.--Lat 37°21', long 106°30', in Conejos County near Platoro, Colo. Standard class A pan, anemometer, maximum and minimum thermometers, fan type psychrometer, standard 8-inch and recording rain gages at elevation 9,826 ft.

Heron Dam.--Lat 36°40', long 106°42', in Rio Arriba County about 4 mi. northeast of Heron Dam near Tierra Amarilla, N. Mex. Standard class A pan, maximum and minimum thermometers, and standard 8-inch rain gage at elevation 7,310 ft.

El Vado Dam.--Lat 36°36', long 106°44', in Rio Arriba County at El Vado Dam near Tierra Amarilla, N. Mex. Standard class A pan, anemometer, maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 6,750 ft.

Abiquiu Dam.--Lat 36°14', long 106°26', in Rio Arriba County at Abiquiu Dam near Abiquiu, N. Mex. Standard class A pan, maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 6,380 ft.

Nambe Falls Dam.--Lat 35°51', long 105°54', in Santa Fe County at Nambe Falls Dam, N. Mex. Standard class A pan, maximum and minimum thermometers, recording thermograph, standard 8-inch and recording rain gages at elevation 6,840 ft.

Cochiti Dam.--Lat 35°38', long 106°19', in Sandoval County at operations building, at Cochiti Dam, N. Mex. Standard class A pan, anemometer, maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 5,560 ft.

Jemez Canyon Dam.--Lat 35°23', long 106°32', in Sandoval County at Jemez Canyon Dam, N. Mex. Standard class A pan, anemometer maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 5,388 ft.

Elephant Butte Dam.--Lat 33°09', long 107°11', in Sierra County at Elephant Butte Dam, N. Mex. Standard class A pan, anemometer, maximum and minimum thermometers, and standard 8-inch rain gage at elevation 4,576 ft.

Caballo Dam.--Lat 32°54', long 107°18', in Sierra County at Caballo Dam, N. Mex. Standard class A pan, anemometer, maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 4,190 ft.

New Mexico State University.--Lat 32°17', long 106°45', in Doña Ana County at University Park, N. Mex. Standard class A pan, anemometer, maximum and minimum thermometers, standard 8-inch and recording rain gages at elevation 3,881 ft.

EVAPORATION AND PRECIPITATION

Evaporation and precipitation, in inches
2023

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.	Annual
Alamosa	Evap.	-	-	-	-	-	-	-	-	-	-	-	-	-
Airport	Precip.	0.39	0.38	0.37	0.14	0.86	0.16	0.01	0.39	0.92	0.42	0.00	0.40	4.44
Platoro	Evap.	-	-	-	-	0.45	4.70	11.94	7.05	3.62	3.46	-	-	-
Dam	Precip.	-	-	-	-	0.11	0.10	0.16	1.33	1.05	0.73	-	-	-
Heron	Evap.	-	-	-	4.47	8.23	8.73	11.19	8.33	6.35	4.60	1.25	-	-
Dam	Precip.	1.89	1.00	1.13	0.17	1.85	0.64	0.01	0.77	1.96	0.31	0.44	0.91	11.08
El Vado	Evap.	-	-	-	4.77	8.23	8.7	11.19	8.33	6.35	4.60	1.25	0.00	-
Dam	Precip.	1.32	0.59	0.92	0.07	1.87	0.95	0.02	0.97	1.18	0.20	0.27	0.7	9.06
Abiquiu	Evap.	2.48	3.64	6.20	6.9	8.73	9.29	12.82	10.08	7.56	5.86	3.60	2.17	79.33
Dam	Precip.	0.82	0.18	0.84	0.04	2.02	1.02	0.17	0.89	1.26	0.15	0.75	0.46	8.60
Nambe	Evap.	-	-	-	8.81	7.18	10.48	12.38	9.98	7.49	7.28	0.00	0.00	-
Canyon Dam	Precip.	0.68	0.50	1.00	0.00	0.42	0.33	0.00	0.30	0.53	0.14	0.00	0.00	3.90
Cochiti	Evap.	2.79	4.15	7.13	7.10	7.77	9.81	12.26	9.78	6.93	5.37	3.68	2.80	79.57
Dam	Precip.	0.50	0.39	0.76	0.15	0.67	1.15	0.35	0.37	2.16	0.04	0.49	1.34	8.37
Jemez	Evap.	3.10	4.42	7.75	9.60	12.71	14.40	13.68	11.84	9.60	5.89	4.25	3.14	100.38
Canyon Dam	Precip.	0.41	0.26	0.79	0.00	0.66	0.14	0.03	0.92	0.35	0.05	0.75	1.10	5.46
Elephant	Evap.	5.21	6.24	10.44	14.36	17.02	19.36	21.20	15.44	13.83	9.48	5.26	4.28	142.12
Butte Dam	Precip.	0.71	0.10	0.28	0.00	0.40	0.24	0.42	1.04	1.70	0.45	0.40	1.10	6.84
Caballo	Evap.	4.45	5.22	9.51	13.30	14.5	17.76	16.98	13.94	12.53	8.45	-	4.14	-
Dam	Precip.	0.36	0.30	0.24	0.00	2.34	0.00	0.47	0.72	2.42	0.39	0.40	0.90	8.54
State	Evap.	4.05	4.61	7.53	12.80	12.80	14.13	16.26	12.51	9.45	7.31	3.99	3.88	109.32
University	Precip.	0.37	0.08	0.09	0.00	0.76	0.07	0.30	1.38	0.46	0.41	0.37	0.37	4.66

