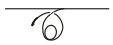
REPORT

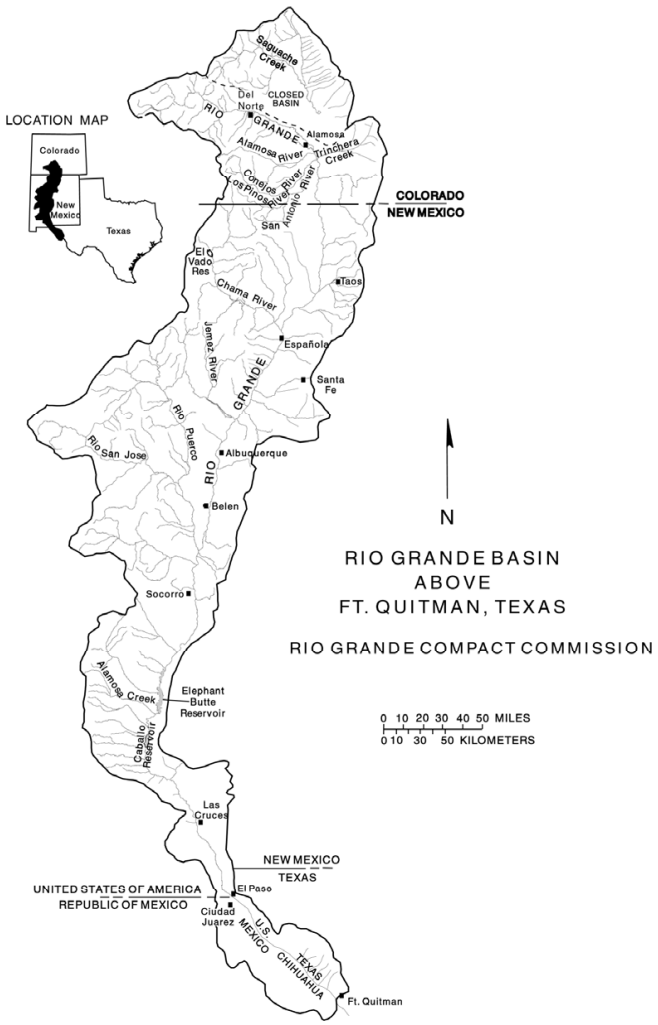
of the

RIO GRANDE COMPACT COMMISSION

2017



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
Rio Antonio
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San
El Vado Res
Chama River
Taos
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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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ILLUSTRATIONS

RIO GRANDE COMPACT COMMISSION

COLORADO NEW MEXICO TEXAS

March 29, 2018

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

The Honorable Susana Martinez
Governor of the State of New Mexico
Santa Fe, New Mexico

The Honorable John W. Hickenlooper
Governor of the State of Colorado
Denver, Colorado

Honorable Governors:

The 79th Annual Meeting of the Rio Grande Compact Commission was held in Austin, Texas on March 29, 2018. 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 $208,280 in the fiscal year ending June 30, 2017. The United States bore $58,681 of this total; the balance of $149,599 was borne equally by the three States party to the Compact.

Upon printing, the 2017 Report of the Rio Grande Compact Commission will be provided under separate cover.

Respectfully,

Pat Gordon
Patrick R. Gordon, Commissioner for Texas

Tom Blaine
Tom Blaine, Commissioner for New Mexico

Kevin G. Rein
Kevin G. Rein, Commissioner for Colorado

REPORT OF THE ENGINEER ADVISERS
TO THE RIO GRANDE COMPACT COMMISSION
March 9, 2018

The Engineer Advisers to the Rio Grande Compact Commission met in Albuquerque, New Mexico on January 17, 2018 and between March 5 and March 9, 2018 to:

1) receive reports
2) prepare the 2017 Rio Grande Compact (Compact) water accounting
3) discuss continuing and new issues in preparation for the 2018 annual meeting of the Rio Grande Compact Commission (Commission)
4) 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 the previous calendar year.

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 2017 and are again unable to reach a consensus on the accounting. The lack of consensus arises from a disagreement that began in 2011 amongst the Texas Engineer Adviser and New Mexico and Colorado Engineer Advisers on the release of credit water by Reclamation from Elephant Butte Reservoir in late summer 2011. As a result, the Engineer Advisers have not reached consensus on how to finalize the 2011 through 2017 Compact Delivery Tables for Colorado and New Mexico and the Release and Spill from Project Storage Table. For 2017, as in previous years, each of the Engineer Advisers developed accounting procedures described in the addenda to this report. At the 2017 meeting, the Commission did not approve any of the proposed accounting scenarios. In 2018,

the Engineer Advisers used the accounting scenarios they individually prepared to carry forward Compact accounting for the 2017 calendar year. As described in the New Mexico Engineer Adviser's addenda in previous years, the use of accounting methods 1 and 2 had an impact on the timing of Article VII storage restrictions and upstream storage operations. However, in 2017 both methods had Article VII transitions on the same dates due to there being such a small quantity of credit water in Project Storage.

RIO GRANDE BASIN CONDITIONS

Snowpack and snow-water equivalent amounts were above average for most of the winter of 2016-2017. Good snow events in December 2016 and January 2017 turned the season around from below average to well above average. Additional storms in March and April 2017 kept the snowpack and snow-water equivalent amounts above average until mid-April leading into the runoff. As a result, snowmelt runoff levels in 2017 were above average in most of the basin in Colorado and in New Mexico.

Summer monsoon precipitation was generally above average in the basin in Colorado and New Mexico in 2017. Platoro Reservoir reached a high of approximately 67 percent of capacity during June of 2017. Usable Water in Rio Grande Project Storage was below the Article VII trigger of 400,000 acre-feet until early April. In early August, Usable Water dropped below the 400,000 acre-feet threshold and again put post-Compact reservoirs under the Article VII storage restrictions. In early December, Usable Water in storage rose above the 400,000 acre-foot threshold and remained above it through the remainder of the year.

Reclamation stored 14,473 acre-feet of Rio Grande water in El Vado Reservoir for the Coalition of Six Middle Rio Grande Basin Pueblos (Pueblos) Prior and Paramount (P&P) operation. All of this water was stored while under Article VII restrictions. There were no releases of P&P water for irrigation in 2017. All water stored for use on P&P lands was released by December 5, 2017. Evaporative losses on final P&P storage totaled 540 ac-ft and a total of 13,933 ac-ft was released to Elephant Butte Reservoir. El Vado Reservoir reached a high of approximately 125,056 acre-feet on June 26, 2017. The San Juan-Chama Project (SJCP) delivered 162,522 acre-feet through the Azotea Tunnel into the Rio Grande basin during the year which is approximately 169 percent of the estimated SJCP firm yield.

Reclamation's P&P storage operations ceased on April 8, 2017 prior to Article VII storage restrictions being lifted. Beginning April 9, 2017, pursuant to Article VI of the Compact, New Mexico retained water in the amount of its accrued debit in El Vado Reservoir in 2017. For Method 1 accounting, the 12,800 acre-feet of debit water was stored by late April. For Method 2 accounting, 20,300 acre-feet of debit water was stored by the first week of May and retained 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 2018 Commission meeting, including information obtained from the reports of the federal agencies at meetings with the Engineer Advisers or otherwise reported at the 2018 Engineer Adviser meetings. The terms "reported" and "indicated" herein reflect information provided by various entities without analysis by the Engineer Advisers.

Middle Rio Grande Endangered Species Collaborative Program

The Middle Rio Grande Endangered Species Collaborative Program (Collaborative Program) as authorized by the Omnibus Appropriations Act of 2009 (P.L. 111-8) has begun several new initiatives that focus on adaptive management of water and species, evaluation of long-term monitoring programs, and reorganization to improve Collaborative Program efforts. In FY 2017, Reclamation reported that their federal appropriations were $3,326,138 for Collaborative Program activities. Related FY2017 accomplishments include

- Collaborative Program Executive Committee retreat in April 2017
- captive propagation of Rio Grande silvery minnow (silvery minnow)
- annual monitoring of silvery minnow population
- genetics study of the silvery minnow
- silvery minnow rescue and salvage efforts during river drying
- annual monitoring of Southwestern willow flycatcher (flycatcher) population and their nests
- program management, assessment, reporting, and outreach activities

Teams associated with the Collaborative Program continued to meet, including the Minnow Action Team (MAT). With expected snowmelt runoff at or above normal, the MAT recommended that the Collaborative Program monitor species response to runoff, evaluate silvery minnow use of inundated floodplain, and provide some amount of supplemental water for selected refugial habitats.

Update on Wild Earth Guardian's Litigation over the 2003 Biological Opinion

In 2014, the Wild Earth Guardians filed a lawsuit in Federal District Court against Reclamation alleging it made arbitrary and capricious decisions to depart from some 2003 Biological Opinion (BO) requirements and that the scope of its on-going consultation was improper and too narrow. Subsequently, the Middle Rio Grande Conservancy District (MRGCD) intervened in the case. In addition, WildEarth Guardians alleged the Corps was required to consult with the Service and was not exercising discretion it has to modify its reservoir operations to benefit endangered species. On March 1, 2017 the parties to the case voluntarily agreed to dismiss all claims against Reclamation. The remaining claims in the lawsuit are all against the Corps. Wild Earth Guardians filed its opening brief on the merits of the case on December 15, 2017. The Corps and MRGCD filed their respective responses on February 22, 2018, and the Wild Earth Guardians' reply brief is due March 15, 2018. The Corps' response position is that it does not have any discretionary authority with respect to reservoir operations. The response also references the Compact and Commission on multiple occasions (See EA Recommendation Section).

URGWOM Accounting Model

Led by the Corps, Reclamation and the NMISC, the Upper Rio Grande Water Operations Model (URGWOM) is a cooperative program, which supports daily water operations and accounting procedures. During 2017, the Corps provided basin-wide annual operating plans, extended the database to include historical data from years 1950 to 2015, and conducted two URGWOM training sessions. Continuing work includes water quality methods, developing a real-time operation model by linking URGWOM to the Corps Water Management System; improving the model's ability to estimate Colorado deliveries at Lobatos gage; improving the accounting and the allocation procedures for the Lower Rio Grande portion of the model; and

developing a RiverSmart platform for completing planning studies. Finally, updates of the five-year plan and model documentation were initiated. Software updates include output canvas enhancements and the initial release of RiverWISE being made available to model developers.

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 accounts and reports depletions related to them in the middle Rio Grande. It coordinates with the New Mexico Office of the State Engineer (NMOSE) to determine if a permit is needed and to ensure the depletions are offset by the project sponsors. The NMISC reported it continues to coordinate with the Corps on several recently implemented habitat restoration projects to ensure the Corps project's depletions are offset. The NMISC also coordinates with Reclamation in using the State's Strategic Water Reserve for ESA related water management. Above average spring snowmelt runoff flows in 2017 resulted in more sustained water across habitat restoration sites than in previous years, with all the depletions offset by NMISC's Strategic Water Reserve.

San Acacia Levee Project

The Corps reported that construction of Phase I and II was completed February 2017, Phase IIB construction was completed January 2017 and Phase IIC construction was completed November 2017. The NMISC reported that the Corps is now in the process of certifying the levees, developing the operations and maintenance manual, and preparing the as-built engineering drawings. Following completion of these activities the Corps will hand over operations and maintenance to the MRGCD. The MRGCD and NMISC were local and cost share sponsors, respectively. The sponsors' non-federal cost share requirement was approximately 15 percent of the total project cost.

The Corps reported that the lawsuit filed by the Wild Earth Guardians alleging violations of NEPA by the Corps for the Levee Project and violation of the ESA by the Service has progressed. Briefing on the merits of the case was completed on January 22, 2018. The Corps expects this case will be set for oral argument. However, the judge has the option of making a ruling just based on the briefings. The Corps reported that the San Acacia Levee Project in its current scope is complete and does not expect the ongoing litigation to have any further impacts.

Elephant Butte Delta Channel Project

The Delta Channel was successful in conveying the above average 2017 snowmelt runoff into the active reservoir pool at Elephant Butte Reservoir. Monsoonal precipitation and corresponding river flows during 2017 were just about average in the middle Rio Grande and the Delta Channel successfully conveyed all flow into Elephant Butte Reservoir during 2017. During January, February and March of 2017, Reclamation work crews conducted in-channel maintenance, sandbar de-vegetation and access road grading throughout the Delta Channel Project area. Since 2003, New Mexico has spent nearly $18 million to construct and maintain the Delta Channel.

NMISC and Reclamation are coordinating to address the projected lower water levels at Elephant Butte Reservoir for 2018. These lower levels could require additional maintenance work on the Delta Channel in order to maintain conveyance.

Relinquishment Update

The total amount of Accrued Credit relinquished by Colorado since 2013 is 3,000 acre-feet. Between 2013 and 2016 Colorado stored a total of 2,068 acre-feet of relinquished water in Platoro Reservoir. Colorado did not store any relinquished water in 2017 which leaves a balance of 932 acre-feet in Colorado's relinquishment account.

The total amount of Accrued Credit relinquished by New Mexico since 2003 is 380,500 acre-feet. No relinquished water was stored in New Mexico during 2017. Relinquishment water storage to date totals 288,281 acre-feet, leaving a balance of 92,219 acre-feet available to be stored in future years when Article VII storage restrictions are in effect.

For 2018, the New Mexico Engineer Adviser anticipates requesting that Reclamation store 1,150 acre-feet of New Mexico's allocation of relinquishment credit, if conditions permit.

Gaging Station Review

At the Rio Grande near Otowi gage (#08313000), the USGS reported that for 2017 they utilized three ratings (#37, #38 and #39). The USGS is still dealing with sediment entering the river from Los Alamos Canyon as a result of the Las Conchas fire and summer monsoon flows. The USGS indicated they plan to continue to use rating #39 but will monitor the section for

changes related to sedimentation and if warranted will change rating tables as needed. The USGS also installed a redundant sensor (radar) and a wire weight gage early in the calendar year.

The USGS indicated there were no gage access issues with San Ildefonso Pueblo during the calendar year. Additionally, the new gage, Rio Grande above Buckman (#08313150), installed by USGS upstream of the City of Santa Fe's Buckman Direct Diversion Project and several miles downstream of the Otowi gage is helping to improve the Otowi gage record and is currently using rating #1. During 2017, the NMISC performed routine flow measurements at the Otowi gage under an access agreement with the San Ildefonso Pueblo. The NMISC provided six measurements to the USGS, in part to assist with monitoring sedimentation issues. The USGS stated that they believe these measurements from NMISC are accurate and therefore were included in the database.

The USGS also reported that they reviewed and approved the 2017 Rio Grande below Caballo Reservoir (#08362500) flow records developed by Reclamation and that all necessary documentation was provided and reviewed. The USGS reported that the record accuracy looked good, in large part due to the high number of measurements (59 in total). The USGS also stated that record accuracy can be improved and measurement quantity reduced with the use of an Acoustic Doppler Velocity Meter to track velocity changes.

The USGS reported that during the 2017 calendar year, 35 stream flow measurements were collected on the Rio Grande below Elephant Butte (#08361000) gage. Of the 35 measurements, 1 was rated excellent (no flow), 19 were rated good, 10 were rated fair, and 5 were rated poor. Aquatic vegetation growth on the streambed at the USGS gaging station section has caused a low bias in gaged flow during certain months. This issue has occurred for an undetermined period of time but began to be addressed in 2016 by utilizing an alternate section which is not impacted by vegetation growth during certain months. The gage record for both 2016 and 2017 reflects improved precision and the NMISC will continue to coordinate with the USGS to provide a more accurate gage record in the future.

At the 2016 Engineer Advisers' meeting Reclamation indicated that they would relocate the infrastructure for the below Caballo gage to the opposite side of the river. Reclamation is currently coordinating with the USGS and is anticipating that relocation work will be completed prior to the 2018 irrigation season.

During 2017, the NMISC continued its survey of water level elevations in Elephant Butte

and Caballo reservoirs. The results indicated that Reclamation's reservoir stage elevations were within the agreed upon threshold criteria (< 0.05 ft) at both reservoirs for the June 2017 event. However, during the December 2017 reservoir survey, NMISC's survey indicated a discrepancy between the shoreline elevation and that being reported by their Stage Discharge Recorder (SDR) encoder system in the stilling well for Elephant Butte Reservoir. Two verification surveys were performed by Reclamation early in 2018 and it was determined that the elevation of the reservoir was being under-reported by 0.23 feet, therefore, the SDR was adjusted by +0.23 feet, retroactive to December 20, 2017, the last survey performed within the accepted threshold. The Caballo survey was within the accepted threshold.

Reclamation also notified the Engineer Advisers that surveys conducted on February 26 and 27, 2018 showed the SDR elevation was reading higher than the lake elevation and was adjusted by -0.28 feet. Reclamation made a physical inspection of the SDR on February 27, 2018 and did not find any apparent problems. They will perform more frequent surveys during 2018. The cause of the discrepancies is under evaluation by Reclamation at this time and the Engineer Advisers stress the critical nature of this issue. Therefore the Engineer Advisers request that Reclamation prepare a report, in coordination with the Engineer Advisers, NMISC and other relevant entities, detailing the cause of the discrepancy and the actions taken to reduce or alleviate the inaccurate stage elevation readings. This report should be delivered to the Engineer Advisers as soon as possible. NMISC and Reclamation will continue to perform side by side surveys at select times during 2018 to ensure the accuracy of the reservoir elevation data.

Mass Balance Review

The NMISC conducted a mass balance analysis for the Rio Grande between the Elephant Butte and Caballo gages for calendar year 2017. The mass balance analysis indicated that the reach gained water in ten out of twelve months with a total calculated gain of 17,160 acre-feet. A significant portion of the gain occurred during the June through September rainy period.

