

Seventh Annual Report
of the
**RIO GRANDE COMPACT
COMMISSION**

1945



TO THE GOVERNORS OF
Colorado, New Mexico and Texas

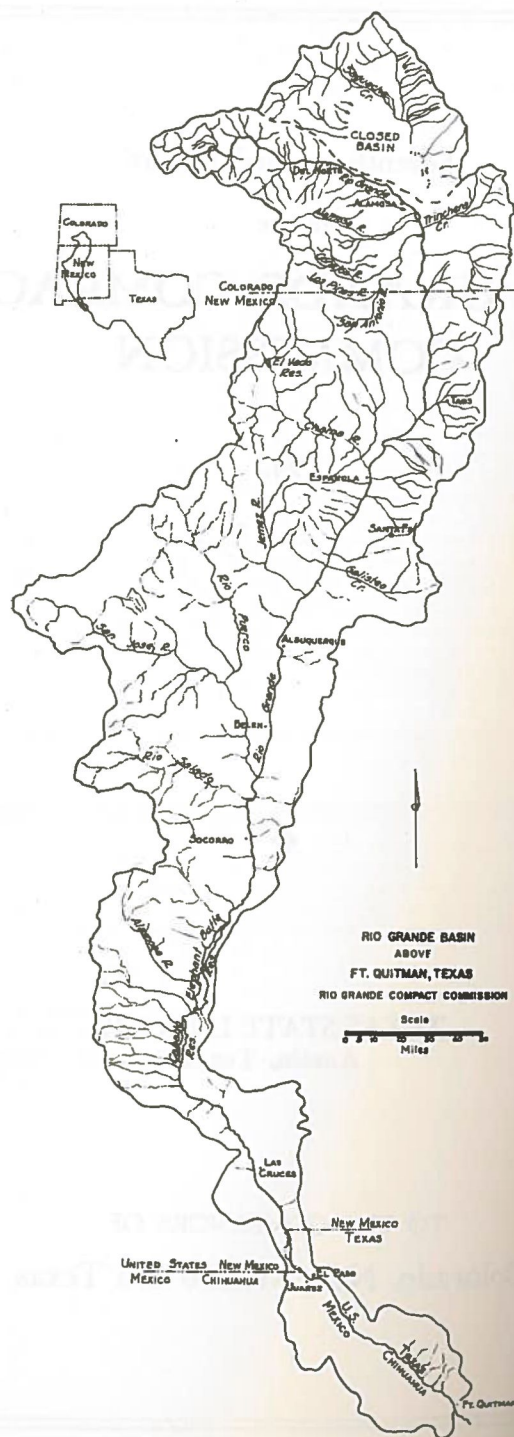


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This publication authorized by the Commission
at the Ninth Annual (Nineteenth) Meeting in
El Paso, Texas, February 22, 23, and 24, 1948.

COLORADO
M. C. HINDERLIDER
STATE ENGINEER
DENVER, COLORADO

TEXAS
J. E. QUAID
316 CAPLES BLDG.
EL PASO, TEXAS

Rio Grande Compact Commission

UNITED STATES
BERKELEY JOHNSON, CHAIRMAN
POST OFFICE BOX 277
SANTA FE, NEW MEXICO

NEW MEXICO
THOMAS M. MCCLURE
STATE ENGINEER
SANTA FE, NEW MEXICO

SECRETARY
RUFUS H. CARTER, JR.
POST OFFICE BOX 897
SANTA FE, NEW MEXICO

Denver, Colorado
February 27, 1946

HIS EXCELLENCY, JOHN C. VIVIAN
Governor of the State of Colorado.

HIS EXCELLENCY, JOHN J. DEMPSEY
Governor of the State of New Mexico.

HIS EXCELLENCY, COKE R. STEVENSON
Governor of the State of Texas.

Sirs:

At the Seventh Annual Meeting of the Rio Grande Compact Commission held in Denver, Colorado, February 25, 26, and 27, 1946, The Commission reviewed and adopted records of stream flow and departures from schedules of deliveries of water by Colorado and New Mexico and of releases of water from Rio Grande Project Storage during the year 1945.

The Commission found that:

(a) At the beginning of 1945, Colorado had an accrued credit of 83,500 acre feet; at the end of the year this credit was reduced to 69,400 acre feet.

(b) At the beginning of 1945, New Mexico had an accrued debit of 136,600 acre feet; at the end of the year this debit had increased to 150,400 acre feet.

(c) Prior to January 1, 1945, the release of usable water from Rio Grande Project Storage had amounted to 191,500 acre feet in excess of the average normal release of 790,000 acre feet specified in the Compact; such releases in excess of normal aggregated 246,500 acre feet at the end of the year 1945.