RIO GRANDE COMPACT

The State of Colorado, the State of New Mexico, and the State of Texas, desiring to remove all causes of present and future controversy among these States and between citizens of one of these States and citizens of another State with respect to the use of the waters of the Rio Grande above Fort Quitman, Texas, and being moved by considerations of interstate comity, and for the purpose of effecting an equitable apportionment of such waters, have resolved to conclude a Compact for the attainment of these purposes, and to that end, through their respective Governors, have named as their respective Commissioners:

For the State of Colorado	M. C. Hinderlider
For the State of New Mexico	Thomas M. McClure
For the State of Texas	Frank B. Clayton

who, after negotiations participated in by S. O. Harper, appointed by the President as the representative of the United States of America, have agreed upon the following articles, to- wit:

ARTICLE I

(a) The State of Colorado, the State of New Mexico, the State of Texas, and the United States of America, are hereinafter designated “Colorado,” “New Mexico,” “Texas,” and the “United States,” respectively.

(b) “The Commission” means the agency created by this Compact for the administration thereof.

(c) The term “Rio Grande Basin” means all of the territory drained by the Rio Grande and its tributaries in Colorado, in New Mexico, and in Texas above Fort Quitman, including the Closed Basin in Colorado.

(d) The “Closed Basin” means that part of the Rio Grande Basin in Colorado where the streams drain into the San Luis Lakes and adjacent territory, and do not normally contribute to the flow of the Rio Grande.

(e) The term “tributary” means any stream which naturally contributes to the flow of the Rio Grande.

(f) “Transmountain Diversion” is water imported into the drainage basin of the Rio Grande from any stream system outside of the Rio Grande Basin, exclusive of the Closed Basin.

(g) “Annual Debits” are the amounts by which actual deliveries in any calendar year fall below scheduled deliveries.

(h) “Annual Credits” are the amounts by which actual deliveries in any calendar year exceed scheduled deliveries.

(i) “Accrued Debits” are the amounts by which the sum of all annual debits exceeds the sum of all annual credits over any common period of time.

(j) “Accrued Credits” are the amounts by which the sum of all annual credits exceeds the sum of all annual debits over any common period of time.

(k) “Project Storage” is the combined capacity of Elephant Butte Reservoir and all other reservoirs actually available for the storage of usable water below Elephant Butte and above the first diversion to lands of the Rio Grande Project, but not more than a total of 2,638,860 acre feet.

(l) “Usable Water” is all water, exclusive of credit water, which is in project storage and which is available for release in accordance with irrigation demands, including deliveries to Mexico.

(m) “Credit Water” is that amount of water in project storage which is equal to the accrued credit of Colorado, or New Mexico, or both.

(n) “Unfilled Capacity” is the difference between the total physical capacity of project storage and the amount of usable water then in storage.

(o) “Actual Release” is the amount of usable water released in any calendar year from the lowest reservoir comprising project storage.

(p) “Actual Spill” is all water which is actually spilled from Elephant Butte Reservoir, or is released therefrom for flood control, in excess of the current demand on project storage and which does not become usable water by storage in another reservoir; provided, that actual spill of usable water cannot occur until all credit water shall have been spilled.

(q) ”Hypothetical Spill” is the time in any year at which usable water would have spilled from project storage if 790,000 acre feet had been released therefrom at rates proportional to the actual release in every year from the starting date to the end of the year in which hypothetical spill occurs; in computing hypothetical spill the initial condition shall be the amount of usable water in project storage at the beginning of the calendar year following the effective date of this Compact, and thereafter the initial condition shall be the amount of usable water in project storage at the beginning of the calendar year following each actual spill.

ARTICLE II

The Commission shall cause to be maintained and operated a stream gaging station equipped with an automatic water stage recorder at each of the following points, to-wit:

(a) On the Rio Grande near Del Norte above the principal points of diversion to the San Luis Valley;

(b) On the Conejos River near Mogote;

(c) On the Los Pinos River near Ortiz;

(d) On the San Antonio River at Ortiz;

(e) On the Conejos River at its mouths near Los Sauces;

(f) On the Rio Grande near Lobatos;

(g) On the Rio Chama below El Vado Reservoir;

(h) On the Rio Grande at Otowi Bridge near San Ildefonso;

(i) On the Rio Grande near San Acacia;

(j) On the Rio Grande at San Marcial;

(k) On the Rio Grande below Elephant Butte Reservoir;

(l) On the Rio Grande below Caballo Reservoir.

Similar gaging stations shall be maintained and operated below any other reservoir constructed after 1929, and at such other points as may be necessary for the securing of records required for the carrying out of the Compact; and automatic water stage recorders shall be maintained and operated on each of the reservoirs mentioned, and on all others constructed after 1929.

Such gaging stations shall be equipped, maintained and operated by the Commission directly or in cooperation with an appropriate Federal or State agency, and the equipment, method and frequency of measurement at such stations shall be such as to produce reliable records at all times. (Note: See Resolution of Commission printed elsewhere in this report.)

ARTICLE III

The obligation of Colorado to deliver water in the Rio Grande at the Colorado-New Mexico State Line, measured at or near Lobatos, in each calendar year, shall be ten thousand acre feet less than the sum of those quantities set forth in the two following tabulations of relationship, which correspond to the quantities at the upper index stations:

DISCHARGE OF CONEJOS RIVER

Quantities in thousands of acre feet

Conejos Index Supply (1)	Conejos River at Mouths (2)
100	0
150	20
200	45
250	75
300	109
350	147
400	188
450	232
500	278
550	326
600	376
650	426
700	476

Intermediate quantities shall be computed by proportional parts.