Gaging Station Operating Costs

Over the last several years, the Engineer Advisers and Compact Commissioners have expressed concern over the large difference in costs between what Reclamation charges to operate the gage below Caballo Reservoir as compared to what the Colorado Division of Water

Resources (CDWR) and USGS charge on average for other Compact gages. The three Compact states equally split the costs of their operations in support of the Compact, including operation and maintenance of the Compact gaging stations. The Compact gaging stations are operated by the CDWR, USGS and Reclamation.

In the last few years, Reclamation has decreased their charged amount for the gage below Caballo Reservoir. However, there is still some concern over the difference in operational costs between Reclamation's gage and other entities gages. For the fiscal year ending on June 30, 2019, the costs charged by the CDWR average $11,271 per gage, the costs charged by the USGS average $11,808 per gage, and the cost charged by Reclamation for the Compact portion of one gage, the gage below Caballo Reservoir, was $17,549. The Engineer Advisers note that costs have been reduced and urge Reclamation to continue to seek ways to further reduce costs associated with the gage below Caballo.

Review of Compact Accounting Data

Leading up to the 2016 annual meeting, the Engineer Advisers worked with Reclamation, USGS, and the Corps to develop a proposed schedule which set out the activities during each year needed in order to review and approve the data required under the Compact. The document, titled "Schedule for Review and Approval of the Rio Grande Compact Accounting Records for the Previous Year" discusses data collected by agencies for Compact purposes. For calendar year 2017, city, state and federal agencies for the most part followed the schedule for review and approval of data required under the compact. The process will be reviewed and revised as necessary to meet compact business needs.

YEAR 2017 OPERATIONS

In 2017, there were no significant wildfire impacts to the Rio Grande watershed in either Colorado or New Mexico. This stands in significant contrast to 2013, when several major wildfires impacted the Rio Grande watershed in both New Mexico and Colorado. The effects of previous wildfires on the watershed are likely to continue for many years.

Snow Melt Runoff Forecasting

As has been reported in previous Engineer Advisers' reports, Colorado and New Mexico rely heavily on accurate streamflow forecasts to determine their Compact obligations on a yearly basis. Some recent forecasts have lacked the accuracy and reliability needed to effectively administer the Rio Grande for Compact purposes, particularly in the Colorado area. The States are looking for ways in which to increase the accuracy of the Natural Resources Conservation Service (NRCS) forecasts, and the potential use of new forecasts and forecasting techniques developed by other federal agencies.

At the 2018 Engineer Advisers' meeting, a presentation was made regarding the efforts of the National Center for Atmospheric Research (NCAR) to improve the streamflow forecast estimates. NCAR is investigating the potential to increase the accuracy of the NRCS streamflow forecasts by including a temperature component. NCAR researchers have found that adding seasonal temperature forecast information to a regression based analysis such as the NRCS forecast does improve the forecast accuracy. NCAR researchers are also working on developing a new streamflow forecasting model based on SUMMA, which is the Structure for Unifying Multiple Modeling Alternatives. It is hoped that this new forecasting model will be operational by next winter.

Closed Basin Project

The total production of the Closed Basin Project in calendar year 2017 was 11,789 acre-feet. This total includes water that was exchanged for Colorado Parks and Wildlife water to be delivered to the Blanca Wildlife Habitat Area and to Head Lake. The amount delivered to the Rio Grande for Compact purposes was 8,003.5 acre-feet. The remainder of the water produced 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 2017 was of sufficient quality to qualify for credit under the Compact.

Reclamation continues to address problems of biofouling in the production wells of the Closed Basin Project. Reclamation replaced seven wells in 2017 that were most affected by iron bacteria, and rehabilitated numerous other wells. These new replacement wells were constructed using glass beads (round silica) as the gravel pack to assist in the mitigation of biofouling issues. Updating numbers reported in past EA reports, it is known that 80 of the 170 original wells have

been replaced as of the end of 2017. Some of these 80 wells have been replaced more than one time. Wells will continue to be replaced as budgetary constraints allow in an effort to help maintain production of the project. The new replacement wells have been equipped with variable frequency drive pumps. This is another effort to maximize efficiency of the Closed Basin Project. The Closed Basin Operating Committee continues to monitor groundwater levels and groundwater production and adjust project operations pursuant to the enabling legislation.

Platoro Reservoir

The Colorado Engineer Adviser reported that in 2017 the Conejos Water Conservancy District did not store any pre-Compact direct flow water by exchange in Platoro Reservoir during the time of Article VII restrictions. While water was not stored this year while under Article VII restrictions, the Engineer Adviser for Texas points out that this action has occurred and been reported in the past, and Article VII of the Compact says "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…"

Colorado Groundwater Regulations

In late 2015, the State Engineer of Colorado completed the development of rules and regulations concerning the use of groundwater in the Upper Rio Grande Basin in Colorado. These rules require the owners of non-exempt wells in the Rio Grande Basin in Colorado to sustain the aquifers and augment injurious stream depletions caused by their groundwater withdrawals, either with a plan for augmentation or joining a subdistrict to meet the goals through a groundwater management plan. As an integral part of these rules, the State Engineer of Colorado has also completed the development of Phase 6 of the Rio Grande Decision Support System Model. This model captures the interaction between surface and groundwater and shows the effect that wells have on senior surface water rights. The rules were submitted to the Division 3 Water Court in Alamosa for formal adoption, and a number of water users objected to them. The State Engineer worked diligently with the objectors in attempts to address their concerns and entered into stipulations with most of the objectors, but several of them pushed the case to a 13 day trial concluding on February 14, 2018. It is hoped that a ruling will be entered in this case by mid 2018.

Aamodt Settlement

The Aamodt Water Rights Settlement Agreement (Settlement Agreement) was developed through multi-party negotiations begun in 2000 between the Pueblos of Nambé, Pojoaque, Tesuque and San Ildefonso, the State of New Mexico, the United States of America, the 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 Settlement Agreement provides for the funding and construction of a Regional Water System to supply treated water to Pueblo and non-Pueblo parties. The Settlement Agreement relies on three sources of water including Pueblo reserved rights, transferred agricultural rights, and SJCP water. One of the intentions of the Settlement Agreement is that the Rio Grande Compact accounting will not be affected by the use of these sources of water. As expressly stated in the Settlement Agreement, "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). Reclamation reported to the Engineer Advisers there will be no adverse impacts to Compact deliveries. Should impacts to the Compact be identified, Reclamation stated they will work the Commission and the Engineer Advisers to address them. The Engineer Advisers will continue to evaluate the project as it moves forward including potential impacts to the Otowi Index Supply.

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 SJCP water, for endangered species needs and compliance with the 2003 BO. In 2017, Reclamation reported that a total of 13,413 acre-feet of leased SJCP water was released during the period June 30 through September 27.

Reclamation indicated it continued to maintain portable pumping stations at four locations on the Low Flow Conveyance Channel (LFCC) in the San Acacia reach, and that only one of the four were operated during 2017. The pumps at the South Boundary site were operated from July 7 through October 2 to pump 4,478 acre-feet from the LFCC to the Rio Grande under a permit issued by the NMOSE. Reclamation reported that the total water used to supplement flows in the Rio Grande was 17,891 acre-feet.

Six Middle Rio Grande Pueblos Prior and Paramount Operations

Reclamation and BIA each reported that their 2017 projected storage volume for the P&P operation was 14,473 acre-feet, the entirety of which was stored in El Vado Reservoir under Article VII restrictions. During the 2017 irrigation season, favorable conditions resulted in no release of P&P water for irrigation. The stored water suffered 540 acre-feet of evaporative loss during the year leaving 13,933 acre-feet of P&P water in El Vado Reservoir at the end of the irrigation season. In accordance with historic practice when the P&P storage occurred during the Article VII storage restriction, Reclamation released the water from the reservoir and for delivery to Elephant Butte Reservoir after the irrigation season. This release occurred between November 15 and December 5, 2017.

Based on the March 1, 2018 most probable snowmelt runoff forecast, the BIA reported that Reclamation will have a preliminary storage target of approximately 40,523 acre-feet for their P&P operation in 2018. Additional forecasts in April and May as well as discussions between Reclamation and the Pueblos may change this storage target.

The BIA continues to make funding available to the Pueblos to perform work upgrading their irrigation systems. Most of the funding goes toward water control structures such as turnouts and check structures, mainly in MRGCD ditches, which enable the Pueblos to make better, more efficient use of their water supply. In some cases, BIA money is combined with Reclamation and NRCS funding to complete larger projects, including laser leveling, installation of subsurface pressure pipe systems, and concrete lining of ditches.

The BIA funds the MRGCD to perform work on their systems which serve Pueblo lands. The BIA cooperates with the MRGCD to improve water delivery and efficiency. Examples include working towards the MRGCD's policy of irrigating a minimum of one acre per hour, scheduling irrigation, and helping coordinate with Pueblo farmers for delivery and an adequate water supply.

The BIA reported that discussions on the carryover of P&P water are ongoing. Several meetings between the Pueblos and federal agencies have taken place regarding the carryover of stored water not needed to meet the BIA's diversion demand for the Pueblo's senior lands. The Engineer Advisers have asked BIA on several occasions if a decision has been reached on carryover of P&P water. Per BIA, no decision has been reached on this issue. The Engineer Advisers do not support the carryover of unused stored water.

The Engineer Advisers remain concerned about the procedures for quantifying storage, release and delivery of water for the P&P lands of the Pueblos. The Texas Engineer Adviser remains concerned about the storage of native Rio Grande water in El Vado Reservoir by Reclamation when the storage restrictions of Article VII are in effect.

Reclamation's Lower Reach Planning in 2017

As part of its requirements in the 2016 BO, Reclamation must submit a Lower Reach Plan to the Service by June, 2018. Reclamation stated that the draft Lower Reach Plan includes multiple projects that are intended to improve habitat and enhance flows in the Isleta and San Acacia Reaches, while managing sediment and increasing safe channel capacity. Reclamation stated that the implementation of the Lower Reach Plan will not increase depletions. The New Mexico Engineer Adviser is concerned that some of the projects as described may increase depletions. Reclamation has committed to work with NMISC to establish a methodology to quantify depletions. Reclamation committed that they will offset any increased depletions. The Engineer Advisers support the intent of the Lower Reach Plan but want to ensure that the projects do not impact deliveries of water to Elephant Butte Reservoir.

Rio Grande Project Operations

The 2008 Operating Agreement (2008 OA) and its manual provide the procedures used to operate the Rio Grande Project. A January 2017 Record of Decision for the final environmental impact allows the 2008 OA to remain in effect through 2050. Reclamation reported a final 2017 release from Caballo Reservoir of 622,476 acre-feet for all three Rio Grande Project water users: El Paso County Water Improvement District No. 1 (EP No. 1), Elephant Butte Irrigation District (EBID), and Mexico. Reclamation reported it used the 2008 OA methodology to make end of year allocations to EBID at the diversion headings of 270,749 acre-feet (259,510 acre-feet were delivered, resulting in an unused allocation of 11,239 acre-feet), and to EP No.1 of 438,371 acre-feet (249,919 acre-feet were delivered resulting in an unused allocation of 202,102 acre-feet). During 2017 Mexico's diversion allocation was 60,000 acre-feet; 54,506 acre-feet were delivered. Reclamation's report indicates flows into Hudspeth County Water Conservation and Reclamation District during 2017 were 35,439 acre-feet.

Reclamation reported that Project releases started on March 31, 2017 and continued

through October 11, 2017. The USGS reported the total annual flow at the gage below Elephant Butte dam was 649,100 acre-feet. Elephant Butte Reservoir storage peaked at 516,226 acre-feet on June 14, 2017, and storage at Caballo Reservoir peaked at 78,426 acre-feet on March 30, 2017. Combined end-of-year storage at Elephant Butte and Caballo Reservoirs was 462,144 acre-feet, with no SJCP water in storage.

Reclamation reported that Usable Water in Project storage was below 400,000 acre-feet January 1, 2017 through April 9, 2017. Project storage was above 400,000 acre-feet on April 9, 2017 through August 10, 2017. Project storage was below 400,000 acre-feet again August 10, 2017 through December 6, 2017. Usable water in Project storage has remained above 400,000 acre-feet since December 6, 2017. For 2017, the above dates apply using either accounting method 1 or method 2.

Reclamation conducted the start and end of irrigation season update meetings for the Engineer Advisers in 2017. The data for the end of year meeting was draft at the time. It was sent as final to the Engineer Advisers in January 2018.

The New Mexico Engineer Adviser expressed concern about continued use of the 2008 OA for the Rio Grande Project. These concerns include changes in Reclamation's reported annual allocation and delivery values since 2008. Additionally the New Mexico Engineer Adviser expressed concern over operational and administrative changes that have been made under the Operating Manual.

ADDITIONAL FEDERAL AGENCY REPORTED INFORMATION

Representatives of USGS, Reclamation, Corps, 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 projects. The USGS is in the third year of a three-year WaterSmart Focus Area Study to assess water use and availability from the headwaters in southern Colorado to Fort Quitman, Texas. The study is investigating water budget components on the basis of an eight digit hydrologic unit code (HUC-8). Data on water use, evapotranspiration, groundwater, surface water, and snow

processes will be analyzed and made easily accessible for use by stakeholders. The study is being conducted by personnel from the USGS Colorado, New Mexico, Utah, and Texas Water Science centers.

The USGS, in cooperation with Reclamation, is continuing to develop an improved 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. The model is operational and final calibration and report documentation is scheduled to be completed by Spring 2018. Through the Mesilla Basin Monitoring Program, which is supported by several cooperators, the USGS continues to maintain an observation well network and to monitor salinity in shallow groundwater in the Mesilla Valley. The USGS is also conducting a microgravity pilot study, as well as a seepage investigation, which may aid in understanding surface water and ground water interactions in the basin. The Engineer Advisers also received a report on review procedures for non-USGS streamflow records in New Mexico and Colorado.

Corps Rio Grande Environmental Management Program

The Corps reported that the Water Resources Development Act (WRDA) of 2007 provided authorization for the Rio Grande Environmental Management Program. This program includes the entire Rio Grande Basin and all tributaries from the headwaters in Colorado to the Gulf of Mexico. The program includes two basic parts: (1) a program for planning, construction, and evaluation of measures for fish and wildlife habitat rehabilitation and enhancements and (2) implementation of a long-term monitoring plan, computerized data inventory and analysis, applied research, and an adaptive management program. The authorization for this program was extended in WRDA 2014 through fiscal year 2019. The first Feasibility Cost Share Agreement under this program was implemented in August 2016 with the MRGCD for a large-scale study evaluating ecosystem restoration in August of 2016 that will span from the Pueblo of Sandia south to the Pueblo of Isleta.

Zebra Mussels/Quagga Mussels

The Engineer Advisers continue to be concerned about the possible infestation of Zebra and Quagga mussels in the Upper Rio Grande basin and their possible spread throughout the entire basin. Reclamation has engaged in public outreach efforts since 2009, which includes

printing 41,000 ‘Zap the Zebra’ brochures and 1,000 mussel posters. These brochures and posters have been dispersed throughout New Mexico at the New Mexico State Parks facilities, convenience and sporting good shops and libraries. Permanent signs with the “Stop Aquatic Hitchhikers!” message have been installed at boating docks and other key locations at both Elephant Butte and Navajo Reservoirs. Information is distributed to the public at New Mexico reservoirs where quagga or zebra mussel inspections occur.

Since 2013, aquatic invasive species inspections have increased from two to eleven waterbodies in New Mexico. The number of watercraft inspections statewide has increased from 9,346 in 2013 to 39,124 in 2017. Reclamation sampled seven of its New Mexico reservoirs under Reclamation’s Detection Laboratory for Exotic Species direction. All tests came back negative for PCR and microscopy test in 2017.

Factors that may contribute to a lack of mussel occupation in New Mexico reservoirs include a fast spring runoff coupled with high levels of suspended solids, rapid drawdown of reservoir waters and canals, and ongoing drought. Continued vigilance is important, as conditions more suitable to aquatic invasive species establishment may occur in the future.

Rio Grande Silvery Minnow

The Service and Reclamation reported on the 2017 monitoring results for the silvery minnow in the middle Rio Grande and the October Catch per Unit Effort (CPUE) data typically used to report long-term trends in relative abundance. As described in the 2016 BO, incidental take of silvery minnows is authorized for the Proposed Action if October density is greater than or equal to 1.0 fish per 100 m^2 for 10 of 15 years; October density is less than 1.0 per 100 m^2 for no more than 5 of 15 years; and October density is less than 0.3 fish per 100 m^2 for no more than 2 of the 15 years. Incidental take will be considered exceeded if these densities are not met as a result of the Proposed Action. During the October CPUE survey silvery minnows were detected at 19 of the 20 fixed sites sampled with an estimated density of 23.2 silvery minnow/100 m^2. The 2017 CPUE represents a significant improvement over the October 2016 CPUE data and represents one of the highest densities observed in the 24 year history of similar monitoring efforts.

The Service reported that captive silvery minnows continued to be maintained at the City of Albuquerque BioPark, the Southwestern Native Aquatic Resources and Recovery Center (SNARRC, formerly the Dexter National Fish Hatchery), Uvalde National Fish Hatchery, and the Interstate Stream Commission's Los Lunas Silvery Minnow Refugium. However, because the October 2017 CPUE was higher than in recent years, fewer silvery minnow were needed for stocking of the river. Middle Rio Grande releases of silvery minnow for augmentation purposes were only done in the San Acacia Reach where 48,336 Visible Implant Elastometer marked fish were released.

Temporary Modification of Operations at El Vado Reservoir.