Pursuant to the provisions of Article XIII of the Compact, consideration is being given to revisions of schedules of deliveries which will not be substantive in character.

The expenses for administration during the fiscal year ending June 30, 1945 were \$17,658.70, of which amount \$5,800.00 were borne by agencies of the United States.

The balance of \$11,858.70 was divided equally among the three signatory States.

Factual data in support of the above and other records bearing on the administration of the Compact during 1945 are available in the files of the Commission.

Respectfully submitted

M. C. Hinderlider

M. C. HINDERLIDER
Rio Grande Compact Commissioner
for Colorado.

Thomas M. McClure

THOMAS M. MCCLURE
Rio Grande Compact Commissioner
for New Mexico.

J. E. Quaid

J. E. QUAID
Rio Grande Compact Commissioner
for Texas.

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.

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
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 per cent of the total positive ions in that water when

the total dissolved solids in such water exceeds three hundred fifty parts per million.

ARTICLE IV.

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

DISCHARGE OF RIO GRANDE AT OTOWI BRIDGE AND AT SAN MARCIAL EXCLUSIVE OF JULY, AUGUST AND SEPTEMBER

Quantities in thousands of acre feet

Otowi Index Supply (5)	San Marcial Index Supply (6)
100	0
200	65
300	141
400	219
500	300
600	383
700	469
800	557
900	648
1000	742
1100	839
1200	939
1300	1042
1400	1148
1500	1257
1600	1370
1700	1489
1800	1608
1900	1730
2000	1856
2100	1985
2200	2117
2300	2253

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.

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.

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 thereafter 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 losses of water to Mexico.

ARTICLE XV.

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

ARTICLE XVI.

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

ARTICLE XVII.

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

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

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

S/ M. C. Hinderlider
M. C. HINDERLIDER

S/ Thomas M. McClure
THOMAS M. MCCLURE

S/ Frank B. Clayton
FRANK B. CLAYTON

APPROVED:

S/ S. O. Harper
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

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.

GAGING STATIONS

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 United State Geological Survey.

(b) Gaging stations on streams and reservoirs in the Rio Grande Basin below Lobatos and above San Marcial shall be equipped, maintained and operated by New Mexico in cooperation with the U. S. Geological Survey; the gaging station on the Rio Grande at San Marcial shall likewise be the responsibility of New Mexico to the extent that this station is not maintained and operated by the International Boundary Commission, or some other federal agency.

(c) Gaging stations on Elephant Butte Reservoir and on Caballo Reservoir, and the stream gaging stations on the Rio Grande below those reservoirs 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 gaging station shall be sufficient to obtain records at least equal in accuracy to those classified as "good" by the U. S. Geological Survey. 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 observations is sufficient in each case to establish any material changes in water levels in such reservoirs.

RESERVOIR CAPACITIES

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 records of flow of the Rio Grande at San Marcial, at San Acacia, and below Elephant Butte Reservoir may be correlated, 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.

EVAPORATION LOSSES

The Commission shall encourage the equipping, maintenance and operation, in cooperation with the United States 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.

ADJUSTMENTS 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.

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.

TRANS-MOUNTAIN 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 allowance shall be made for losses in transit from such points to the Index Gaging Station on the stream with which the imported waters are commingled.

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.

SECRETARY

The Commission shall employ a secretary who shall be a registered professional engineer, or a Corporate Member of the American Society of Civil Engineers, experienced in irrigation, agricultural or hydraulic engineering. The period of employment of the secretary shall be at the pleasure of the Commission but not exceeding one year, at the end of which period his services shall automatically terminate; provided, however, that the Commission, upon unanimous agreement, may extend his employment for a period not exceeding one year following the year within which his employment has been automatically terminated, or may employ another individual under like conditions with respect to period of employment, it being the intent and purpose of the Commission to limit the term of employment of any such appointee so that any re-appointment, or the appointment of any successor, can be made for a period of but one year, and then only by the unanimous action of the Commission.

The salary of the secretary shall be determined by the Commission. He shall be reimbursed for his necessary traveling expenses incurred in performing his official duties, as may be determined by the Commission.

Each of the respective states, at its own expense, shall provide adequate office facilities for the use of the secretary of the Commission.

It shall be the duty of the secretary to collect and correlate all factual data and other records having a bearing upon the administration of the Compact, and to keep each Commissioner advised thereof. It shall be the further duty of the secretary to inspect all gaging stations maintained by the Commission, and to make recommendations to the Commission as to any changes or improvements to existing stations, and for the addition of new stations, to the end that reliable records may be had for the proper carrying out of the provisions of the Compact.