(1) Conejos Index Supply is the natural flow of Conejos River at the U.S.G.S. gaging station near Mogote during the calendar year, plus the natural flow of Los Pinos River at the U.S.G.S. gaging station near Ortiz and the natural flow of San Antonio River at the U.S.G.S. gaging station at Ortiz, both during the months of April to October, inclusive.

(2) Conejos River at Mouths is the combined discharge of branches of this river at the U.S.G.S. gaging stations near Los Sauces during the calendar year.

DISCHARGE OF RIO GRANDE EXCLUSIVE OF CONEJOS RIVER

Quantities in thousands of acre feet

Rio Grande at Del Norte (3)	Rio Grande at Lobatos less Conejos at Mouths (4)
200	60
250	65
300	75
350	86
400	98
450	112
500	127
550	144
600	162

DISCHARGE OF RIO GRANDE EXCLUSIVE OF CONEJOS RIVER--Con.

Quantities in thousands of acre feet

Rio Grande at Del Norte (3)	Rio Grande at Lobatos less Conejos at Mouths (4)
650	182
700	204
750	229
800	257
850	292
900	335
950	380
1,000	430
1,100	540
1,200	640
1,300	740
1,400	840

Intermediate quantities shall be computed by proportional parts.

(3) Rio Grande at Del Norte is the recorded flow of the Rio Grande at the U.S.G.S. gaging station near Del Norte during the calendar year (measured above all principal points of diversion to San Luis Valley) corrected for the operation of reservoirs constructed after 1937.

(4) Rio Grande at Lobatos less Conejos at Mouths is the total flow of the Rio Grande at the U.S.G.S. gaging station near Lobatos, less the discharge of Conejos River at its Mouths, during the calendar year.

The application of these schedules shall be subject to the provisions hereinafter set forth and appropriate adjustments shall be made for (a) any change in location of gaging stations; (b) any new or increased depletion of the runoff above inflow index gaging stations; and (c) any transmountain diversions into the drainage basin of the Rio Grande above Lobatos.

In event any works are constructed after 1937 for the purpose of delivering water into the Rio Grande from the Closed Basin, Colorado shall not be credited with the amount of such water delivered, unless the proportion of sodium ions shall be less than forty-five percent of the total positive ions in that water when the total dissolved solids in such water exceeds three hundred fifty parts per million.

ARTICLE IV

The obligation of New Mexico to deliver water in the Rio Grande at San Marcial, during each calendar year, exclusive of the months of July, August, and September, shall be that quantity set forth in the following tabulation of relationship, which corresponds to the quantity at the upper index station:

DISCHARGE OF RIO GRANDE AT OTOWI BRIDGE AND AT SAN MARCIAL
EXCLUSIVE OF JULY, AUGUST AND SEPTEMBER
Quantities in thousands of acre feet

Otowi Index Supply (5)	San Marcial Index Supply (6)
100	0
200	65
300	141
400	219
500	300
600	383
700	469
800	557
900	648
1,000	742
1,100	839
1,200	939
1,300	1,042
1,400	1,148
1,500	1,257
1,600	1,370
1,700	1,489
1,800	1,608
1,900	1,730
2,000	1,856
2,100	1,985
2,200	2,117
2,300	2,253

Intermediate quantities shall be computed by proportional parts.

(5) The Otowi Index Supply is the recorded flow of the Rio Grande at the U.S.G.S. gaging station at Otowi Bridge near San Ildefonso (formerly station near Buckman) during the calendar year, exclusive of the flow during the months of July, August and September, corrected for the operation of reservoirs constructed after 1929 in the drainage basin of the Rio Grande between Lobatos and Otowi Bridge.

(6) San Marcial Index Supply is the recorded flow of the Rio Grande at the gaging station at San Marcial during the calendar year exclusive of the flow during the months of July, August and September.

The application of this schedule shall be subject to the provisions hereinafter set forth and appropriate adjustments shall be made for (a) any change in location of gaging stations; (b) depletion after 1929 in New Mexico at any time of the year of the natural runoff at Otowi Bridge; (c) depletion of the runoff during July, August and September of tributaries between Otowi Bridge and San Marcial, by works constructed after 1937; and (d) any transmountain diversions into the Rio Grande between Lobatos and San Marcial.

Concurrent records shall be kept of the flow of the Rio Grande at San Marcial, near San Acacia, and of the release from Elephant Butte Reservoir to the end that the records at these three stations may be correlated. (Note: See Resolution of Commission printed elsewhere in this report.)

ARTICLE V

If at any time it should be the unanimous finding and determination of the Commission that because of changed physical conditions, or for any other reason, reliable records are not obtainable, or cannot be obtained, at any of the stream gaging stations herein referred to, such stations may, with the unanimous approval of the Commission, be abandoned, and with such approval another station, or other stations, shall be established and new measurements shall be substituted which, in the unanimous opinion of the Commission, will result in substantially the same results so far as the rights and obligations to deliver water are concerned, as would have existed if such substitution of stations and measurements had not been so made. (Note: See Resolution of Commission printed elsewhere in this report.)