For 2017, there was not a resolution for temporary modification of operations at El Vado Reservoir requested or approved due to the anticipated above average runoff conditions in the Rio Grande basin.

For 2018, based on the March 1 NRCS forecast model, Reclamation and the Corps anticipate that extremely low inflow to El Vado Reservoir will not provide sufficient supply for a temporary modification of operations at El Vado Reservoir. Even though there is anticipated to be an insufficient supply, the Engineer Advisers had a discussion regarding the potential for a temporary modification of operations at El Vado Reservoir for 2018. The Engineer Advisers have not drafted a resolution to the Commission for consideration.

Middle Rio Grande Project Channel Maintenance

Reclamation's report indicates it is pursuing work at 12 active priority sites along the middle Rio Grande Project reach where bank erosion or reduced channel capacity could cause levee failure. Of the active priority sites, six require an annual review of channel capacity and possible maintenance due to sediment accumulation. A three mile sediment plug developed in the main channel at River Mile 81, near the north boundary of the Bosque del Apache National Wildlife Refuge (BDA), during the spring snowmelt runoff. The plug was removed in September 2017, and a long-term river realignment project at this location started in January 2018. The purpose of the project is to reduce the likelihood of a catastrophic levee breach, improve habitat for endangered species, and allow for improved water and sediment movement through the area. Reclamation is moving forward with a pilot 3 mile section, entirely within the

BDA boundary, of the original 7 or 8 mile length as an initial step in project implementation.

The New Mexico Engineer Adviser expressed concern over the timeliness of sediment plug clearing in 2017. The Engineer Advisers request that Reclamation develop a formal methodology to quickly address sediment plugs impacting river efficiency.

Vegetation Management at Elephant Butte and Caballo Reservoirs

Reclamation continued vegetation management efforts solely in Caballo Reservoir in 2017 based on what Reclamation describes as a "bang for the buck" strategy. The previous cooperative agreement for vegetation management between Reclamation and NMISC expired at the end of federal fiscal year 2017. Future vegetation management activities will be performed by task orders under a new technical services agreement for water salvage and river maintenance. Reclamation reported that some maintenance of Caballo Reservoir was performed at Reclamation's expense for 2017. Approximately 876 acres of phreatophytic vegetation was managed utilizing mowers and mulchers. NMISC and Reclamation have executed a task order using $60,000 of state funds for vegetation management activities during 2018.

At the 2017 Annual Compact meeting, Reclamation mentioned the cessation of vegetation clearing in Elephant Butte Reservoir about five years ago because of the listed species and the designation of critical habitat in the reservoir. At that time, Reclamation focused efforts on Caballo. At the 2017 Annual Compact Meeting, Reclamation committed to work with the Service, the Commissioners or the Engineer Advisers on trying to conduct vegetation management again in Elephant Butte Reservoir. A meeting was held on May 9, 2017 with the Engineer Advisers. Reclamation committed to come up with a plan to enhance vegetation management in Elephant Butte and Caballo Reservoirs. Reclamation stated they would visit informally with the Service to discuss potential impacts to endangered species habitat. It appears no such meeting occurred. The Engineer Advisers request Reclamation completes a draft plan for further vegetative control and discuss the plan with the Service.

Southwestern Willow Flycatcher and Yellow-billed Cuckoo

Reclamation reported it conducted surveys and nest monitoring for the flycatcher during the summer of 2017 along about 250 miles of the Rio Grande between Isleta Pueblo and Elephant Butte Reservoir. Other areas surveyed included above Cochiti Lake and select

locations between Caballo Reservoir and El Paso, Texas. In 2017, a small decrease was noted with 370 flycatcher territories detected along the Rio Grande and the majority of them in the San Marcial/Elephant Butte Reservoir area (257 territories and 85 percent of New Mexico Rio Grande detections). The number of territories in the Lower Rio Grande increased from 50 to 68, a 36% increase.

In 2017, the Service received a petition to delist the cuckoo based on the petitioners' opinion that the original listing of the species was in error. The Service is currently reviewing the petition, the original listing, as well as information newly available after several years of survey data and analysis of the species. Reclamation surveys have expanded for the cuckoo and now extend from Belen to El Paso, Texas. In 2017, 121 cuckoo territories were detected with the most concentrated areas in the San Marcial/Elephant Butte Reservoir area.

The tamarisk leaf beetle severely defoliated tamarisk throughout the majority of the middle Rio Grande this year. Because the defoliation occurred after nesting activity was complete for flycatchers no adverse impacts were observed; however there remains a concern that tamarisk defoliation could impact nesting success in future years by providing less foliage cover and making nests more vulnerable to predation, parasitism, and natural elements.

Silvery Minnow 10(j) Reintroduction in Big Bend-Texas

In 2017, the Service's Texas Team scheduled monitoring within three canyon stretches along the Rio Grande: Boquillas Canyon, Lower Canyons, and Martin Canyon. The Martin Canyon monitoring was canceled due to high flows. In April 2017, the Service's Texas Team sampled over 83 miles of river within the Lower Canyons and two silvery minnows were collected. In May 2017, the Service's Texas Team surveyed 30 miles within Boquillas Canyon and did not locate any silvery minnows.

In 2017-2018, SNARRC raised 290,175 minnows for the Texas effort, with 174,150 stocked at La Linda and 116,025 stocked at Dryden. Uvalde National Fish Hatchery raised 120,756 minnows and stocked them at Fosters Weir.

With a recapture rate of 0.01% of all stocked silvery minnows, a lack of habitat improvements including no instream flow recommendations and no guaranteed instream flows or avenues to attain them, the Service's Texas Team recommended ceasing their stocking and monitoring efforts in the Big Bend reach until environmental flow requirements can be

determined and implemented. In the interim, before an official decision is made, the Service's Texas Team will continue to stock and monitor for silvery minnows within the Big Bend National Park boundaries.

Additional Listing Information Provided by the Service

On July 11, 2012, the Service received a petition requesting the Rio Grande cooter be listed as endangered or threatened and that critical habitat be designated under the ESA. On March 16, 2016, the Service found that the petition presented substantial scientific or commercial information indicating that the petitioned action for Rio Grande cooter may be warranted. A species status review is planned but has not yet been completed. The Service will evaluate the potential threats to this species, but also the extent to which any protections or other conservation efforts have reduced those threats during the species status review.

On March 16, 2016, the Service announced that it had received petitions presenting substantial scientific information indicating that listing the Rio Grande chub and the Rio Grande sucker may be warranted. However, both of these species have little information on status and threats available to inform a petition finding and therefore were assigned a lower priority for review. The Service will evaluate the potential threats to these species and the extent to which any protections or other conservation efforts have reduced those threats during our reviews. During 2017, the Service along with the Colorado Parks and Wildlife and New Mexico Game and Fish began drafting a conservation agreement regarding the chub and the sucker.

International Boundary and Water Commission Activities

The IBWC provided a report of its activities along the Rio Grande in New Mexico and Texas during 2017. A brief discussion of IBWC's mission and international treaties was given. This discussion included their flood control mission under of the Convention of 1933 and deliveries under the 1906 Treaty.

IBWC stated Mexico was allocated 100 percent of a full supply which is 60,000 acre-feet but only diverted 52,588 acre-feet. 2018 is projected to be less than a full supply with an initial February 1, 2018 allocation of 33,940 acre-feet. Mexico has agreed to begin taking water at the same time as EP No. 1. The release is anticipated to begin March 16 with Mexico taking water on March 19 or 20. The monthly binational meetings have been helpful in coordinating

irrigation schedules as well as operations and maintenance activities.

IBWC provided updates to the status of their River Habitat Restoration, Environmental Water Transaction Program, River Management Plan and Channel Maintenance Plan. These activities fall under the 2009 Record of Decision (2009 ROD) for the Canalization Project. In the 2009 ROD, IBWC committed to implement 30 habitat restoration projects under River Habitat Restoration. Currently, work is underway at 22 habitat restoration sites, totaling about 500 acres. IBWC treated 370 acres of saltcedar. From 2012 to 2017, over 41,000 trees and 1,000 shrubs were planted. In 2018, about 30,000 more trees and shrubs will be planted. IBWC also has installed 55 shallow groundwater monitoring wells, most of which were installed between 2013 and 2014. Data from the wells are being processed and are targeted for release in 2018.

In 2017 under the Environmental Water Transaction Program, IBWC acquired some water and is working with other entities to obtain sufficient water required to meet 2009 ROD obligations. IBWC is also working with EBID on irrigation infrastructure and anticipates irrigating several restoration sites in 2018. In 2018 under the Channel Maintenance Plan, IBWC contractors transplanted willows from islands in Sunland Park, N.M. to nearby restoration sites.

IBWC previously completed a "Channel Maintenance Alternatives and Sediment Transport Modeling Study" to address sediment issues consistent with the 2009 ROD. The study identified two of nine problem areas (Thurman Arroyo 1 and 2). The design phase should be completed spring of this year and IBWC anticipates awarding a contract for construction in FY2018 at Thurman Arroyo 1 and 2.

IBWC estimated that 450,000 to 490,000 cubic yards of silt enters into the Canalization reach annually. This reach is defined as 105 river miles from Percha Dam to El Paso. Prior to 1990 IBWC removed 250,000 to 300,000 cubic yards per year. During the past irrigation season, IBWC removed approximately 190,000 cubic yards, 167,000 as part of canalization and 32,000 for rectification. IBWC needs and wants partners located outside of their jurisdiction to reduce sediment load to the river. The South Central New Mexico Stormwater Coalition appears to be taking a lead on this issue per IBWC but more partners are still needed.

IBWC provided brief information and updates on other ongoing projects. IBWC provided information on the American Canal Upper Reach (construction phase), American Canal Lower Reach (design changes), Sunland Park (redesign of complete reach) and Wasteway 1 and

2 (construction completed soon for Wasteway 1 and in 2018 for Wasteway 2). They mentioned FEMA levee coordination about base level engineering analysis to map flood risk zones in El Paso and future levee accreditation steps. Finally, they discussed projects in which IBWC is a stakeholder; the Northwest El Paso Drainage Study, Doniphan Drainage Study, Doniphan Corridor Improvements, and Texas Department of Transportation Loop 375 Border Highway West Expansion.

ENGINEER ADVISER RECOMMENDATIONS

At the 2017 Annual Meeting of the Rio Grande Compact Commission, the Engineer Advisers recommended and were then directed to make materials associated with this report available to the public prior to the meeting. New Mexico volunteered to host these materials on the NMOSE/NMISC website for the current year. The Engineer Advisers will continue to investigate a means to better make material available to the public before annual meetings.

The Engineer Advisers recommend the Commissioners direct the legal committee to review the February 22, 2018 Federal Defendant's Response Brief on the Merits in the Federal District Court case WildEarth Guardians v. US Army Corps of Engineers (case no. 1:14-cv-00666-RB-SCY) and provide legal opinions on the implications and impacts, if any, to the Commission and the Compact. If necessary, the legal committee should provide recommendations on future actions the Commission may take in regard to this issue. The Engineer Advisers are concerned that the Corps' presentation at the Engineer Advisers meeting did not provide a clear description of the Corps' relationship with the Commission regarding non-discretionary actions.

BUDGET

The Engineer Advisers reviewed the cost of operation for the year ending June 30, 2017 and the budget for the fiscal year ending June 30, 2019.

The Engineer Advisers found that the expenses for gaging stations and administration of the Compact for the year ending June 30, 2017 were $208,280. The United States federal government bore $58,681 of this total, with the balance of $149,599 borne equally by the three states.

The Engineer Advisers find that the proposed budget for the fiscal year ending June 30, 2019 indicates a total of $200,403 will be spent for gaging and administration, with a proposed contribution by the United States federal government of $51,594.

Craig W. Cotten

Engineer Adviser for Colorado

John W. Longworth

Engineer Adviser for New Mexico

Curtis Seaton

Engineer Adviser for Texas

The Colorado Engineer Adviser's Addendum to the 2018 Engineer Advisers' Report

March 29, 2018

At the 2018 Rio Grande Compact Commission (RGCC) Engineer Advisers' meeting held in Albuquerque, New Mexico on March 5-9, 2018, the Engineer Advisers did not reach consensus on the 2017 Rio Grande Compact (Compact) Accounting. The lack of consensus stems from the continuing disagreement regarding Colorado and New Mexico Credit Water that Reclamation released in 2011 and possibly in 2012, the appropriate accounting of 2011 and 2012 Colorado and New Mexico deliveries that were affected by Reclamation's release beyond the available Usable Water, and the directly relevant 2006 direction of the RGCC to Reclamation. There was no release of credit water by Reclamation in 2017 and the Engineer Advisers did reach agreement on the accounting of the 2017 streamflow numbers for the Colorado and New Mexico gaging stations. However, because of the lack of agreement on the effects of the releases of credit water in previous years, the amount of accrued debit of Colorado and the accrued credit or debit of New Mexico could not be agreed upon or finalized for 2017.

Therefore, the Colorado Engineer Adviser presents for the Commission's consideration the following method of accounting for the 2017 calendar year Compact Accounting:

> Method 2: Colorado and New Mexico Credit Water was released during 2011, and accounted as being reduced in the month it was released, as in a relinquishment.

Method 2:

With this Method, the Credit Water will have been reduced for evaporation at the end of the calendar year – in accordance with Article VI of the Compact and the 2006 direction of the RGCC to Reclamation. The Colorado Engineer Adviser carried forward the end of 2016 accounting results for Method 2 used through the 2017 calendar year. This method complies with the last paragraph of Article VI of the Compact, wherein Credit Water in Elephant Butte Reservoir is "reduced annually to compensate for evaporation losses in the proportion that such credits (or debits) bore to the total amount of water…during the year."

Under this method, Reclamation released accrued Credit Water from Elephant Butte Reservoir during the summer of 2011 unilaterally and without the permission of Colorado or New Mexico. This unauthorized release coupled with normal compact accounting resulted in 2017 Accrued Debits for Colorado that are more than those calculated in the Texas accounting method (Method 1). Method 2 results in Colorado having an Accrued Debit for the end of year 2017 of 400 acre-feet.

The difference in Colorado's Compact compliance status between the Texas method and Method 2 (minus 100 acre-feet) illustrates the effect of Reclamation's 2011 release of Credit Water on Colorado Compact compliance carried forward through 2017. Unlike an authorized relinquishment, however, Colorado did not receive the Article VII benefit of being able to store a like amount of water to that released by Reclamation in 2011 in post-compact reservoirs in the future when Article VII of the Compact is in effect.

Summary

The Colorado Engineer Adviser believes that the Texas method (Method 1) of accounting as put forth in the Texas addendum contravenes the last unnumbered paragraph of Article VI of the Compact and the unanimous direction of the Commission to Reclamation in 2006. Therefore, the Texas method is not acceptable to the Colorado Engineer Adviser.

No after-the-fact accounting can address the primary issues that occurred in 2011 and potentially 2012 when Reclamation made its unauthorized releases of accrued Credit Water, which are:

1) Colorado and New Mexico have sole authority to decide the disposition of any of their respective accrued Credit Water; and
2) Reclamation's actions denied Colorado and New Mexico the benefits associated with relinquishments or other negotiated solutions under the Compact and eliminated Texas' incentive to negotiate the terms of a relinquishment or other negotiated solution during drought times.

The method proposed above is a suggestion for the Commission's consideration. The Colorado Engineer Adviser recognizes that no accounting method may be approved without the unanimous approval of the Commission, and that any accounting method must not violate the express terms of the Compact.

New Mexico Addendum to the 2018 Engineer Advisers' Report to the Rio Grande Compact Commission

March 2018

At the 2018 Rio Grande Compact Commission (RGCC) Engineer Advisers' meeting, the Engineer Advisers again did not reach consensus on a method by which to finalize the Rio Grande Compact (Compact) Accounting. The lack of consensus stems from:

1) the continuing disagreement raised in litigation by New Mexico against the U.S. Bureau of Reclamation (Reclamation) regarding New Mexico and Colorado Credit Water that Reclamation unilaterally released from Elephant Butte Reservoir in 2011 without authorization from either Colorado or New Mexico;
2) the appropriate accounting of 2011, 2012, 2013, 2014, 2015, 2016, and 2017 New Mexico and Colorado deliveries that were affected by Reclamation's unilateral and unauthorized 2011 Credit Water release;
3) Reclamation's disregard for Article VI in the Compact[1] and the 2006 direction of the RGCC to Reclamation regarding the accounting and release of accrued Credit Water; and
4) Reclamation's continued use of Method 1 accounting (see Method 1 accounting spreadsheet) and the impacts on New Mexico of this accounting due to the differences in the timing and duration of the Article VII storage restriction on upstream reservoirs constructed after 1929.

Compact Accounting by Texas/Reclamation using Method 1, as compared to New Mexico's use of Method 2

The Texas Engineer Adviser conducted Compact accounting for the 2017 calendar year using a method (see Method 1 accounting spreadsheet) that reduces Credit Water for evaporation monthly during the calendar year. This same method was put forward to the Commission by Texas and Reclamation in 2012 and carried forward by them in subsequent years using the same accounting steps. At the start of calendar year 2017 using Method 1, Colorado had an Accrued Credit of 7,400 acre-feet, and New Mexico had an Accrued Debit of 12,800 acre-feet. At the beginning of calendar year 2018 using Method 1, Colorado had an Accrued Debit of 300 acre-feet and New Mexico had an Accrued Credit of 6,400 acre-feet. This method, however, is

[1] Pursuant to Article VI of the Compact, "all credits and debits of Colorado and New Mexico shall be computed for each calendar year" and "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."

contrary to Article VI of the Compact for accounting of both Credit water in Elephant Butte Reservoir and Debit water retained in storage in post-1929 reservoirs, and the 2006 direction of the RGCC to Reclamation. The New Mexico Engineer Adviser has repeatedly apprised the Commission that approval of Method 1 would require the RGCC to disregard the explicit language of the Compact requiring annual accounting for evaporation and is contradictory to the unanimous RGCC directive in 2006. Furthermore, the 2006 resolution was executed by the unanimous consent of the RGCC and therefore cannot be unilaterally rescinded by a single state nor by an Engineer Adviser. Therefore, Method 1 is not acceptable to the New Mexico Engineer Adviser.

The New Mexico Engineer Adviser conducted Compact accounting for the 2017 calendar year using a method (referred to as Method 2, see accounting sheet) that he and the Colorado Engineer Adviser proposed in 2012 (see the 2012 New Mexico and Colorado addendum to the 2012 Engineer Adviser Report). Method 2 reduces Credit Water for evaporation at the end of the calendar year in accordance with Article VI of the Compact and the 2006 direction of the RGCC to Reclamation. Additionally, Method 2 computes evaporation on debit water retained in storage in post-compact reservoirs, El Vado Reservoir in 2017, annually at the end of the calendar year, also as described in Article VI of the Compact. The New Mexico Engineer Adviser carried forward the end of 2011 accounting results with Method 2 through the 2017 calendar year using the same accounting steps (See 2017 New Mexico Addendum). Method 2 accounting for calendar year 2017 resulted in an Accrued Credit of 7,300 acre-feet for Colorado and an Accrued Debit of 20,300 acre-feet for New Mexico. The New Mexico Engineer Adviser used these values as inputs for the 2017 Compact accounting. Consequently, the Compact compliance status for Colorado and New Mexico for 2018, using Method 2, is 400 acre-feet of Accrued Debit and 700 acre-feet of Accrued Debit, respectively. Method 2 accounting sheets and associated tables are attached to this March 2018 addendum.

Pursuant to Article VI of the Compact, New Mexico retained debit water in storage in reservoirs constructed after 1929 upstream of Elephant Butte during 2017. All the debit water was retained in El Vado Reservoir. By the end of the first week in May 2017, 20,300 acre-feet had been stored (the amount of New Mexico's Accrued Debit using Method 2) when the Article VII storage restriction was not in effect. That water was retained in El Vado Reservoir for the remainder of the calendar year. As a result of the differences in annual accounting, New Mexico had a larger Accrued Debit, than otherwise would have occurred without the Credit Water Release, and retained that amount in storage per Article VI of the Compact, locking up that water and making it unavailable for release by the Middle Rio Grande Conservancy District during 2017. Furthermore, under Article VI of the Compact Accrued Debit is also held constant during the year, with evaporation calculated annually. Method 1 accounting, incorrectly, and contrary to Article VI of the Compact, reduces Accrued Debit monthly for evaporative losses during the calendar year. The result of this difference in accounting is that, Method 1 results in less of a credit for evaporative losses on Accrued Debit retained in storage.

For calendar year 2017 the timing of Article VII storage restrictions occurred on the same day using either accounting method. This was because New Mexico was in an Accrued Debit for 2017 under both accounting methods, and Colorado's Accrued Credit in Elephant Butte was small. In summary, if Reclamation's 2011 release had been an authorized relinquishment done in accordance with the Compact, New Mexico and Colorado would have received Article VII up-stream storage benefits (the ability to store and release 33,825 acre-feet of water when the Article VII storage restriction is in effect), to which they are entitled under the Compact. However, New Mexico and Colorado were denied these Article VII benefits because the releases by Reclamation were done unilaterally and were not authorized in accordance with Article VII. In addition, Reclamation's refusal to use Method 2 accounting to determine Usable Water in Rio Grande Project Storage affected its El Vado Reservoir operations in 2015 and 2016. The impact from the difference in accounting the timing of Article VII storage restrictions due to Reclamation's unilateral release of New Mexico and Colorado Accrued Credit water in 2011 is documented in the 2015, 2016, and 2017 addenda of the New Mexico Engineer Adviser.

Given the lack of resolution on the above issues and absent an explicit agreement by Reclamation to abide by Article VI of the Compact and the RGCC's 2006 directives regarding the accounting and release of accrued Credit Water, the New Mexico Engineer Adviser again recommends that the RGCC not approve any Compact accounting for 2011, 2012, 2013, 2014, 2015, 2016 and 2017.

TABLE 12. EVAPORATION LOSS ON RIO GRANDE WATER STORED IN RESERVOIRS ABOVE OTOWI AND TOTAL RIO GRANDE STORAGE AT EL VADO AND ABIQUIU.

(Method 2)

(UNIT = ACRE-FEET)

TABLE 12. Evap abv Otowi MONTH	EL VADO AND ABIQUIU RIO GRANDE STORAGE (1)	R.G. COMPACT DEBT WATER STORED IN EL VADO (2)	LOSSES ON R.G. COMPACT DEBT WATER STORED IN EL VADO (3)	LOSSES ON RIO GRANDE STORED IN EL VADO (4)	LOSSES ON RIO GRANDE STORED IN ABIQUIU (5)	OTOWI EVAPORATION ADJUSTMENT (6) = (4) + (5)
JANUARY	4325	0	0	326	0	326
FEBRUARY	14363	0	0	71	-1	70
MARCH	26852	0	0	139	20	159
APRIL	45946	15966	112	175	86	261
MAY	113237	20300	107	413	90	503
JUNE	139686	20300	163	1,035	67	1102
JULY	128380	20300	84	544	5	549
AUGUST	118887	20300	72	447	2	449
SEPTEMBER	94191	20300	79	407	-3	404
OCTOBER	77817	20300	84	354	8	362
NOVEMBER	55362	20300	48	156	1	157
DECEMBER	39843	20300	32	70	-1	69
ANNUAL			781	4137	274	4411

(1) SUM OF NATURAL STORAGE IN EL VADO AND ABIQUIU.

(2) AMOUNT OF DEBT WATER IN STORAGE IN EL VADO.

(3) ACTUAL NET EVAPORATION LOSS TO DEBT WATER IN EL VADO EQUAL TO PERCENT DEBIT WATER TO TOTAL NATIVE TIMES NET LOSS; ARTICLE VI OF COMPACT

(4) ACTUAL NET EVAPORATION LOSS TO NATURAL POOL IN EL VADO.

(5) ACTUAL NET EVAPORATION LOSS TO NATURAL POOL IN ABIQUIU.

(6) SUM OF NET EVAPORATION LOSSES IN EL VADO AND ABIQUIU.

2017 Evaporation Loss On Rio Grande Compact Water Stored in Elephant Butte Reservoir
(Unit = Acre-Feet) Except Col. (8)
(New Mexico Accounting Method-2)

Month	Total Rio Grande Stored in Elephant Butte (Ac-Ft)	Total Net Evap on Rio Grande Stored in Elephant Butte (Ac-Ft)	Colorado's Rio Grande Compact Credit Water Stored in Elephant Butte (Ac-Ft)	Colorado's Credit Water Evaporation Adjustment (Ac-Ft)	New Mexico's Rio Grande Compact Credit Water Stored in Elephant Butte (Ac-Ft)	New Mexico's Credit Water Evaporation Adjustment (Ac-Ft)	Total Credit Water Evaporation Adjustment (Ac-Ft)	Total Rio Grande Usable Water Stored in Elephant Butte (Kaf)	Total Water Relinquished (Ac-Ft)	CO Credit Water Relinquished (Ac-Ft)	NM Credit Water Relinquished (Ac-Ft)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
January	250968	1072	7300	31	0	0	31	244	0	0	0
February	295292	2873	7300	71	0	0	71	288	0	0	0
March	307438	6050	7300	142	0	0	142	300	0	0	0
April	391928	8915	7300	161	0	0	161	385	0	0	0
May	500385	11601	7300	160	0	0	160	493	0	0	0
June	469189	13913	7300	200	0	0	200	462	0	0	0
July	366221	7996	7300	143	0	0	143	359	0	0	0
August	284501	5727	7300	129	0	0	129	277	0	0	0
September	226510	6484	7300	179	0	0	179	219	0	0	0
October	297220	5681	7300	116	0	0	116	290	0	0	0
November	354744	4783	7300	80	0	0	80	347	0	0	0
December	425083	2953	7300	41	0	0	41	418	0	0	0
Annual		78048		1453		0	1453		0	0	0

(8) = (1) - [(3) + (5)] Total usable Rio Grande water in Elephant Butte Reservoir.

2017 STORAGE IN RESERVOIRS IN NEW MEXICO

New Mexico Accounting Method 2

ACRE-FEET

RESERVOIR	*ITEM*	*2016 DEC*	*2017JAN*	*FEB*	*MAR*	*APR*	*MAY*	*JUNE*	*JULY*	*AUG*	*SEPT*	*OCT*	*NOV*	*2017 DEC*
ABOVE OTOWI BRIDGE														
EL VADO	TOTAL	52,230	50,458	54,302	58,621	62,714	114,605	141,667	130,030	135,560	129,067	112,905	91,052	73,693
	TRANS-MTN	(52,098)	(46,098)	(39,939)	(37,013)	(31,843)	(1,359)	(2,446)	(1,755)	(16,676)	(35,497)	(35,755)	(35,692)	(33,850)
ABIQUIU	TOTAL	118,367	120,850	123,836	122,405	135,124	145,215	147,292	143,926	142,267	142,853	139,297	128,520	117,726
	TRANS-MTN	(117,722)	(120,340)	(123,291)	(116,555)	(119,235)	(144,196)	(145,744)	(142,716)	(141,150)	(141,087)	(137,470)	(127,341)	(116,537)
	ACC. SED	(545)	(545)	(545)	(606)	(814)	(1,029)	(1,083)	(1,105)	(1,115)	(1,145)	(1,159)	(1,176)	(1,188)
SUBTOTAL RIO GRANDE		232	4,325	14,363	26,852	45,946	113,236	139,686	128,380	118,886	94,191	77,818	55,363	39,844
OTOWI BRIDGE TO SAN MARCIAL														
McCLURE	TOTAL	541	476	656	1,066	1,625	2,201	1,846	1,567	1,323	1,081	1,344	1,324	1,240
	PRE-COMP	0	0	(151)	(561)	(585)	(719)	(356)	(77)	0	(71)	(334)	(314)	(230)
	TRANS-MTN	0	0	0	0	0	0	0	0	0	0	0	0	0
NICHOLS	TOTAL	319	328	354	354	494	358	460	383	316	322	460	354	335
	PRE-COMP	(27)	0	(26)	(26)	(166)	(30)	(132)	(55)	0	(4)	(142)	(36)	(17)
	TRANS-MTN	(78)	(78)	(78)	(78)	(78)	(78)	(78)	(78)	(78)	(78)	(78)	(78)	(78)
COCHITI	TOTAL	44,595	45,112	45,911	46,932	45,946	46,764	45,843	49,413	47,731	48,086	47,807	47,114	47,053
	TRANS-MTN	(43,801)	(44,901)	(45,351)	(45,237)	(44,888)	(44,475)	(43,958)	(46,022)	(45,634)	(45,308)	(45,118)	(44,904)	(44,788)
	ACC. SED	(954)	(962)	(972)	(1,105)	(1,442)	(1,869)	(1,936)	(1,966)	(1,989)	(2,014)	(2,031)	(2,051)	(2,070)
GALISTEO	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
JEMEZ	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
	TRANS-MTN	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACC.SED.[1]	0	0	0	0	0	0	0	0	0	0	0	0	0
ACOMITA	TOTAL[2]													
SEAMA	TOTAL[3]													
SUBTOTAL RIO GRANDE		595	(25)	343	1,345	906	2,152	1,689	3,165	1,669	2,014	1,908	1,409	1,445
NEW MEXICO														
TOTAL RIO GRANDE		827	4,300	14,706	28,197	46,852	115,388	141,375	131,545	120,555	96,205	79,726	56,772	41,289

[1] accumulated sediment (312 acre-feet) omitted from the accounting while Jemez Reservoir is dry by decision of the Engineer Advisers, March 4, 2005

[2] storage omitted from accounting by action of the Commission on March 23, 2000

[3] No data available.

Addendum Engineer Advisers Report
Texas Engineer Adviser
March 29, 2018

The Engineer Advisers to the Rio Grande Compact Commission (Commission) were unable to reach agreement on the Accounting of water deliveries for 2017. The issue centered on how the evaporation losses on Credit Water are calculated and tabulated and are carried forward from the 2011 and 2012 Water Accounting. Three separate accountings were developed in 2014 and labeled as Method 1, 2, and 3. At the 2016 Rio Grande Compact Commission meeting, Colorado noted they will no longer follow Method 3. The Texas Engineer Adviser proposes that Method 1 be accepted and thus bases his calculations on that method.

The history of this issue is addressed in a memorandum from the Engineer Advisers to the Commission dated March 23, 2006 (the "Memorandum"). As described in the Memorandum, the Commission has been inconsistent in the way it has tabulated Credit Water in storage based on evaporation losses during the year. There are times when the Commission has approved an accounting where Credit Water is held constant each month and the Credit Water is only reduced at the end of the year (Method 3), even though the calculation of Credit Water evaporation is a summation of monthly evaporation amounts. Under this method, whenever Usable Water amounts go negative and Credit Water was released, those amounts were repaid immediately as inflows occur. Also, there are times when the Commission has approved the evaporation of Credit Water monthly (Method 1). That is, Credit Water and Usable Water are subject to evaporation as it occurs. Under this method, the Texas Engineer Adviser understands that Usable Water is not negative. As understood by the Texas Engineer Adviser, Method 2 holds the credit water constant throughout the year. If there is insufficient Usable Water in Elephant Butte to cover all the evaporation losses on the Credit Water, Usable Water has gone negative. Method 2 then assumes the negative dip into the Credit Water can never be repaid. The Texas Engineer Adviser was unable to find any instance where this method had been approved by the Commission. Accordingly, the Texas Commissioner rescinds its support of the Memorandum.

The Engineer Advisers presented recommendations to the Commission on this issue in 2006. The Commission approved three recommendations. The recommendations were:

The Commission direct that accrued Credit Water be held constant during the year.

The Commission direct the Engineer Advisers to meet if the total combined accrued Credit Water exceeds 150,000 acre-feet and Usable Water is less than a full allocation or if the combined accrued Credit Water exceeds 50% of Project Storage and make a recommendation to the Commission regarding optimum use of water in Project Storage for Commission approval.

The Commission direct Reclamation to allocate or release Credit Water only as directed by the Commission.

The Engineer Advisers have not agreed on a recommendation and the Commission has not approved a proposal to optimize the use of water in Project Storage. Therefore, since one of the methods historically used by the Commission was to tabulate evaporation of credit water on a

monthly basis, Reclamation proceeded with this historical practice and allocated the monthly tabulated evaporation of Credit Water to Usable Water.

An additional accounting concern for Texas involves Bonita Lateral. Texas does not believe that any water taken from Elephant Butte Reservoir and Caballo Reservoir for the Bonita Lateral ("Bonita Water) is a delivery of Compact water to Texas. The Bonita Lateral water is delivered lands outside the Rio Grande Project. Texas believes that the historic method of Compact accounting where Bonita Water is added to the usable release is wrong. The methodology used is double counting the Bonita Water. Texas has requested an explanation for the Bonita Water from Reclamation and has not received any response to date. Texas believes that under the Compact, the accounting for deliveries of water to the Rio Grande Project should be accurate. This would require an official explanation for the Bonita Lateral and why Compact waters counted as deliveries to Texas can be diverted by Reclamation for non-project users. Texas is ready to discuss this following receipt of a response from Reclamation and looks forward to resolving this issue.