ARTICLE VI

Commencing with the year following the effective date of this Compact, all credits and debits of Colorado and New Mexico shall be computed for each calendar year; provided, that in a year of actual spill no annual credits nor annual debits shall be computed for that year.

In the case of Colorado, no annual debit nor accrued debit shall exceed 100,000 acre feet, except as either or both may be caused by holdover storage of water in reservoirs constructed after 1937 in the drainage basin of the Rio Grande above Lobatos. Within the physical limitations of storage capacity in such reservoirs, Colorado shall retain water in storage at all times to the extent of its accrued debit.

In the case of New Mexico, the accrued debit shall not exceed 200,000 acre feet at any time, except as such debit may be caused by holdover storage of water in reservoirs constructed after 1929 in the drainage basin of the Rio Grande between Lobatos and San Marcial. Within the physical limitations of storage capacity in such reservoirs, New Mexico shall retain water in storage at all times to the extent of its accrued debit. In computing the magnitude of accrued credits or debits, New Mexico shall not be charged with any greater debit in any one year than the sum of 150,000 acre-feet and all gains in the quantity of water in storage in such year.

The Commission by unanimous action may authorize the release from storage of any amount of water which is then being held in storage by reason of accrued debits of Colorado or New Mexico; provided, that such water shall be replaced at the first opportunity thereafter.

In computing the amount of accrued credits and accrued debits of Colorado or New Mexico, any annual credits in excess of 150,000 acre feet shall be taken as equal to that amount.

In any year in which actual spill occurs, the accrued credits of Colorado, or New Mexico, or both, at the beginning of the year shall be reduced in proportion to their respective credits by the amount of such actual spill; provided that the amount of actual spill shall be deemed to be increased by the aggregate gain in the amount of water in storage, prior to the time of spill, in reservoirs above San Marcial constructed after 1929; provided, further, that if the Commissioners for the States having accrued credits authorize the release of part, or all, of such credits in advance of spill, the amount so released shall be deemed to constitute actual spill.

In any year in which there is actual spill of usable water, or at the time of hypothetical spill thereof, all accrued debits of Colorado, or New Mexico, or both, at the beginning of the year shall be cancelled.

In any year in which the aggregate of accrued debits of Colorado and New Mexico exceeds the minimum unfilled capacity of project storage, such debits shall be reduced pro- portionally to an aggregate amount equal to such minimum unfilled capacity.

To the extent that accrued credits are impounded in reservoirs between San Marcial and Courchesne, and to the extent that accrued debits are impounded in reservoirs above San Marcial, such credits and debits shall be reduced annually to compensate for evaporation losses in the proportion that such credits or debits bore to the total amount of water in such reservoirs during the year.

ARTICLE VII

Neither Colorado nor New Mexico shall increase the amount of water in storage in reservoirs constructed after 1929 whenever there is less than 400,000 acre feet of usable water in project storage; provided, that if the actual releases of usable water from the beginning of the calendar year following the effective date of this Compact, or from the beginning of the calendar year following actual spill, have aggregated more than an average of 790,000 acre feet per annum, the time at which such minimum stage is reached shall be adjusted to compensate for the difference between the total actual release and releases at such average rate; provided, further, that Colorado, or New Mexico, or both, may relinquish accrued credits at any time, and Texas may accept such relinquished water, and in such event the state, or states, so relinquishing shall be entitled to store water in the amount of the water so relinquished.

ARTICLE VIII

During the month of January of any year the Commissioner for Texas may demand of Colorado and New Mexico, and the Commissioner for New Mexico may demand of Colorado, the release of water from storage reservoirs constructed after 1929 to the amount of the accrued debits of Colorado and New Mexico, respectively, and such releases shall be made by each at the greatest rate practicable under the conditions then prevailing, and in proportion to the total debit of each, and in amounts, limited by their accrued debits, sufficient to bring the quantity of usable water in project storage to 600,000 acre feet by March first and to maintain this quantity in storage until April thirtieth, to the end that a normal release of 790,000 acre feet may be made from project storage in that year.

ARTICLE IX

Colorado agrees with New Mexico that in event the United States or the State of New Mexico decides to construct the necessary works for diverting the waters of the San Juan River, or any of its tributaries, into the Rio Grande, Colorado hereby consents to the construction of said works and the diversion of waters from the San Juan River, or the tributaries thereof, into the Rio Grande in New Mexico, provided the present and prospective uses of water in Colorado by other diversions from the San Juan River, or its tributaries, are protected.

ARTICLE X

In the event water from another drainage basin shall be imported into the Rio Grande Basin by the United States or Colorado or New Mexico, or any of them jointly, the State having the right to the use of such water shall be given proper credit therefor in the application of the schedules.

ARTICLE XI

New Mexico and Texas agree that upon the effective date of this Compact all controversies between said States relative to the quantity or quality of the water of the Rio Grande are composed and settled; however, nothing herein shall be interpreted to prevent

recourse by a signatory state to the Supreme Court of the United States for redress should the character or quality of the water, at the point of delivery, be changed hereafter by one signatory state to the injury of another. Nothing herein shall be construed as an admission by any signatory state that the use of water for irrigation causes increase of salinity for which the user is responsible in law.

ARTICLE XII

To administer the provisions of this Compact there shall be constituted a Commission composed of one representative from each state, to be known as the Rio Grande Compact Commission. The State Engineer of Colorado shall be ex-officio the Rio Grande Compact Commissioner for Colorado. The State Engineer of New Mexico shall be ex-officio the Rio Grande Compact Commissioner for New Mexico. The Rio Grande Compact Commissioner for Texas shall be appointed by the Governor of Texas. The President of the United States shall be requested to designate a representative of the United States to sit with such Commission, and such representative of the United States, if so designated by the President, shall act as Chairman of the Commission without vote.