COMPACT ACCOUNTING 2016 - METHOD 1

The Texas Engineer Adviser has reviewed the streamflow and reservoir storage records and other pertinent data for calendar year 2016. This method, recommended by the Texas Engineer Adviser, reduces the Credit Water evaporation monthly. The scheduled and actual deliveries, release of Usable Water for the year 2016, and balances as of January 1, 2017 are as follows:

(a) Deliveries by Colorado at the State line:

Balance as of January 1, 2017	7,400 acre-feet
Scheduled delivery	421,600 acre-feet
Actual delivery at Lobatos plus 10,000 acre-feet	415,400 acre-feet
Reduction of credit water on account of evaporation	1,500 acre-feet
Accrued debit January 1, 2018	300 acre-feet

(b) Deliveries by New Mexico at Elephant Butte Dam:

Balance as of January 1, 2016	-12,800 acre-feet
Scheduled delivery	853,000 acre-feet
Actual delivery	871,700 acre-feet
Reduction of debit on account of evaporation	500 acre-feet
Accrued credit January 1, 2017	6,400 acre-feet

(c) Project Storage and Releases:

Accrued departure (credit) as of January 1, 2016	2,015,800 acre-feet
Actual release of Usable Water	546,400 acre-feet
Normal release for year	790,000 acre-feet
Accrued departure (credit) as of January 1, 2017	2,165,800 acre-feet

Under release capped at 150,000

Method 1: Reduce Credit Water for Evaporation Monthly during the 2017 Calendar Year - Developed by Texas and Reclamation

RIO GRANDE COMPACT - DELIVERIES BY COLORADO AT STATE LINE

YEAR 2017 - Method 1

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 [d]	CHANGE IN STORAGE [e]	OTHER ADJUSTMENTS	NET ADJUSTMENTS	SUPPLY IN MONTH	ACCUMULATED TOTAL	RECORDED FLOW NEAR DEL NORTE	STORAGE AT END OF MONTH	CHANGE IN STORAGE	TRANSMOUNTAIN 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
	------	------	------	------	11.5	------	------	------	------	0.0	------	0.2	------	------	------	------	------	0.0	------	------	------	0.0
JAN	3.9	------	------	3.9	11.7	0.2		0.2	4.1	4.1	11.9	0.2	0.0			0.0	11.9	11.9	4.0	14.2	18.2	18.2
FEB	3.7	------	------	3.7	11.7	0.0		0.0	3.7	7.8	12.1	0.2	0.0			0.0	12.1	24.0	6.5	19.4	25.9	44.1
MAR	14.4	------	------	14.4	11.3	-0.4		-0.4	14.0	21.8	33.3	0.2	0.0			0.0	33.3	57.3	21.7	31.8	53.5	97.6
APR	30.1	24.6	11.0	65.7	14.0	2.7		2.7	68.4	90.2	96.0	0.2	0.0			0.0	96.0	153.3	32.2	23.2	55.4	153.0
MAY	71.9	51.7	11.2	134.8	16.7	2.7	0.1	2.8	137.6	227.8	174.3	0.2	0.0			0.0	174.3	327.6	56.4	31.9	88.3	241.3
JUN	75.9	26.0	1.3	103.2	35.5	18.8	0.2	19.0	122.2	350.0	181.1	0.2	0.0			0.0	181.1	508.7	46.7	26.8	73.5	314.8
JUL	31.5	4.4	0.2	36.1	29.1	-6.4	0.1	-6.3	29.8	379.8	55.7	0.2	0.0	-2.3	0.2	-2.1	53.6	562.3	7.5	11.0	18.5	333.3
AUG	18.9	1.8	0.1	20.8	26.2	-2.9	0.0	-2.9	17.9	397.7	42.1	0.2	0.0			0.0	42.1	604.4	5.8	5.2	11.0	344.3
SEPT	13.5	1.2	0.1	14.8	21.9	-4.3	0.0	-4.3	10.5	408.2	24.7	0.2	0.0			0.0	24.7	629.1	3.1	2.2	5.3	349.6
OCT	17.2	3.4	0.3	20.9	21.6	-0.3	0.1	-0.2	20.7	428.9	32.0	0.2	0.0			0.0	32.0	661.1	8.6	5.3	13.9	363.5
NOV	8.0	------	------	8.0	20.1	-1.5	0.1	-1.4	6.6	435.5	15.9	0.2	0.0			0.0	15.9	677.0	8.8	12.7	21.5	385.0
DEC	5.4	------	------	5.4	18.7	-1.4	0.0	-1.4	4.0	439.5	11.2	0.2	0.0			0.0	11.2	688.2	5.9	14.5	20.4	405.4
YEAR	294.4	113.1	24.2	431.7	------	7.2	0.6	7.8	439.5	------	690.3	------	0.0	-2.3	0.2	-2.1	688.2	------	207.2	198.2	405.4	------

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

[a] Evaporation loss post-compact reservoirs; report of the Engineer Adviser for Colorado.

[b] 2,575 ac-ft minus 243 ac-ft pre-compact; report of the Engineer Adviser for Colorado.

[c] Reduction of Credit for Evaporation calculated on a monthly basis.

[d] Note: No relinquishment credit stored in 2017. Storage of relinquished credit to date has totaled 2,068 acre-feet; balance remaining is 932 acre-feet.

[e] See Engineer Adviser report in regards to change of storage.

SUMMARY OF DEBITS AND CREDITS

	ITEM	DEBIT	CREDIT	BALANCE
C1	Balance at Beginning of Year	--------	--------	Cr. 7.4
C2	Scheduled Delivery from Conejos River	222.8	--------	Dr. 215.4
C3	Scheduled Delivery from Rio Grande	198.8	--------	Dr. 414.2
C4	Actual Delivery at Lobatos plus 10,000 Acre Feet	--------	415.4	Cr. 1.2
C5	Reduction of Debits a/c Evaporation	--------		
C6	Reduction of Credits a/c Evaporation[c]	1.5	--------	Dr. 0.3
C7				
C8	Balance at End of Year	--------	--------	Dr. 0.3

APPROVED:

Engineer Adviser for Colorado_____ Date: _____ Engineer Adviser for New Mexico _____ Date: _____ Engineer Adviser for Texas _____ Date: _____

Method 1: Reduce Credit Water for Evaporation Monthly during the 2017 Calendar Year - Developed by Texas and Reclamation

RIO GRANDE COMPACT - DELIVERIES BY NEW MEXICO AT ELEPHANT BUTTE

YEAR 2017 - Method 1

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				
	Recorded Flow at Otowi Bridge	ADJUSTMENTS						INDEX SUPPLY			STORAGE IN ELEPHANT BUTTE RESERVOIR		Recorded Flow Below Elephant Butte Dam [c]	Effective Supply	
		RESERVOIRS: LOBATOS TO OTOWI													
		Storage End of Month [a]	Change in Storage	Reservoir Evaporation	Other Adjustments	Trans-mountain Diversions	Net Adjustments	During Month	Accumulated Total		End of Month [b]	Change Gain (+) Loss (-)		During Month	Accumulated Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	------	0.2	------	------	------	------	------	------	------	0.8	202.5	------	------	------	------
JAN	44.9	4.3	4.1	0.3		-3.7	0.7	45.6	45.6	4.3	251.0	48.5	0.0	48.5	48.5
FEB	50.0	14.4	10.1	0.1		-2.7	7.5	57.5	103.1	14.7	295.3	44.3	0.0	44.3	92.8
MAR	132.5	26.9	12.5	0.2		-8.8	3.9	136.4	239.5	28.2	307.4	12.1	60.3	72.4	165.2
APR	223.8	45.9	19.0	0.3		-1.5	17.8	241.6	481.1	46.9	391.9	84.5	78.7	163.2	328.4
MAY	278.8	113.2	67.3	0.5		-3.6	64.2	343.0	824.1	115.4	500.4	108.5	96.0	204.5	532.9
JUN	153.7	139.7	26.5	1.1		-2.2	25.4	179.1	1003.2	141.4	469.2	-31.2	133.3	102.1	635.0
JUL	68.0	128.4	-11.3	0.5		-13.2	-24.0	44.0	1047.2	131.5	366.2	-103.0	113.3	10.3	645.3
AUG	54.0	118.9	-9.5	0.4		-7.0	-16.1	37.9	1085.1	120.6	284.5	-81.7	94.2	12.5	657.8
SEPT	56.5	94.2	-24.7	0.4		-8.4	-32.7	23.8	1108.9	96.2	226.5	-58.0	68.9	10.9	668.7
OCT	71.3	77.8	-16.4	0.4		-2.6	-18.6	52.7	1161.6	79.7	297.2	70.7	4.2	74.9	743.6
NOV	79.3	55.4	-22.4	0.1		-10.2	-32.5	46.8	1208.4	56.8	354.7	57.5	0.1	57.6	801.2
DEC	73.9	39.8	-15.6	0.1		-12.2	-27.7	46.2	1254.6	41.3	425.1	70.4	0.1	70.5	871.7
YEAR	1286.7	------	39.6	4.4		-76.1	-32.1	1254.6	------	------	------	222.6	649.1	871.7	------

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

[a] Note: In 2017, no relinquishment credit under previous relinquishment agreements was stored in New Mexico reservoirs. Storage of relinquished credit to date has totaled 288,281 acre-feet; balance remaining is 92,219 acre-feet.

[b] Based on end of year surveys, Elephant Butte lake elevation corrected by +0.23 feet, effective December 20, 2017.

[c] Gage record reflects improved precision since 2016. A low bias in gaged flow during certain months due to algae growth was identified and addressed for 2016 forward. The low bias occurred for an undetermined amount of time. New Mexico will continue to coordinate with USGS to provide a more accurate gage record in the future.

[d] Reduction of debits for evaporation calculated on a monthly basis.

SUMMARY OF DEBITS AND CREDITS

	ITEM	DEBIT	CREDIT	BALANCE
NM1	Balance at Beginning of Year	--------	--------	Dr. 12.8
NM2	Scheduled Delivery at Elephant Butte	853.0	--------	Dr. 865.8
NM3	Actual Elephant Butte Effective Supply	--------	871.7	Cr. 5.9
NM4	Reduction of Debits a/c Evaporation[d]	--------	0.5	Cr. 6.4
NM5	Reduction of Credits a/c Evaporation and Spill	--------	--------	Cr. 6.4
NM6			--------	
NM7				
NM8	Balance at End of Year	--------	--------	Cr. 6.4

APPROVED:

Engineer Adviser for Colorado_____ Date: _____ Engineer Adviser for New Mexico _____ Date: _____ Engineer Adviser for Texas _____ Date: _____

Method 1: Reduce Credit Water for Evaporation Monthly during the 2017 Calendar Year - Developed by Texas and Reclamation

RIO GRANDE COMPACT - RELEASE AND SPILL FROM PROJECT STORAGE
YEAR 2017 - Method 1

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[c]	New Mexico Credit Water[c]	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
						7.4[b]	0.0[b]	7.4[b]										
JAN	1,999.6	243.6	25.6	269.2	1,730.4	7.4	0.0	7.4		276.6	0.1	0.0	0.1				0.1	0.1
FEB	1,999.6	288.0	29.6	317.6	1,682.0	7.3	0.0	7.3		324.9	0.0	0.0	0.0				0.0	0.1
MAR	1,999.6	300.2	78.3	378.5	1,621.1	7.2	0.0	7.2		385.7	2.6	0.1	2.7				2.7	2.8
APR	1,974.6	384.9	72.0	456.9	1,517.7	7.0	0.0	7.0		463.9	80.9	0.1	81.0				81.0	83.8
MAY	1,974.6	493.6	67.1	560.7	1,413.9	6.8	0.0	6.8		567.5	95.4	0.2	95.6				95.6	179.4
JUN	1,974.6	462.6	70.9	533.5	1,441.1	6.6	0.0	6.6		540.1	127.1	0.2	127.3				127.3	306.7
JUL	1,974.6	359.7	68.5	428.2	1,546.4	6.5	0.0	6.5		434.7	113.9	0.1	114.0				114.0	420.7
AUG	1,974.6	278.1	62.2	340.3	1,634.3	6.4	0.0	6.4		346.7	98.3	0.1	98.4				98.4	519.1
SEPT	1,974.6	220.3	32.5	252.8	1,721.8	6.2	0.0	6.2		259.0	99.5	0.1	99.6				99.6	618.7
OCT	1,999.6	291.1	35.6	326.7	1,672.9	6.1	0.0	6.1		332.8	5.0	0.0	5.0				5.0	623.7
NOV	1,999.6	348.7	36.3	385.0	1,614.6	6.0	0.0	6.0		391.0	0.2	0.0	0.2				0.2	623.9
DEC	1,999.6	419.2	37.1	456.3	1,543.3	5.9	0.0	5.9		462.2	0.1	0.0	0.1				0.1	624.0
YEAR	------	------	------	------	------	------	------	------	------	------	623.1	0.9	624.0	0.0	0.0	0.0	624.0	------

Remarks: Cols. 2, 6 and 11 reflect implementation of revised area-capacity tables from Elephant Butte and Caballo Reservoirs, effective Jan 1, 2009

[a] Project Storage Capacity is 1,974,600 acre-feet (April to September) and 1,999,600 acre-feet (October to March) as adopted by the Rio Grande Compact Commission on March 31, 2009 which includes flood control storage reservation at Elephant Butte Reservoir of 50,000 acre-feet from April through September and 25,000 acre-feet from October through March.

[b] Based on Balance at Beginning of Year (C1 and NM1).

[c] Calculated on a monthly basis.

ACCRUED DEPARTURE FROM NORMAL RELEASE

	ITEM	DEBIT	CREDIT	BALANCE
P1	Accrued Departure at Beginning of Year	------	------	Cr. 2015.8
P2	Actual Release during Year	624.0	------	Cr. 1391.8
P3	Normal Release for Year	------	790.0	Cr. 2181.8
P4	Under Release in Excess of 150.0	16.0	------	Cr. 2165.8
P5		------		
P6				
P7	Accrued Departure at End of Year	------	------	Cr. 2165.8

TIME OF HYPOTHETICAL SPILL: Did not occur

APPROVED:
Engineer Adviser for Colorado_____ Date: _____ Engineer Adviser for New Mexico _____ Date: _____ Engineer Adviser for Texas _____ Date: _____

Method 2: Reduce Credit Water for Evaporation at the End of the 2017 Calendar Year - Developed by Colorado and New Mexico

RIO GRANDE COMPACT - DELIVERIES BY COLORADO AT STATE LINE

YEAR 2017 - Method 2

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 [d]	CHANGE IN STORAGE [e]	OTHER ADJUSTMENTS	NET ADJUSTMENTS	SUPPLY IN MONTH	ACCUMULATED TOTAL	RECORDED FLOW NEAR DEL NORTE	STORAGE AT END OF MONTH	CHANGE IN STORAGE	TRANSMOUNTAIN 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
	------	------	------	------	11.5	------	------	------	------	0.0	------	0.2	------	------	------	------	------	0.0	------	------	------	0.0
JAN	3.9	------	------	3.9	11.7	0.2		0.2	4.1	4.1	11.9	0.2	0.0			0.0	11.9	11.9	4.0	14.2	18.2	18.2
FEB	3.7	------	------	3.7	11.7	0.0		0.0	3.7	7.8	12.1	0.2	0.0			0.0	12.1	24.0	6.5	19.4	25.9	44.1
MAR	14.4	------	------	14.4	11.3	-0.4		-0.4	14.0	21.8	33.3	0.2	0.0			0.0	33.3	57.3	21.7	31.8	53.5	97.6
APR	30.1	24.6	11.0	65.7	14.0	2.7		2.7	68.4	90.2	96.0	0.2	0.0			0.0	96.0	153.3	32.2	23.2	55.4	153.0
MAY	71.9	51.7	11.2	134.8	16.7	2.7	0.1	2.8	137.6	227.8	174.3	0.2	0.0			0.0	174.3	327.6	56.4	31.9	88.3	241.3
JUN	75.9	26.0	1.3	103.2	35.5	18.8	0.2	19.0	122.2	350.0	181.1	0.2	0.0			0.0	181.1	508.7	46.7	26.8	73.5	314.8
JUL	31.5	4.4	0.2	36.1	29.1	-6.4	0.1	-6.3	29.8	379.8	55.7	0.2	0.0	-2.3	0.2	-2.1	53.6	562.3	7.5	11.0	18.5	333.3
AUG	18.9	1.8	0.1	20.8	26.2	-2.9	0.0	-2.9	17.9	397.7	42.1	0.2	0.0			0.0	42.1	604.4	5.8	5.2	11.0	344.3
SEPT	13.5	1.2	0.1	14.8	21.9	-4.3	0.0	-4.3	10.5	408.2	24.7	0.2	0.0			0.0	24.7	629.1	3.1	2.2	5.3	349.6
OCT	17.2	3.4	0.3	20.9	21.6	-0.3	0.1	-0.2	20.7	428.9	32.0	0.2	0.0			0.0	32.0	661.1	8.6	5.3	13.9	363.5
NOV	8.0	------	------	8.0	20.1	-1.5	0.1	-1.4	6.6	435.5	15.9	0.2	0.0			0.0	15.9	677.0	8.8	12.7	21.5	385.0
DEC	5.4	------	------	5.4	18.7	-1.4	0.0	-1.4	4.0	439.5	11.2	0.2	0.0			0.0	11.2	688.2	5.9	14.5	20.4	405.4
YEAR	294.4	113.1	24.2	431.7	------	7.2	0.6	7.8	439.5	------	690.3	------	0.0	-2.3	0.2	-2.1	688.2	------	207.2	198.2	405.4	------

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

[a] Evaporation loss post-compact reservoirs; report of the Engineer Adviser for Colorado.

[b] 2,575 ac-ft minus 243 ac-ft pre-compact; report of the Engineer Adviser for Colorado..

[c] Evaporation of credit water accounted as described in Article VI of the Rio Grande Compact.

[d] Note: No relinquishment credit stored in 2017. Storage of relinquished credit to date has totaled 2,068 acre-feet; balance remaining is 932 acre-feet.

[e] See Engineer Adviser report in regards to change of storage.