The salaries and personal expenses of the Rio Grande Compact Commissioners for the three States shall be paid by their respective States, and all other expenses incident to the administration of this Compact, not borne by the United States, shall be borne equally by the three States.

In addition to the powers and duties hereinbefore specifically conferred upon such Commission, and the members thereof, the jurisdiction of such Commission shall extend only to the collection, correlation and presentation of factual data and the maintenance of records having a bearing upon the administration of this Compact, and, by unanimous action, to the making of recommendations to the respective States upon matters connected with the administration of this Compact. In connection therewith, the Commission may employ such engineering and clerical aid as may be reasonably necessary within the limit of funds provided for that purpose by the respective States. Annual reports compiled for each calendar year shall be made by the Commission and transmitted to the Governors of the signatory States on or before March first following the year covered by the report. The Commission may, by unanimous action, adopt rules and regulations consistent with the provisions of this Compact to govern their proceedings.

The findings of the Commission shall not be conclusive in any court or tribunal which may be called upon to interpret or enforce this Compact.

ARTICLE XIII

At the expiration of every five-year period after the effective date of this Compact, the Commission may, by unanimous consent, review any provisions hereof which are not substantive in character and which do not affect the basic principles upon which the Compact is founded, and shall meet for the consideration of such questions on the request of any member of the Commission; provided, however, that the provisions hereof shall remain in full force and effect until changed and amended within the intent of the Compact by unanimous action of the Commissioners, and until any changes in this Compact are ratified by the legislatures of the respective states and consented to by the Congress, in the same manner as this Compact is required to be ratified to become effective.

ARTICLE XIV

The schedules herein contained and the quantities of water herein allocated shall never be increased nor diminished by reason of any increase or diminution in the delivery or loss of water to Mexico.

ARTICLE XV

The physical and other conditions characteristic of the Rio Grande and peculiar to the territory drained and served thereby, and to the development thereof, have actuated this Compact and none of the signatory states admits that any provisions herein contained establishes any general principle or precedent applicable to other interstate streams.

ARTICLE XVI

Nothing in this Compact shall be construed as affecting the obligations of the United States of America to Mexico under existing treaties, or to the Indian Tribes, or as impairing the rights of the Indian Tribes.

ARTICLE XVII

This Compact shall become effective when ratified by the legislatures of each of the signatory states and consented to by the Congress of the United States. Notice of ratification shall be given by the Governor of each state to the Governors of the other states and to the President of the United States, and the President of the United States is requested to give notice to the Governors of each of the signatory states of the consent of the Congress of the United States.

IN WITNESS WHEREOF, the Commissioners have signed this Compact in quadruplicate original, one of which shall be deposited in the archives of the Department of State of the United States of America and shall be deemed the authoritative original, and of which a duly certified copy shall be forwarded to the Governor of each of the signatory States.

Done at the City of Santa Fe, in the State of New Mexico, on the 18th day of March, in the year of our Lord, One Thousand Nine Hundred and Thirty-eight.

(Sgd.) M. C. HINDERLIDER

(Sgd.) THOMAS M.

McCLURE (Sgd.) FRANK B.

CLAYTON

APPROVED:

(Sgd.) S. O. HARPER

RATIFIED BY:

Colorado, February 21, 1939
New Mexico, March 1, 1939
Texas, March 1, 1939

Passed Congress as Public Act No. 96, 76th

Congress, Approved by the President May 31,

1939

RESOLUTION ADOPTED BY RIO GRANDE COMPACT COMMISSION
AT THE ANNUAL MEETING HELD AT EL PASO, TEXAS, FEBRUARY 22-24, 1948, CHANGING
GAGING STATIONS AND MEASUREMENTS OF
DELIVERIES BY NEW MEXICO

R E S O L U T I O N

Whereas, at the Annual Meeting of the Rio Grande Compact Commission in the year 1945, the question was raised as to whether or not a schedule for delivery of water by New Mexico during the entire year could be worked out, and

Whereas, at said meeting the question was referred to the Engineering Advisers for their study, recommendations and report, and

Whereas, said Engineering Advisers have met, studied the problems and under date of February 24, 1947, did submit their Report, which said Report contains the findings of said Engineering Advisers and their recommendations, and

Whereas, the Compact Commission has examined said Report and finds that the matters and things therein found and recommended are proper and within the terms of the Rio Grande Compact, and

Whereas, the Commission has considered said Engineering Advisers' Report and all available evidence, information and material and is fully advised:

Now, Therefore, Be it Resolved:

The Commission finds as follows:

(a) That because of change of physical conditions, reliable records of the amount of water passing San Marcial are no longer obtainable at the stream gaging station at San Marcial and that the same should be abandoned for Compact purposes.

(b) That the need for concurrent records at San Marcial and San Acacia no longer exists and that the gaging station at San Acacia should be abandoned for Compact purposes.

(c) That it is desirable and necessary that the obligations of New Mexico under the Compact to deliver water in the months of July, August, September, should be scheduled.

(d) That the change in gaging stations and substitution of the new measurements as hereinafter set forth will result in substantially the same results so far as the rights and obligations to deliver water are concerned, and would have existed if such substitution of stations and measurements had not been so made.