SUMMARY OF DEBITS AND CREDITS

	ITEM	DEBIT	CREDIT	BALANCE
C1	Balance at Beginning of Year	--------	--------	Cr. 7.3
C2	Scheduled Delivery from Conejos River	222.8	--------	Dr. 215.5
C3	Scheduled Delivery from Rio Grande	198.8	--------	Dr. 414.3
C4	Actual Delivery at Lobatos plus 10,000 Acre Feet	--------	415.4	Cr. 1.1
C5	Reduction of Debits a/c Evaporation	--------		
C6	Reduction of Credits a/c Evaporation[c]	1.5	--------	Dr. 0.4
C7				
C8	Balance at End of Year	--------	--------	Dr. 0.4

APPROVED:

Engineer Adviser for Colorado_____ Date: _____ Engineer Adviser for New Mexico _____ Date: _____ Engineer Adviser for Texas _____ Date: _____

Method 2: Reduce Credit Water for Evaporation at the End of the 2017 Calendar Year - Developed by Colorado and New Mexico

RIO GRANDE COMPACT - DELIVERIES BY NEW MEXICO AT ELEPHANT BUTTE

YEAR 2017 - Method 2

Quantities in thousands of acre feet to nearest hundred

	OTOWI INDEX SUPPLY										ELEPHANT BUTTE EFFECTIVE SUPPLY				
		ADJUSTMENTS						INDEX SUPPLY			STORAGE IN ELEPHANT BUTTE RESERVOIR			Effective Supply	
		RESERVOIRS: LOBATOS TO OTOWI													
MONTH	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	Total Water Stored in New Mexico Above San Marcial at End of Month [a]	End of Month [a, b]	Change Gain (+) Loss (-)	Recorded Flow Below Elephant Butte Dam [c]	During Month	Accumulated Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	------	0.3	------	------	------	------	------	------	------	0.8	202.5	------	------	------	------
JAN	44.9	4.3	4.0	0.3		-3.7	0.6	45.5	45.5	4.3	251.0	48.5	0.0	48.5	48.5
FEB	50.0	14.4	10.1	0.1		-2.7	7.5	57.5	103.0	14.7	295.3	44.3	0.0	44.3	92.8
MAR	132.5	26.9	12.5	0.2		-8.8	3.9	136.4	239.4	28.2	307.4	12.1	60.3	72.4	165.2
APR	223.8	45.9	19.0	0.3		-1.5	17.8	241.6	481.0	46.9	391.9	84.5	78.7	163.2	328.4
MAY	278.8	113.2	67.3	0.5		-3.6	64.2	343.0	824.0	115.4	500.4	108.5	96.0	204.5	532.9
JUN	153.7	139.7	26.5	1.1		-2.2	25.4	179.1	1003.1	141.4	469.2	-31.2	133.3	102.1	635.0
JUL	68.0	128.4	-11.3	0.5		-13.2	-24.0	44.0	1047.1	131.5	366.2	-103.0	113.3	10.3	645.3
AUG	54.0	118.9	-9.5	0.4		-7.0	-16.1	37.9	1085.0	120.6	284.5	-81.7	94.2	12.5	657.8
SEPT	56.5	94.2	-24.7	0.4		-8.4	-32.7	23.8	1108.8	96.2	226.5	-58.0	68.9	10.9	668.7
OCT	71.3	77.8	-16.4	0.4		-2.6	-18.6	52.7	1161.5	79.7	297.2	70.7	4.2	74.9	743.6
NOV	79.3	55.4	-22.4	0.1		-10.2	-32.5	46.8	1208.3	56.8	354.7	57.5	0.1	57.6	801.2
DEC	73.9	39.8	-15.6	0.1		-12.2	-27.7	46.2	1254.5	41.3	425.1	70.4	0.1	70.5	871.7
YEAR	1286.7	------	39.5	4.4		-76.1	-32.2	1254.5	------	------	------	222.6	649.1	871.7	------

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

[a] Note: In 2017, no relinquishment credit under previous relinquishment agreements was stored in New Mexico reservoirs. Storage of relinquished credit to date has totaled 288,281 acre-feet; balance remaining is 92,219 acre-feet.

[b] Based on end of year surveys, Elephant Butte lake elevation corrected by +0.23 feet, effective December 20, 2017.

[c] Gage record reflects improved precision since 2016. A low bias in gaged flow during certain months due to algae growth was identified and addressed for 2016 forward. The low bias occurred for an undetermined amount of time. New Mexico will continue to coordinate with USGS to provide a more accurate gage record in the future.

[d] Reduction of debits for evaporation of debit water stored in El Vado calculated in accordance with Article VI of the Compact. New Mexico retained 20,300 acre-feet of debit water in El Vado during 2017.

SUMMARY OF DEBITS AND CREDITS

	ITEM	DEBIT	CREDIT	BALANCE
NM1	Balance at Beginning of Year	--------	--------	Dr. 20.3
NM2	Scheduled Delivery at Elephant Butte	852.9	--------	Dr. 873.2
NM3	Actual Elephant Butte Effective Supply	--------	871.7	Dr. 1.5
NM4	Reduction of Debits a/c Evaporation[d]	--------	0.8	Dr. 0.7
NM5	Reduction of Credits a/c Evaporation and Spill	--------	--------	
NM6			--------	
NM7				
NM8	Balance at End of Year	--------	--------	Dr. 0.7

APPROVED:

Engineer Adviser for Colorado_____ Date: _____ Engineer Adviser for New Mexico _____ Date: _____ Engineer Adviser for Texas _____ Date: _____

Method 2: Reduce Credit Water for Evaporation at the End of the 2017 Calendar Year - Developed by Colorado and New Mexico

RIO GRANDE COMPACT - RELEASE AND SPILL FROM PROJECT STORAGE

YEAR 2017 - Method 2

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[c]	New Mexico Credit Water[c]	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
						7.3[b]	0.0[c]	7.3[b]										
JAN	1,999.6	243.7	25.6	269.3	1,730.3	7.3	0.0	7.3		276.6	0.1	0.0	0.1				0.1	0.1
FEB	1,999.6	288.0	29.6	317.6	1,682.0	7.3	0.0	7.3		324.9	0.0	0.0	0.0				0.0	0.1
MAR	1,999.6	300.1	78.3	378.4	1,621.2	7.3	0.0	7.3		385.7	2.6	0.1	2.7				2.7	2.8
APR	1,974.6	384.6	72.0	456.6	1,518.0	7.3	0.0	7.3		463.9	80.9	0.1	81.0				81.0	83.8
MAY	1,974.6	493.1	67.1	560.2	1,414.4	7.3	0.0	7.3		567.5	95.4	0.2	95.6				95.6	179.4
JUN	1,974.6	461.9	70.9	532.8	1,441.8	7.3	0.0	7.3		540.1	127.1	0.2	127.3				127.3	306.7
JUL	1,974.6	358.9	68.5	427.4	1,547.2	7.3	0.0	7.3		434.7	113.9	0.1	114.0				114.0	420.7
AUG	1,974.6	277.2	62.2	339.4	1,635.2	7.3	0.0	7.3		346.7	98.3	0.1	98.4				98.4	519.1
SEPT	1,974.6	219.2	32.5	251.7	1,722.9	7.3	0.0	7.3		259.0	99.5	0.1	99.6				99.6	618.7
OCT	1,999.6	289.9	35.6	325.5	1,674.1	7.3	0.0	7.3		332.8	5.0	0.0	5.0				5.0	623.7
NOV	1,999.6	347.4	36.3	383.7	1,615.9	7.3	0.0	7.3		391.0	0.2	0.0	0.2				0.2	623.9
DEC	1,999.6	417.8	37.1	454.9	1,544.7	7.3	0.0	7.3		462.2	0.1	0.0	0.1				0.1	624.0
YEAR	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	623.1	0.9	624.0	0.0	0.0	0.0	624.0	-----

Remarks: Cols. 2, 6 and 11 reflect implementation of revised area-capacity tables from Elephant Butte and Caballo Reservoirs, effective Jan 1, 2009.

[a] Project Storage Capacity is 1,974,600 acre-feet (April to September) and 1,999,600 acre-feet (October to March) as adopted by the Rio Grande Compact Commission on March 31, 2009 which includes flood control storage reservation at Elephant Butte Reservoir of 50,000 acre-feet from April through September and 25,000 acre-feet from October through March.

[b] Based on Balance at Beginning of Year (C1 and NM1).

[c] Credit water held constant during the year in accordance with Article VI and per direction of Compact Commission in March 2006. Evaporation for credit water is accounted at end of calendar year in the proportion that the Credit Water bore to the total amount of water in Elephant Butte Reservoir during the year. If loan had been approved, Credit Water would have been decreased by the amount of the negative usable water.

[d] Due to Caballo release discrepancies during 2011, data was not approved for 2011; consequently, the accrued departure at the beginning of 2012, 2013, 2014, 2015, 2016 and 2017 could not be computed.

ACCRUED DEPARTURE FROM NORMAL RELEASE

	ITEM	DEBIT	CREDIT	BALANCE
P1	Accrued Departure at Beginning of Year[d]	-----	-----	Cr.
P2	Actual Release during Year	624.0	-----	Cr.
P3	Normal Release for Year	-----	790.0	Cr.
P4			-----	Cr.
P5		-----		
P6				
P7	Accrued Departure at End of Year	-----	-----	Cr.

TIME OF HYPOTHETICAL SPILL Not applicable

APPROVED:

Engineer Adviser for Colorado_____ Date: _____ Engineer Adviser for New Mexico _____ Date: _____ Engineer Adviser for Texas _____ Date: _____

RIO GRANDE COMPACT COMMISSION REPORT

COST OF OPERATION AND BUDGET

BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2017 (FY-2017)

Item	Total Cost	Borne by United States	Borne by Colorado	Borne by New Mexico	Borne by Texas
GAGING STATIONS					
In Colorado	$75,370		$75,370		
In New Mexico, above Caballo Reservoir	$75,062	$41,142		$33,920	
In New Mexico, Caballo Reservoir and below	$35,434	$11,655		$3,255	$20,524
Subtotal	$185,866	$52,797	$75,370	$37,175	$20,524
ADMINISTRATION					
U.S.G.S. Technical Services	$19,414	$5,884	$4,510	$4,510	$4,510
Other expenses1	$3,000		$1,000	$1,000	$1,000
Subtotal	$22,414	$5,884	$5,510	$5,510	$5,510
GRAND TOTAL	$208,280	$58,681	$80,880	$42,685	$26,034
EQUAL SHARES			$49,866	$49,866	$49,866

1Includes cost of court reporter and publication of Annual Report.

BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2019 (FY-2019)

Item	Total Cost	Borne by United States	Borne by Colorado	Borne by New Mexico	Borne by Texas
GAGING STATIONS					
In Colorado	$78,897		$78,897		
In New Mexico, above Caballo Reservoir	$76,574	$41,149		$35,425	
In New Mexico, Caballo Reservoir and below	$21,936	$4,387			$17,549
Subtotal	$177,407	$45,536	$78,897	$35,425	$17,549
ADMINISTRATION					
U.S.G.S. Technical Services	$19,996	$6,058	$4,646	$4,646	$4,646
Other expenses1	$3,000		$1,000	$1,000	$1,000
Subtotal	$22,996	$6,058	$5,646	$5,646	$5,646
GRAND TOTAL	$200,403	$51,594	$84,543	$41,071	$23,195
EQUAL SHARES			$49,603	$49,603	$49,603

1Includes cost of court reporter and publication of Annual Report.

Agreement No: 18CRNM000000012
Customer No:
6000001029/6000001775/6000000631
Project No: RG209L7
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, 2018 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, 2018 to June 30, 2019, the following amounts:

(a)	U.S. Geological Survey	$6,058
(b)	State of Colorado	$4,646
(c)	State of New Mexico	$4,646
(d)	State of Texas	$4,646

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, 2019, 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, 2019, 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. 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.

8. Billing for this agreement will be rendered semi-annually in January 2019 and July 2019. 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.)

9. 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

Jonnathan Bumgarner 2/23/2018
Director, New Mexico Water Science Center

RIO GRANDE COMPACT COMMISSION

Commissioner for Colorado Date 3-29-18

Commissioner for New Mexico Date 3/29/18

Commissioner for Texas Date

Representative of the United States Date 3/29/18

Statement of Work
for
18CRNM000000012

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.

RESOLUTION

RIO GRANDE COMPACT COMMISSION

Honoring Rolf Schmidt-Petersen

WHEREAS, *Rolf Schmidt-Petersen, has served for 18 years as an employee of the State of New Mexico on Rio Grande Compact issues including nine years as the New Mexico Engineer Adviser to the Rio Grande Compact Commission;*

WHEREAS, *during that time Mr. Schmidt-Petersen faithfully and exceptionally represented New Mexico and multiple New Mexico Rio Grande Compact Commissioners as a staff member of the New Mexico Interstate Stream Commission;*

WHEREAS, *during his tenure, the Commissioners of the states of New Mexico, Texas, and Colorado, and the federal Chair to the Rio Grande Compact Commission did develop great admiration and respect for Mr. Schmidt-Petersen;*

AND WHEREAS, *in particular, Mr. Schmidt-Petersen showed tremendous dedication and support to the Rio Grande Compact Commission in his knowledge of the Compact and of the Rio Grande Basin in its entirety;*

NOW THEREFORE, BE IT RESOLVED *that the Rio Grande Compact Commission assembled in its 79th annual meeting held in Austin, Texas, acknowledges the devoted service of Mr. Schmidt-Petersen to the people of the Rio Grande basin, and the Rio Grande Compact Commission, and this Commission extends to Mr. Schmidt-Petersen its best wishes for a prosperous and enjoyable future;*

BE IT FURTHER RESOLVED, *that the New Mexico Engineer Adviser to the Rio Grande Compact Commission is hereby directed to furnish copies of this unanimously adopted resolution to Rolf Schmidt-Petersen, and to cause said resolution to be included in the Minutes of the 79th annual meeting of the Rio Grande Compact Commission.*

In witness whereof, we do hereby cause our signatures to be affixed hereon this 29th day of March 2018, A.D., in Austin, Texas.

TOM BLAINE, P.E.
Commissioner for New Mexico

PATRICK R. GORDON
Commissioner for Texas

KEVIN G. REIN, P.E.
Commissioner for Colorado

HAL SIMPSON, P.E.
Federal Chairman

Resolution of the Rio Grande Compact Commission

Honoring Dick Wolfe

WHEREAS, *Dick Wolfe served the people of the State of Colorado as an employee of the Colorado Division of Water Resources for 24 years, and as the Colorado State Engineer from 2007 through 2017; and*

WHEREAS, *Dick Wolfe served the people of the Upper Rio Grande Basin for 10 years as Colorado's Commissioner to the Rio Grande Compact Commission; and*

WHEREAS, *During that time Mr. Wolfe did faithfully serve the interests of the citizens of Colorado and of the Upper Rio Grande Basin in his actions as Commissioner; 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, his fellow Commissioners, their advisers and staff developed great respect, admiration, and appreciation of Mr. Wolfe during his tenure as Commissioner;*

NOW, THEREFORE, BE IT RESOLVED, *that the Rio Grande Compact Commission, at its 79th annual meeting held in Austin, Texas on March 29, 2018, does hereby express its gratitude and appreciation for the untiring service and counsel rendered by Dick Wolfe, P.E. in addressing the many technical, legal, and political water resource problems that have been confronted during his service to, and tenure as the Rio Grande Compact Commissioner for the State of Colorado.*

BE IT FURTHER RESOLVED, *that the Rio Grande Compact Commission, its advisers and staff sincerely wish Dick Wolfe, his wife Susan, 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 Dick Wolfe, P.E., and to cause said resolution to be included in the Minutes of the 79th annual meeting of the Rio Grande Compact Commission.*

Hal Simpson
Federal Chairman

Kevin G. Rein
Commissioner for Colorado

Tom Blaine
Commissioner for New Mexico

Patrick R. Gordon
Commissioner for Texas

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.

STREAMFLOW

Rio Grande near Del Norte, Colo

Location. -- Water-stage recorder, 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 mi west of Del Norte, and 5.0 mi upstream from Pinos Creek. Datum of gage is 7,980.25 ft above National Geodetic Vertical Datum of 1929. Prior to May 16, 1908, staff gage at site 4 mi downstream at different datum. Records are equivalent.

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

Average discharge. -- 128 years (1890-2017), 888 ft^3/s (643,100 acre-ft per year).

Extremes. -- 1889-2017: 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 daily discharges, which are poor.
Flow regulated by four reservoirs, total capacity 126,100 acre-ft, and by several smaller ones. Six transmountain diversions import water into basin 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	6,020	220	160	194	11,941
February	6,105	235	185	218	12,109
March	16,786	1,010	210	541	33,295
April	48,379	2,800	619	1,613	95,960
May	87,890	4,280	1,160	2,835	174,330
June	91,300	4,490	1,400	3,043	181,094
July	28,087	1,240	704	906	55,711
August	21,236	1,060	374	685	42,122
September	12,437	808	310	415	24,669
October	16,112	1,000	351	520	31,958
November	8,032	354	205	268	15,931
December	5,650	230	130	182	11,207
Calendar year 2017	348,034	4,490	130	952	690,325

Conejos River below Platoro Reservoir, Colo.

Location. -- Water-stage recorder and concrete control, lat 37°21'17.65", long 106°32'39", in SW 1/4NW 1/4 sec. 22, T. 36 N., R. 4 E., on left bank 1,100 ft downstream from valve house for Platoro Reservoir, and 0.7 mi northwest of 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. -- 65 years (1952-2017), 91 ft^3/s (66,010 acre-ft per year).

Extremes. -- 1952-2017: 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. -- No estimated daily discharges. Records good except for the period Nov. 10 to Apr. 13, which is fair.
No diversions above station. Flow completely regulated by Platoro Reservoir (capacity, 59,570 acre-ft).