Be it Further Resolved:

That the following measurements and schedule thereof shall be substituted for the measurements and schedule thereof as now set forth in Article IV of the Compact:

"The obligation of New Mexico to deliver water in the Rio Grande into Elephant Butte Reservoir during each calendar year shall be measured by that quantity set forth in the following tabulation of relationship which corresponds to the quantity at the upper index station:

RIO GRANDE COMPACT COMMISSION REPORT

DISCHARGE OF RIO GRANDE AT OTOWI BRIDGE AND ELEPHANT BUTTE EFFECTIVE SUPPLY

Quantities in thousands of acre-feet

Otowi Index Supply (5)	Elephant Butte Effective Index Supply (6)
100	57
200	114
300	171
400	228
500	286
600	345
700	406
800	471
900	542
1,000	621
1,100	707
1,200	800
1,300	897
1,400	996
1,500	1,095
1,600	1,195
1,700	1,295
1,800	1,395
1,900	1,495
2,000	1,595
2,100	1,695
2,200	1,795
2,300	1,895
2,400	1,995
2,500	2,095
2,600	2,195
2,700	2,295
2,800	2,395
2,900	2,495
3,000	2,595

Intermediate quantities shall be computed by proportional parts.

(5) The Otowi Index Supply is the recorded flow of the Rio Grande at the U.S.G.S. gaging station at Otowi Bridge near San Ildefonso (formerly station near Buckman) during the calendar year, corrected for the operation of reservoirs constructed after 1929 in the drainage basin of the Rio Grande between Lobatos and Otowi Bridge.

(6) Elephant Butte Effective Index Supply is the recorded flow of the Rio Grande at the gaging station below Elephant Butte Dam during the calendar year plus the net gain in storage in Elephant Butte Reservoir during the same year or minus the net loss in storage in said reservoir, as the case may be.

The application of this schedule shall be subject to the provisions hereinafter set forth and appropriate adjustments shall be made for (a) any change in location of gaging stations; (b) depletion after 1929 in New Mexico of the natural runoff at Otowi Bridge; and (c) any transmountain diversions into the Rio Grande between Lobatos and Elephant Butte Reservoir."

Be it Further Resolved:

That the gaging stations at San Acacia and San Marcial be, and the same are hereby abandoned for Compact purposes.

Be it Further Resolved:

That this Resolution has been passed unanimously and shall be effective January 1, 1949, if within 120 days from this date the Commissioner for each State shall have received from the Attorney General of the State represented by him, an opinion approving this Resolution, and shall have so advised the Chairman of the Commission, otherwise, to be of no force and effect.

(Note: The following paragraph appears in the Minutes of the Annual Meeting of the Commission held at Denver, Colorado, February 14-16, 1949.

"The Chairman announced that he had received, pursuant to the Resolution adopted by the Commission at the Ninth Annual Meeting on February 24, 1948, opinions from the Attorneys General of Colorado, New Mexico and Texas that the substitution of stations and measurements of deliveries by New Mexico set forth in said resolution was within the powers of the Commission")

RULES AND REGULATIONS FOR ADMINISTRATION OF THE RIO GRANDE COMPACT

A Compact, known as the Rio Grande Compact, between the States of Colorado, New Mexico and Texas, having become effective on May 31, 1939 by consent of the Congress of the United States, which equitably apportions the waters of the Rio Grande above Fort Quitman and permits each State to develop its water resources at will, subject only to its obligations to deliver water in accordance with the schedules set forth in the Compact, the following Rules and Regulations have been adopted for its administration by the Rio Grande Compact Commission; to be and remain in force and effect only so long as the same may be satisfactory to each and all members of the Commission, and provided always that on the objection of any member of the Commission, in writing, to the remaining two members of the Commission after a period of sixty days from the date of such objection, the sentence, paragraph or any portion or all of these rules to which any such objection shall be made, shall stand abrogated and shall thereafter have no further force and effect; it being the intent and purpose of the Commission to permit these rules to obtain and be effective only so long as the same may be satisfactory to each and all of the Commissioners.

(1) GAGING STATIONS /1, /2

Responsibility for the equipping, maintenance and operation of the stream gaging stations and reservoir gaging stations required by the provisions of Article II of the Compact shall be divided among the signatory States as follows:

(a) Gaging stations on streams and reservoirs in the Rio Grande Basin above the Colorado-New Mexico boundary shall be equipped, maintained, and operated by Colorado in cooperation with the U.S. Geological Survey.

(b) Gaging stations on streams and reservoirs in the Rio Grande Basin below Lobatos and above Caballo Reservoir shall be equipped, maintained and operated by New Mexico in cooperation with the U.S. Geological Survey to the extent that such stations are not maintained and operated by some other Federal agency.

(c) Gaging stations on Elephant Butte Reservoir and on Caballo Reservoir, and the stream gaging station on the Rio Grande below Caballo Reservoir shall be equipped, maintained and operated by or on behalf of Texas through the agency of the U.S. Bureau of Reclamation.

The equipment, method and frequency of measurements at each compact stream gaging station shall be sufficient to obtain stream flow records at least equal in accuracy to those classified as “good” by the U.S. Geological Survey. The stream flow records for each compact stream gaging station shall be reviewed annually by the U.S. Geological Survey to ensure accuracy. Water-stage recorders on the reservoirs specifically named in Article II of the Compact shall have sufficient range below maximum reservoir level to record major fluctuations in storage. Staff gages may be used to determine fluctuations below the range of the water-stage recorders on these and other large reservoirs, and staff gages may be used upon approval of the Commission in lieu of water-stage recorders on small reservoirs, provided that the frequency of observation is sufficient in each case to establish any material changes in water levels in such reservoirs.