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	411	14	13	13	815
February	364	13	13	13	722
March	1,438	182	13	46	2,852
April	2,053	99	36	68	4,072
May	8,205	479	62	265	16,275
June	8,147	524	51	272	16,160
July	7,701	430	113	248	15,275
August	4,297	230	73	139	8,523
September	3,620	230	40	121	7,180
October	2,595	188	43	84	5,147
November	1,406	50	38	47	2,789
December	962	65	10	31	1,908
Calendar year 2017	41,199	524	10	112	81,718

STREAMFLOW

Conejos River near Mogote, Colo

Location. -- Water-stage recorder, 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. -- 107 years (1904, 1912-2017), 318 ft3/s (230,200 acre-ft per year).
Extremes. -- 1903-1905, 1911-2017: Maximum discharge, 9,000 ft3/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. Diversions above station for irrigation of about 500 acres. Since 1951 flow partly regulated by Platoro Reservoir.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	1,970	68	58	64	3,907
February	1,882	74	54	67	3,733
March	7,270	476	58	235	14,420
April	15,188	894	218	506	30,125
May	36,223	1,800	419	1,168	71,848
June	38,257	1,920	637	1,275	75,883
July	15,900	727	338	513	31,538
August	9,516	477	225	307	18,875
September	6,787	381	100	226	13,462
October	8,661	565	140	279	17,179
November	4,033	152	119	134	7,999
December	2,731	133	43	88	5,417
Calendar year 2017	148,418	1,920	43	405	294,387

San Antonio River at Ortiz, Colo

Location. -- Water-stage recorder, lat 36°59'35", long 106°02'17", in New Mexico in NE1/4 SE1/4, 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.
Average discharge. -- 77 years (1941-2017), 24 ft^3/s (17,400 acre-ft per year).
Extremes. -- 1920, 1925-2017: 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 the period of Oct. 1 to Nov. 17, flows below 1 ft^3/s, and estimated daily discharges, which are poor. A few small diversions above station for irrigation.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	111	4	3	4	220
February	154	6	4	6	306
March	1,545	143	5	50	3,065
April	5,543	348	60	185	10,995
May	5,624	382	61	181	11,155
June	669	61	3	22	1,327
July	73	9	0	2	146
August	55	6	0	2	109
September	60	19	0	2	118
October	159	29	3	5	316
November	88	4	2	3	175
December	54	2	2	2	107
Calendar year 2017	14,136	382	0	39	28,039

STREAMFLOW

Los Pinos River near Ortiz, Colo

Location. -- Water-stage recorder, 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. -- 99 years (1915-1920, 1925-2017), 116 ft^3/s (83,820 acre-ft per year).

Extremes. -- 1915-1920, 1925-2017: 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 estimated daily discharges, which are poor. Diversions above station for irrigation.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	538	19	15	17	1,067
February	568	22	19	20	1,127
March	2,899	227	20	94	5,750
April	12,416	856	111	414	24,627
May	26,045	1,310	314	840	51,660
June	13,134	831	88	438	26,051
July	2,198	106	47	71	4,360
August	911	58	13	29	1,807
September	614	74	12	20	1,218
October	1,710	163	29	55	3,392
November	938	35	23	31	1,861
December	615	31	16	20	1,220
Calendar year 2017	62,586	1,310	12	171	124,139

Conejos River near Lasauses, Colo

Location. -- Water-stage recorder, lat 37°18'01", long 105°44'47", inSW 1/4 SW 1/4 sec. 2, T. 35 N., 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 channel is 7,495.02 ft and on secondary (south) channel is 7,499.86 ft above main sea level (levels by Bureau of Reclamation).

Drainage area. -- 887 sq mi.

Average discharge. -- 96 years (1922-2017), 170 ft^3/s (123,300 acre-ft per year).

Extremes. -- 1921-2017: Maximum discharge, 3,890 ft^3/s May 15, 1941; no flow at times in some years.

Remarks. -- Records good except for gage heights above 4.00 ft in main channel, which are fair, and estimated daily discharges, which are poor. Diversions above station for irrigation of about 75,000 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	2,034	75	54	66	4,034
February	3,274	173	62	117	6,494
March	10,914	775	96	352	21,648
April	16,249	1,030	158	542	32,230
May	28,428	1,630	344	917	56,387
June	23,564	1,420	176	785	46,739
July	3,795	285	31	122	7,527
August	2,928	203	31	94	5,808
September	1,548	170	9	52	3,071
October	4,340	333	46	140	8,608
November	4,430	164	98	148	8,787
December	2,976	147	53	96	5,903
Calendar year 2017	104,480	1,630	9	286	207,237

STREAMFLOW

Rio Grande near Lobatos, Colo

Location. -- Water-stage recorder, lat 37°04'43", long 105°45'25", in NE1/4 NW1/4 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); 87 years (1931-2017) 427 ft^3/s (309,500) acre-ft per year).

Extremes. -- 1899-2017: 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 estimated daily discharges, which are poor. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversions for irrigation, and return flow 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	9,170	370	210	296	18,189
February	13,075	604	280	467	25,934
March	26,982	1,640	421	870	53,519
April	27,933	1,520	398	931	55,405
May	44,493	2,430	738	1,435	88,252
June	37,049	2,140	324	1,235	73,487
July	9,324	533	167	301	18,494
August	5,563	321	70	179	11,034
September	2,674	196	49	89	5,304
October	7,025	430	108	227	13,934
November	10,846	519	170	362	21,513
December	10,265	476	270	331	20,361
Calendar year 2017	204,399	2,430	49	560	405,425

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; 48 years (1970-2017) 134 ft3/s (97,210 acre-ft per year) subsequent to completion of Azotea tunnel.

Extremes. -- 1963-2003: Maximum discharge, 1,610 ft3/s Mar. 12, 1985 (gage height, 6.65 ft); 2003-2017: 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	1,531	130	0	55	3,037
March	11,861	806	25	383	23,526
April	17,757	965	304	592	35,221
May	20,852	936	244	673	41,359
June	21,073	927	274	702	41,798
July	5,767	298	86	186	11,438
August	2,797	251	13	90	5,548
September	943	242	0	31	1,871
October	1,368	201	0	44	2,713
November	71	13	0	2	140
December	50	11	0	2	99
Calendar year 2017	84,070	965	0	230	166,750

STREAMFLOW

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 ft3/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 2017	---	---	---	---	---

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. -- 47 years (1971-2017), 130 ft^3/s (93,830 acre-ft per year).
Extremes. -- 1971-2017: 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	0	0	0	0	0
February	1,444	101	0	52	2,864
March	4,380	206	46	141	8,688
April	2,566	202	0	86	5,090
May	1,105	101	0	36	2,192
June	3,757	204	0	125	7,452
July	6,150	199	198	198	12,198
August	11,482	504	198	370	22,774
September	14,386	500	198	480	28,534
October	479	198	0	15	950
November	557	34	0	19	1,105
December	142	33	0	5	282
Calendar year 2017	46,448	504	0	127	92,128

STREAMFLOW

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 left 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 and October 1935 to September 1938, at site 1.1 mi upstream at different datums.

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

Average discharge. -- 4 years (1914, 1921-1923), 448 ft3/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; 46 years (1971-2017) 455 ft^3/s (329,700 acre-feet per year).

Extremes. -- 1914-1916, 1920-1924, 1936-2017; Maximum discharge observed, 9,000 ft3/s May 22, 1920 (gage height, 12 ft); no flow Mar. 25, 26, 31, 1955.

Remarks. -- Records good except estimated daily discharges, which are fair. Diversions above station for irrigation of about 10,600 acres. Since 1935 flow regulated by El Vado Reservoir and since October 1970 flow partly regulated by Heron Reservoir. Subsequent to May 1971 flow affected by releases of transmountain water from Heron Reservoir.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	3,174	109	93	102	6,296
February	3,024	110	106	108	5,998
March	19,929	1,220	105	643	39,529
April	47,970	3,100	1,200	1,599	95,148
May	49,615	3,150	511	1,600	98,411
June	18,499	2,790	104	617	36,693
July	17,127	856	205	552	33,971
August	11,419	742	151	368	22,650
September	20,291	714	525	676	40,247
October	13,196	707	245	426	26,174
November	14,913	603	389	497	29,580
December	10,953	613	122	353	21,725
Calendar year 2017	230,110	3,150	93	629	456,423

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; 47 years (1971-2017), 502 ft3/s (363,400 acre-feet per year).

Extremes. -- 1961-2017; Maximum discharge, 2,990 ft^3/s July 1, 1965 (gage height, 6.69 ft); minimum, about 0.5 ft3/s Mar. 17, 1966, Jan. 28, 1972.

Remarks. -- Records good except for estimated daily discharges, which are fair. Flow regulated by Heron, El Vado, and Abiquiu Reservoirs. Diversions above station for irrigation of about 17,600 acres. Subsequent to May 1971 flow affected by the release of transmountain water from Heron Reservoir.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	3,177	124	79	102	6,302
February	2,191	79	77	78	4,346
March	25,006	1,510	79	807	49,599
April	49,370	1,820	1,490	1,646	97,925
May	49,503	1,870	940	1,597	98,189
June	18,849	1,310	184	628	37,387
July	19,243	773	264	621	38,168
August	12,165	619	208	392	24,129
September	20,425	807	269	681	40,513
October	16,114	888	300	520	31,962
November	21,458	936	456	715	42,562
December	17,674	936	99	570	35,057
Calendar year 2017	255,175	1,870	77	696	506,140

STREAMFLOW

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. -- -- 39 years (1979-2017), 13 ft3/s (9,270 acre-feet per year).

Extremes. -- 1979-2017; Maximum discharge, 312 ft3/s June 9, 1979 at site 1,100 ft downstream; no flow December 31, 1993.

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

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	88	5	1	3	175
February	151	7	3	5	300
March	396	27	4	13	785
April	816	33	22	27	1,619
May	1,042	41	24	34	2,066
June	787	39	13	26	1,561
July	522	25	5	17	1,035
August	363	17	5	12	720
September	337	17	3	11	668
October	124	10	3	4	246
November	162	7	3	5	321
December	137	5	3	4	272
Calendar year 2017	4,924	41	1	13	9,767

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 5,488.48 ft above National Geodetic Vertical Datum of 1929. 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. -- 118 years (1896-1905, 1910-2017), 1,479 ft^3/s (1,072,000 acre-feet per year).

Extremes. -- 1895-1905, 1910-2017; 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 fair except for estimated daily discharges, which are poor. Flow partly regulated by Heron, El Vado, and Abiquiu Reservoirs. Diversions above station for irrigation of about 620,000 acres in Colorado and 75,000 acres in New Mexico. Subsequent to May 1971 flow affected by releases of transmountain water from Heron Reservoir.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	22,627	888	593	730	44,881
February	25,222	1,060	640	901	50,028
March	66,808	3,790	852	2,155	132,514
April	112,810	4,580	2,910	3,760	223,759
May	140,570	6,150	3,520	4,535	278,821
June	77,460	4,230	1,030	2,582	153,642
July	34,286	1,380	878	1,106	68,006
August	27,235	1,080	744	879	54,021
September	28,500	1,460	743	950	56,530
October	35,966	2,000	846	1,160	71,339
November	39,989	1,660	895	1,333	79,318
December	37,235	1,670	706	1,201	73,856
Calendar year 2017	648,708	6,150	593	1,774	1,286,712

STREAMFLOW

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. -- 105 years (1913-2017), 7.8 ft3/s (5,700 acre-feet per year).

Extremes. -- 1913-2017; Maximum discharge, 1,500 ft3/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 except for estimated daily discharges, which are poor. 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	56	2	2	2	111
February	55	2	2	2	109
March	47	4	0	2	93
April	178	6	4	6	353
May	247	13	6	8	490
June	367	14	8	12	728
July	256	9	8	8	508
August	300	20	8	10	595
September	318	21	1	11	631
October	239	11	2	8	474
November	103	4	3	3	205
December	101	3	3	3	200
Calendar year 2017	2,267	21	0	6	4,497

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 5,226.08 ft above National Geodetic Vertical Datum of 1929. 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. -- 47 years (1971-2017), 1,276 ft^3/s (925,000 acre-feet per year).

Extremes. -- 1971-2017; 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. Since Nov. 12, 1973, flow completely regulated by Cochiti Dam. Cochiti Eastside Main Canal on left bank and Sili Main Canal on right bank bypass station.

Monthly and yearly discharge, in cubic feet per second

Month	Second-foot-days	Maximum daily	Minimum daily	Mean	Runoff in acre-feet
January	21,680	938	496	699	43,002
February	24,378	1,090	496	871	48,354
March	63,276	3,770	773	2,041	125,508
April	111,810	4,920	2,640	3,727	221,775
May	136,390	5,930	3,240	4,400	270,530
June	73,980	3,970	1,020	2,466	146,739
July	26,602	983	766	858	52,765
August	21,651	802	637	698	42,945
September	22,427	1,370	604	748	44,484
October	31,931	1,930	722	1,030	63,335
November	37,862	1,670	788	1,262	75,099
December	36,886	1,640	634	1,190	73,163
Calendar year 2017	608,873	5,930	496	1,666	1,207,700

STREAMFLOW

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. -- --47 years (1971-2017), 5.1 ft3/s (3,694 acre-feet per year).
Extremes. -- 1970-2017; Maximum discharge, 3,460 ft3/s Aug. 24, 1997 (gage height, 5.57 ft); no flow many days each year.
Remarks. -- Records poor. Flow regulated by Galisteo Reservoir 0.4 mi upstream. Capacity of outlet, 5,000 ft^3/s when reservoir is full. 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	0	0	0	0	0
April	1	1	0	0	2
May	4	4	0	0	8
June	0	0	0	0	0
July	119	54	0	4	235
August	142	81	0	5	282
September	171	62	0	6	339
October	2,091	1,580	0	67	4,147
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 2017	2,528	1,580	0	7	5,013

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. Datum 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. -- 8 years (2010-2017), 35 ft3/s (25,550 acre-feet per year).
Extremes. -- 2010-2017; Maximum discharge, 1,420 cfs Jul. 27, 2013 (gage height, 4.82); no flow many days each year.
Remarks. -- Records fair, except for estimated daily dischaerges, 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	899	133	4	29	1,783
February	1,251	125	23	45	2,480
March	4,289	241	32	138	8,506
April	6,382	266	155	213	12,659
May	3,821	234	40	123	7,579
June	300	44	0	10	594
July	26	24	0	1	51
August	22	11	0	1	44
September	818	427	0	27	1,623
October	3,758	1,250	0	121	7,454
November	230	11	0	8	455
December	272	13	3	9	539
Calendar year 2017	22,066	1,250	0	60	43,768

STREAMFLOW

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 4,241.09 ft above National Geodetic Vertical Datum of 1929. Prior to April 23, 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. -- 103 years (1915-2017), 968 ft3/s (701,000 acre-feet per year).

Extremes. -- 1915-2017; Maximum daily discharge, 8,220 ft^3/s May 22, 1942; no flow at times prior to 1929, Mar. 2-4, 1979.

Remarks. -- Records good except for estimated daily 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	7	4	0	0	15
February	1	0	0	0	1
March	30,401	1,350	0	981	60,300
April	39,650	1,350	1,280	1,322	78,646
May	48,420	2,120	1,260	1,562	96,041
June	67,200	2,670	1,650	2,240	133,291
July	57,118	2,480	761	1,843	113,294
August	47,480	2,040	1,220	1,532	94,177
September	34,725	1,280	986	1,158	68,877
October	2,133	1,210	1	69	4,232
November	72	13	1	2	143
December	45	2	1	1	89
Calendar year 2017	327,252	2,670	0	892	649,105

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 4,140.90 ft above National Geodetic Vertical Dam of 1929. 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. -- 80 years (1938-2017), 894 ft3/s (647,500 acre-feet per year).

Extremes. -- 1938-2017; Maximum daily discharge, 7,650 ft3/s May 20, 1942; minimum daily, 0.0 ft3/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	31	1	1	1	62
February	24	1	1	1	47
March	1,312	1,291	1	42	2,602
April	40,804	1,928	1,121	1,360	80,935
May	48,078	2,067	1,113	1,551	95,363
June	64,077	2,546	1,760	2,136	127,097
July	57,428	2,488	611	1,853	113,908
August	49,552	2,291	1,093	1,598	98,286
September	50,151	2,273	589	1,672	99,475
October	2,528	376	3	82	5,015
November	87	3	3	3	172
December	65	2	2	2	128
Calendar year 2017	314,136	2,546	1	858	623,089

STREAMFLOW

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 U.S.G.S. 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	5.6
February	0.0
March	100.9
April	100.9
May	215.1
June	164.7
July	95.78
August	82.95
September	72.10
October	69.7
November	4.0
December	3.1
Calendar year 2017	914.8

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-fee

Calendar Year 2017

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-fee

Calendar Year 2017

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	-
Contents	561	561	561	561	561	561	561	561	561	561	561	561	-
Change	0	0	0	0	0	0	0	0	0	0	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-fee

Calendar Year 2017

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-fee

Calendar Year 2017

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

STORAGE IN RESERVOIRS

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-fee

Calendar Year 2017

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-fee

Calendar Year 2017

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-fee

Calendar Year 2017

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	27.0	27.0	27.0	27.0	27.0	27.0	18.7	17.0	17.0	17.0	17.0	17.0	-
Contents	598	598	598	598	598	598	328	282	282	282	282	282	-
Change	0	0	0	0	0	0	-270	-46	0	0	0	0	-316

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-fee

Calendar Year 2017

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-fee

Calendar Year 2017

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	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	-
Contents	41	41	41	41	41	41	41	41	41	41	41	41	-
Change	0	0	0	0	0	0	0	0	0	0	0	0	0

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-fee

Calendar Year 2017

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	14.9	16.1	17.2	17.2	17.2	17.2	17.2	17.2	17.2	11.9	11.9	13.4	-
Contents	187	214	237	237	237	237	237	237	237	127	127	155	-
Change	+28	+27	+23	0	0	0	0	0	0	-110	0	+28	-4

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-fee

Date	Elevation	Contents	Change in contents
December 31, 2016	9,974.47	15,374	-
January 31, 2017	9,974.89	15,586	+212
February 28	9,974.85	15,568	-18
March 31	9,974.21	15,244	-324
April 30	9,979.34	17,931	+2,687
May 31	9,984.01	20,618	+2,687
June 30	10,011.23	39,454	+18,836
July 31	10,003.77	33,706	-5,748
August 31	9,999.30	30,477	-3,229
September 30	9,992.62	25,934	-4,543
October 31	9,992.70	25,988	+54
November 30	9,990.42	24,520	-1,468
December 31, 2017	9,988.48	23,304	-1,216
Calendar year 2017	-	-	+7,930

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-fee

Calendar Year 2017

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Cal. Yr.
Gage height	23.9	23.9	23.9	23.9	23.9	23.9	1.6	14.8	19.0	19.0	19.0	22.6	-
Contents	823	823	823	823	823	823	0	306	525	525	525	738	-
Change	0	0	0	0	0	0	-823	+306	+219	0	0	+213	-85

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, 2016	7,096.83	65,748	-
January 31, 2017	7,097.55	66,925	+1,177
February 28	7,098.61	68,690	+1,765
March 31	7,108.23	86,717	+18,027
April 30	7,121.59	119,160	+32,443
May 31	7,134.84	160,291	+41,131
June 30	7,144.67	196,556	+36,265
July 31	7,144.13	194,441	-2,115
August 31	7,139.25	175,963	-18,478
September 30	7,131.28	148,368	-27,595
October 31	7,131.59	149,380	+1,012
November 30	7,131.04	147,588	-1,792
December 31, 2017	7,130.75	146,650	-938
Calendar year 2017	-	-	+80,902

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-fee

Date	Gage Height	Contents	Change in contents	Transmountain water
December 31, 2016	6,841.38	52,230	-	52,098
January 31, 2017	6,840.13	50,458	-1,772	46,098
February 28	6,842.81	54,302	+3,844	39,939
March 31	6,845.69	58,621	+4,319	37,013
April 30	6,848.31	62,714	+4,093	31,843
May 31	6,875.17	114,605	+51,891	1,359
June 30	6,885.67	141,667	+27,062	2,446
July 31	6,881.34	130,030	-11,637	1,755
August 31	6,883.43	135,560	+5,530	16,676
September 30	6,880.97	129,067	-6,493	35,497
October 31	6,874.45	112,905	-16,162	35,755
November 30	6,864.29	91,052	-21,853	35,692
December 31, 2017	6,854.91	73,693	-17,359	33,850
Calendar year 2017	-	-	+21,463	-

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-fee

Date	Elevation	Contents	Change in contents	Transmountain water
December 31, 2016	6,201.15	118,367	-	117,722
January 31, 2017	6,201.92	120,850	+2,483	120,340
February 28	6,202.84	123,836	+2,986	123,291
March 31	6,202.40	122,405	-1,431	116,555
April 30	6,206.26	135,124	+12,719	119,235
May 31	6,209.22	145,215	+10,091	144,196
June 30	6,209.81	147,292	+2,077	145,744
July 31	6,208.85	143,926	-3,366	142,716
August 31	6,208.37	142,267	-1,659	141,150
September 30	6,208.54	142,853	+586	141,087
October 31	6,207.50	139,297	-3,556	137,470
November 30	6,204.27	128,520	-10,777	127,341
December 31, 2017	6,200.95	117,726	-10,794	116,537
Calendar year 2017	-	-	-641	-

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-fee

Date	Elevation	Contents	Change in contents
December 31, 2016	6,823.75	1,575	-
January 31, 2017	6,825.45	1,665	+90
February 28	6,826.70	1,734	+69
March 31	6,826.89	1,745	+11
April 30	6,826.88	1,745	0
May 31	6,826.99	1,751	+6
June 30	6,825.57	1,672	-79
July 31	6,818.60	1,318	-354
August 31	6,814.05	1,112	-206
September 30	6,808.41	889	-223
October 31	6,824.04	1,590	+701
November 30	6,825.50	1,668	+78
December 31, 2017	6,825.14	1,649	-19
Calendar year 2017	-	-	+74

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 combinec

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, 2016	7,836.42	541	-	0	0
January 31, 2017	7,837.34	476	-65	0	0
February 28	7,843.62	656	+180	151	0
March 31	7,854.46	1,066	+410	561	0
April 30	7,865.47	1,625	+559	585	0
May 31	7,874.77	2,201	+576	719	0
June 30	7,869.21	1,846	-355	356	0
July 31	7,864.46	1,567	-279	77	0
August 31	7,859.94	1,323	-244	0	0
September 30	7,854.78	1,081	-242	71	0
October 31	7,860.34	1,344	+263	334	0
November 30	7,859.93	1,324	-20	314	0
December 31, 2017	7,858.25	1,240	-84	230	0
Calendar year 2017	-		699		

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-fee

Date	Gage height	Contents	Change in contents	Pre-Compact water	Transmountain water
December 31, 2016	7,472.54	319	-	27	78
January 31, 2017	7,473.01	328	+9	0	78
February 28	7,474.40	354	+26	26	78
March 31	7,474.39	354	0	26	78
April 30	7,480.56	494	+140	166	78
May 31	7,474.61	358	-136	30	78
June 30	7,479.16	460	+102	132	78
July 31	7,475.78	383	-77	55	78
August 31	7,472.41	316	-67	0	78
September 30	7,472.68	322	+6	4	78
October 31	7,479.16	460	+138	142	78
November 30	7,474.42	354	-106	36	78
December 31, 2017	7,473.38	335	-19	17	78
Calendar year 2017	-		+16		

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, 2016	5,341.60	44,595	-	43,801
January 31, 2017	5,342.07	45,112	+517	44,901
February 28	5,342.78	45,911	+799	45,351
March 31	5,343.65	46,932	+1,021	45,237
April 30	5,342.81	45,946	-986	44,888
May 31	5,343.51	46,764	+818	44,475
June 30	5,342.72	45,843	-921	43,958
July 31	5,345.59	49,413	+3,570	46,022
August 31	5,344.30	47,731	-1,682	45,634
September 30	5,344.58	48,086	+355	45,308
October 31	5,344.36	47,807	-279	45,118
November 30	5,343.80	47,114	-693	44,904
December 31, 2017	5,343.75	47,053	-61	44,788
Calendar year 2017	-	-	+2,458	-

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 2017

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, 2016	5,155.00	0	-	0
January 31, 2017	5,155.00	0	0	0
February 28	5,155.00	0	0	0
March 31	5,155.00	0	0	0
April 30	5,155.00	0	0	0
May 31	5,155.00	0	0	0
June 30	5,155.00	0	0	0
July 31	5,155.00	0	0	0
August 31	5,155.00	0	0	0
September 30	5,155.00	0	0	0
October 31	5,155.00	0	0	0
November 30	5,155.00	0	0	0
December 31, 2017	5,155.00	0	0	0
Calendar year 2017	-	-	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 2017

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 2017.

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, 2016	4,311.79	202,454	-	0
January 31, 2017	4,317.75	250,968	+48,514	0
February 28	4,322.53	295,292	+44,324	0
March 31	4,324.31	312,777	+17,485	5,339
April 30	4,332.13	395,649	+82,872	3,721
May 31	4,340.75	501,124	+105,475	739
June 30	4,338.33	469,917	-31,207	728
July 31	4,329.53	366,940	-102,977	719
August 31	4,321.48	285,213	-81,727	712
September 30	4,314.95	227,210	-58,003	700
October 31	4,322.80	297,912	+70,702	692
November 30	4,328.39	354,744	+56,832	0
December 31, 2017	4,334.67	425,083	+70,339	0
Calendar year 2017	-	-	+222,629	-

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, 2016	4,136.79	21,035	-
January 31, 2017	4,138.71	25,553	+4,518
February 28	4,140.28	29,620	+4,067
March 31	4,152.51	78,318	+48,698
April 30	4,151.30	72,002	-6,316
May 31	4,150.31	67,078	-4,924
June 30	4,151.09	70,939	+3,861
July 31	4,150.61	68,547	-2,392
August 31	4,149.28	62,191	-6,356
September 30	4,141.32	32,543	-29,648
October 31	4,142.32	35,550	+3,007
November 30	4,142.55	36,268	+718
December 31, 2017	4,142.80	37,061	+793
Calendar year 2017	-	-	+16,026

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, 2016	223,489	-
January 31, 2017	276,521	+53,032
February 28	324,912	+48,391
March 31	391,095	+66,183
April 30	467,651	+76,556
May 31	568,202	+100,551
June 30	540,856	-27,346
July 31	435,487	-105,369
August 31	347,404	-88,083
September 30	259,753	-87,651
October 31	333,462	+73,709
November 30	391,012	+57,550
December 31, 2017	462,144	+71,132
Calendar year 2017		+238,655

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

TRANSMOUNTAIN DIVERSIONS

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 1938, 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, 2017

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	1,488
March	0	0	0	0	0	0	16,839
April	0	0	0	0	0	13	32,628
May	0	62	16	192	0	71	45,326
June	568	1,275	304	502	278	354	46,227
July	0	11	78	150	67	14	10,617
August	0	0	38	98	25	2	4,809
September	24	88	5	52	1	4	1,806
October	39	35	7	38	0	6	2,413
November	0	0	0	0	0	0	279
December	0	0	0	0	0	0	90
Calendar year	631	1,471	448	1,032	371	464	162,522

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
2017

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.	Annual
Alamosa	Evap.	-	-	-	-	-	-	-	-	-	-	-	-	-
Airport	Precip.	1.36	0.29	0.73	0.63	1.24	0.19	3.52	0.73	1.75	0.06	0.05	0.14	10.69
Platoro	Evap.	-	-	-	-	3.15	7.94	5.67	4.70	3.87	3.78	-	-	-
Dam	Precip.	-	-	-	-	-	0.58	5.03	2.90	2.56	1.94	-	-	-
Heron	Evap.	-	-	-	5.04	7.18	10.62	8.44	6.97	6.43	4.90	-	-	-
Dam	Precip.	3.15	1.34	1.15	1.50	0.91	0.08	3.11	2.12	2.23	1.04	0.25	0.12	17.00
El Vado	Evap.	-	-	-	5.21	7.36	10.41	8.25	6.73	6.34	5.07	-	-	-
Dam	Precip.	2.59	1.07	0.98	1.49	0.67	0.06	2.39	0.86	3.18	2.56	0.09	0.12	16.06
Abiquiu	Evap.	2.48	3.59	6.13	7.26	9.86	13.31	11.17	9.31	8.19	5.90	3.66	2.17	83.03
Dam	Precip.	2.41	0.25	0.84	1.44	1.33	0.26	2.39	1.21	1.89	0.61	0.12	0.00	12.75
Nambe	Evap.	-	-	-	6.31	9.42	12.22	10.25	8.17	8.19	5.64	-	-	-
Canyon Dam	Precip.	1.54	0.32	1.08	1.24	1.16	0.08	2.67	1.29	3.84	1.16	0.24	0.06	14.68
Cochiti	Evap.	2.79	4.14	7.05	8.64	8.70	10.55	10.18	8.29	8.78	5.25	3.73	2.79	80.89
Dam	Precip.	1.71	0.35	0.54	1.67	0.78	0.62	1.13	1.30	2.63	1.51	0.17	0.00	12.41
Jemez	Evap.	3.10	4.42	7.66	9.53	12.62	14.4	13.68	11.84	9.66	6.02	4.2	3.1	100.23
Canyon Dam	Precip.	1.19	0.29	0.23	0.85	0.29	0.88	0.53	1.10	2.17	0.06	0.02	0.00	7.61
Elephant	Evap.	5.29	6.26	10.85	14.47	16.86	18.84	15.50	11.64	13.99	11.06	8.19	4.59	137.54
Butte Dam	Precip.	2.14	0.68	0.11	0.00	0.42	0.50	2.76	1.36	1.08	0.36	0.04	0.08	9.53
Caballo	Evap.	4.27	6.03	9.70	13.87	16.87	16.16	14.91	11.34	12.02	8.91	6.43	4.15	124.66
Dam	Precip.	2.08	0.52	0.00	0.00	0.20	0.27	3.49	0.58	0.93	2.21	0.08	0.15	10.51
State	Evap.	2.37	5.47	8.87	11.22	13.94	13.28	10.99	10.38	8.81	7.37	4.96	2.89	100.55
University	Precip.	1.57	0.47	0.00	0.06	0.80	0.24	3.25	3.20	0.24	1.28	0.37	0.16	11.64

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

RIO GRANDE COMPACT

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:

RIO GRANDE COMPACT

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.)

RIO GRANDE COMPACT

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 proportionally 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.

RIO GRANDE COMPACT

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:

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.

RULES AND REGULATIONS

(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.

RULES AND REGULATIONS

(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

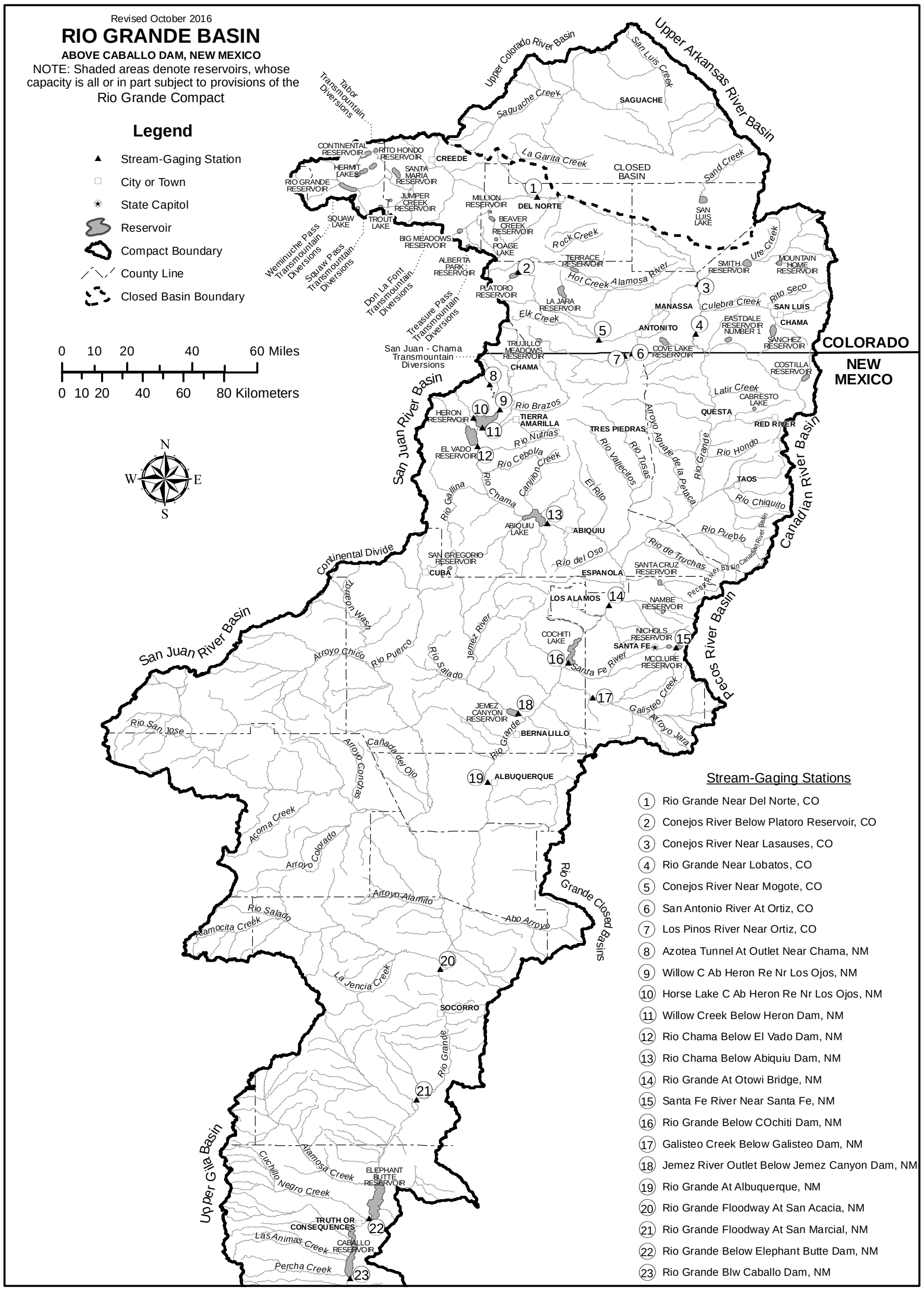
(Signed) JULIAN P. HARRISON

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
Legend
Stream-Gaging Station
City or Town
State Capitol
Reservoir
Compact Boundary
County Line
Closed Basin Boundary
0 10 20 40 60 Miles
0 10 20 40 60 80 Kilometers
N
S
E
W
COLORADO
NEW MEXICO
Upper Arkansas River Basin
Upper Colorado River Basin
San Juan River Basin
Canadian River Basin
Pecos River Basin
Rio Grande Closed Basins
Upper Gila Basin
Continental Divide
CLOSED BASIN
San Juan - Chama Transmountain Diversions
Stream-Gaging Stations
1 Rio Grande Near Del Norte, CO
2 Conejos River Below Platoro Reservoir, CO
3 Conejos River Near Lasauses, CO
4 Rio Grande Near Lobatos, CO
5 Conejos River Near Mogote, CO
6 San Antonio River At Ortiz, CO
7 Los Pinos River Near Ortiz, CO
8 Azotea Tunnel At Outlet Near Chama, NM
9 Willow C Ab Heron Re Nr Los Ojos, NM
10 Horse Lake C Ab Heron Re Nr Los Ojos, NM
11 Willow Creek Below Heron Dam, NM
12 Rio Chama Below El Vado Dam, NM
13 Rio Chama Below Abiquiu Dam, NM
14 Rio Grande At Otowi Bridge, NM
15 Santa Fe River Near Santa Fe, NM
16 Rio Grande Below COchiti Dam, NM
17 Galisteo Creek Below Galisteo Dam, NM
18 Jemez River Outlet Below Jemez Canyon Dam, NM
19 Rio Grande At Albuquerque, NM
20 Rio Grande Floodway At San Acacia, NM
21 Rio Grande Floodway At San Marcial, NM
22 Rio Grande Below Elephant Butte Dam, NM
23 Rio Grande Blw Caballo Dam, NM