/1 Amended at Eleventh Annual Meeting, February 23, 1950.
/2 Amended at Seventy-Seventh Annual Meeting, March 31, 2016.

(2) RESERVOIR CAPACITIES /1

Colorado shall file with the Commission a table of areas and capacities for each reservoir in the Rio Grande Basin above Lobatos constructed after 1937; New Mexico shall file with the Commission a table of areas and capacities for each reservoir in the Rio Grande Basin between Lobatos and San Marcial constructed after 1929; and Texas shall file with the Commission tables of areas and capacities for Elephant Butte Reservoir and for all other reservoirs actually available for the storage of water between Elephant Butte and the first diversion to lands under the Rio Grande Project.

Whenever it shall appear that any table of areas and capacities is in error by more than five per cent, the Commission shall use its best efforts to have a re-survey made and a corrected table of areas and capacities to be substituted as soon as practicable. To the end that the Elephant Butte effective supply may be computed accurately, the Commission shall use its best efforts to have the rate of accumulation and the place of deposition of silt in Elephant Butte Reservoir checked at least every three years.

(3) ACTUAL SPILL /2, /3, /4, /6

(a) Water released from Elephant Butte in excess of Project requirements, which is currently passed through Caballo Reservoir, prior to the time of spill, shall be deemed to have been Usable Water released in anticipation of spill, or Credit Water if such release shall have been authorized.

(b) Excess releases from Elephant Butte Reservoir, as defined in (a) above, shall be added to the quantity of water actually in storage in that reservoir, and Actual Spill shall be deemed to have commenced when this sum equals the total capacity of that reservoir to the level of the uncontrolled spillway less capacity reserved for flood purposes, i.e., 1,999,600 acre-feet in the months of October through March inclusive, and 1,974,600 acre-feet in the months of April through September, inclusive, as determined from the 2009 area-capacity table or successor area-capacity tables and flood control storage reservation of 50,000 acre-feet from April through September and 25,000 acre-feet from October through March.

(c) All water actually spilled at Elephant Butte Reservoir, or released therefrom, in excess of Project requirements, which is currently passed through Caballo Reservoir, after the time of spill, shall be considered as Actual Spill, provided that the total quantity of water then in storage in Elephant Butte Reservoir exceeds the physical capacity of that reservoir at the level of the sill of the spillway gates, i.e. -1,830,000 acre-ft in 1942.

(d) Water released from Caballo Reservoir in excess of Project requirements and in excess of water currently released from Elephant Butte Reservoir, shall be deemed Usable Water released, excepting only flood water entering Caballo Reservoir from tributaries below Elephant Butte Reservoir.

(4) DEPARTURES FROM NORMAL RELEASES /5

For the purpose of computing the time of Hypothetical Spill required by Article VI and for the purpose of the adjustment set forth in Article VII, no allowance shall be made for the difference between Actual and Hypothetical Evaporation, and any under-release of usable water from Project Storage in excess of 150,000 acre-ft in any year shall be taken as equal to that amount.

/1 Amended at Eleventh Annual Meeting, February 23, 1950.
/2 Adopted at Fourth Annual Meeting, February 24, 1943.
/3 Amended September 9, 1998.
/4 Amended March 22, 2001; made effective January 1, 2001.
/5 Adopted June 2, 1959; made effective January 1, 1952.
/6 Adopted March 31, 2009; made effective January 1, 2010.

(5) EVAPORATION LOSSES /6, /7, /8

The Commission shall encourage the equipping, maintenance and operation, in cooperation with the U.S. Weather Bureau or other appropriate agency, of evaporation stations at Elephant Butte Reservoir and at or near each major reservoir in the Rio Grande Basin within Colorado constructed after 1937 and in New Mexico constructed after 1929. The net loss by evaporation from a reservoir surface shall be taken as the difference between the actual evaporation loss and the evapo-transpiration losses which would have occurred naturally, prior to the construction of such reservoir. Changes in evapo-transpiration losses along stream channels below reservoirs may be disregarded.

Net losses by evaporation, as defined above, shall be used in correcting Index Supplies for the operation of reservoirs upstream from Index Gaging Stations as required by the provisions of Article III and Article IV of the Compact.

In the application of the provisions of the last unnumbered paragraph of Article VI of the Compact:

(a) Evaporation losses for which accrued credits shall be reduced shall be taken as the difference between the gross evaporation from the water surface of Elephant Butte Reservoir and rainfall on the same surface.

(b) Evaporation losses for which accrued debits shall be reduced shall be taken as the net loss by evaporation as defined in the first paragraph.

(6) ADJUSTMENT OF RECORDS

The Commission shall keep a record of the location, and description of each gaging station and evaporation station, and, in the event of change in location of any stream gaging station for any reason, it shall ascertain the increment in flow or decrease in flow between such locations for all stages. Wherever practicable, concurrent records shall be obtained for one year before abandonment of the previous station.

(7) NEW OR INCREASED DEPLETIONS

In the event any works are constructed which alter or may be expected to alter the flow at any of the Index Gaging Stations mentioned in the Compact, or which may otherwise necessitate adjustments in the application of the schedules set forth in the Compact, it shall be the duty of the Commissioner specifically concerned to file with the Commission all available information pertaining thereto, and appropriate adjustments shall be made in accordance with the terms of the Compact; provided, however, that any such adjustments shall in no way increase the burden imposed upon Colorado or New Mexico under the schedules of deliveries established by the Compact.

(8) TRANSMOUNTAIN DIVERSIONS

In the event any works are constructed for the delivery of waters into the drainage basin of the Rio Grande from any stream system outside of the Rio Grande Basin, such waters shall be measured at the point of delivery into the Rio Grande Basin and proper allowances shall be made for losses in transit from such points to the Index Gaging Station on the stream with which the imported waters are comingled.

/6 Amended at Tenth Annual Meeting, February 15, 1949.
/7 Amended at Twelfth Annual Meeting, February 24, 1951.
/8 Amended June 2, 1959.

(9) QUALITY OF WATER

In the event that delivery of water is made from the Closed Basin into the Rio Grande, sufficient samples of such water shall be analyzed to ascertain whether the quality thereof is within the limits established by the Compact.

(10) SECRETARY /8, /9, /10

The Commission may, on a yearly basis, employ appropriate entities to render such engineering and clerical aid as may reasonably be necessary for administration of the Compact. The entities may be employed to:

(1) Collect and correlate all factual data and other records having a material bearing on the administration of the Compact and keep each Commissioner advised thereof.

(2) Inspect all gaging stations required for administration of the Compact and make recommendations to the Commission as to any changes or improvements in methods of measurement or facilities for measurement which may be needed to insure that reliable records be obtained.

(3) Report to each Commissioner in writing within thirty days after the end of each quarter a summary of all hydrographic data then available for the current year - on forms prescribed by the Commission - pertaining to:

(a) Deliveries by Colorado
(b) Deliveries by New Mexico
(c) Operation of Project Storage

(4) Make such investigations as may be requested by the Commission in aid of its administration of the Compact.

(5) Act as Secretary to the Commission and submit to the Commission at its regular meeting a report on its activities and a summary of all data needed for determination of debits and credits and other matters pertaining to administration of the Compact.

(11) COSTS /1, /2, /3

At its annual meeting, the Commission shall adopt a budget for the ensuing fiscal year beginning July first.

Such budget shall set forth the total cost of maintenance and operating of gaging stations, of evaporation stations, the cost of engineering and clerical aid, and all other necessary expenses excepting the salaries and personal expenses of the Rio Grande Compact Commissioners.

Contributions made directly by the United States and the cost of services rendered by the United States without cost shall be deducted from the total budget amount; the remainder shall then be allocated equally to Colorado, New Mexico and Texas.

/8 The substitution of this section for the section titled “Reports to Commissioners” was adopted at Ninth Annual Meeting, February 22, 1948.
/9 Amended March 31, 2009.
/10 Amended at Seventy-Seventh Annual Meeting, March 31, 2016.
/1 Amended at Eleventh Annual Meeting, February 23, 1950.
/2 Amended March 31, 2009.
/3 Amended at Seventy-Seventh Annual Meeting, March 31, 2016.

Expenditures made directly by any State for purposes set forth in the budget shall be credited to that State; contributions in cash or in services by any State under a cooperative agreement with any federal agency shall be credited to such State, but the amount of the federal contribution shall not so be credited; in event any State, through contractual relationships, causes work to be done in the interest of the Commission, such State shall be credited with the cost thereof, unless such cost is borne by the United States.

Costs incurred by the Commission under any cooperative agreement between the Commission and any U.S. Government Agency, not borne by the United States, shall be apportioned equally to each State, and each Commissioner shall arrange for the prompt payment of one-third thereof by his State.

The Commissioner of each State shall report at the annual meeting each year the amount of money expended during the year by the State that the Commissioner represents, as well as the portion thereof contributed by all cooperating federal agencies, and the Commission shall arrange for such proper reimbursement in cash or credits between States as may be necessary to equalize the contributions made by each State in the equipment, maintenance and operation of all gaging stations authorized by the Commission and established under the terms of the Compact.

It shall be the duty of each Commissioner to endeavor to secure from the Legislature of the State represented by the Commissioner an appropriation of sufficient funds with which to meet the obligations of that State, as provided by the Compact.

(12) MEETING OF COMMISSION /1, /10, /11

The Commission shall meet each year for the consideration and adoption of the annual report for the calendar year preceding, and for the transaction of any other business consistent with its authority. Other meetings as may be deemed necessary shall be held at any time and place set by mutual agreement, for the consideration of data collected and for the transaction of any business consistent with its authority.

No action of the Commission shall be effective until approved by the Commissioner from each of the three signatory States.

(Signed) M. C. HINDERLIDER

M. C. Hinderlider

Commissioner for Colorado

(Signed) THOMAS M. McCLURE

Thomas M. McClure

Commissioner for New Mexico

(Signed) JULIAN P. HARRISON

Julian P. Harrison

Commissioner for Texas

Adopted December 19, 1939.

/1 Amended at Eleventh Annual Meeting, February 23, 1950.
/10 Amended at Thirteenth Annual Meeting, February 25, 1952.
/11 Amended at Seventy-Seventh Annual Meeting, March 31, 2016.

Revised October 2016

RIO GRANDE BASIN

ABOVE CABALLO DAM, NEW MEXICO

NOTE: Shaded areas denote reservoirs, whose capacity is all or in part subject to provisions of the Rio Grande Compact