The secretary shall report to each Commissioner by letter on or before the fifteenth day of each month, except January, a summary of all hydrographic data then available for the current year - on forms prescribed by the Commission - pertaining to:

- (a) Deliveries by Colorado at State Line;
- (b) Deliveries by New Mexico at San Marcial; and
- (c) Release and Spill from Project Storage.

He shall also compile a complete report covering his secretarial activities, and a summary of all factual data required by the Compact during the preceding calendar year, and submit the same to the Commission at its regular meeting in February, first following the calendar year covered by such report.

The secretary shall carry on such other duties as the Commission may assign to him from time to time, and shall devote his entire time to the duties of his office. He shall execute and deliver a surety bond satisfactory to the Commission, conditioned upon the faithful performance of the duties of his office.

COSTS

In February of each year 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 operation 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.

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.

The secretary shall present to each participating state through the Commissioner of such State, a certified statement of one-third of the cost of his salary, traveling expense, the expense incident to the maintenance of the offices of the Commission, and each Commissioner shall arrange for the prompt payment thereof by the appropriate agency of 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 which he 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 his state an appropriation of sufficient funds with which to meet the obligations of his state, as provided by the Compact.

MEETINGS OF COMMISSION

The Commission shall meet in February of 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. The annual meeting in 1940 shall be held in Monte Vista, Colorado, and thereafter rotate alphabetically according to the states, the place in each state to be designated by the Commissioner from that state. 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.

In accordance with Par. 14, Minutes of the Fourth Annual (Thirteenth) Meeting of the Rio Grande Compact Commission, held in Denver, Colorado, February 24 and 25, 1943, the following was made a part of the Rules and Regulations.

ACTUAL SPILL

(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 physical capacity of that reservoir, to the level of the uncontrolled spillway i.e.-2,219,000 acre feet in 1942.

(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 1.1.-1,830,00 acre feet 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.

RECORDS OF DELIVERIES AND RELEASES

Schedules of Deliveries by Colorado and New Mexico are set forth in Articles III and IV, respectively, of the Compact. Normal releases from Project Storage are fixed by the Compact at 790,000 acre feet per year. In February of each year the Commission holds its Annual Meeting at which time records of deliveries and releases for the previous calendar year are reviewed and adopted as official. The records adopted by the Commission for 1945 are shown on the following three pages.

Deliveries by Colorado at the Colorado-New Mexico state line produced an Annual Debit for 1945 of 14,100 acre feet after adjusting in accordance with the Compact. At the beginning of 1945 Colorado had an Accrued Credit of 83,500 acre feet; at the beginning of 1946 Colorado's Accrued Credit is 69,400 acre feet.

Deliveries by New Mexico at San Marcial resulted in an Annual Debit of 13,800 acre feet after adjusting in accordance with the Compact. At the beginning of 1945 New Mexico had an Accrued Debit of 136,600 acre feet; at the beginning of 1946 New Mexico's Accrued Debit is 150,400 acre feet.

The Annual Departure from normal release of water from Project Storage for 1945 was in excess by 55,000 acre feet after adjusting for evaporation losses. At the beginning of 1945 the Accrued Departure from normal release was in excess by 191,500 acre feet; at the beginning of 1946 the Accrued Departure from normal release is in excess by 246,500 acre feet.

Cooperation in supplying essential data for the schedule of deliveries and releases as well as the adjustments thereto has been received from:

Colorado State Engineer	New Mexico State Engineer
United Pueblos Agency	Soil Conservation Service
Geological Survey	Grazing Service
New Mexico Power Co.	Weather Bureau
International Boundary and Water Commission U. S. Section	
Agricultural Adjustment Administration	
Range Development Service of U. S. G. L. O.	
Farm Security Administration	
Forest Service	

This cooperation is gratefully acknowledged.

RIO GRANDE COMPACT DELIVERIES BY COLORADO AT STATE LINE YEAR 1945

Quantities in Thousands of Acre Feet to Nearest Hundred

M O N T H	COMEJOS INDEX SUPPLY				RIO GRANDE SUPPLY				STORED WATER		DELIVERIES AND CREDITS			
	MEASURED STREAM FLOW		ADJUSTMENTS		RECORDED FLOW NEAR DEL NORTE	CONJOS INDEX SUPPLY	ADJUSTMENTS PER COMPACT	RIO GRANDE INDEX SUPPLY	GAIN (+) OR LOSS (-) IN STORAGE	TOTAL QUANTITY IN STORAGE AT END OF MONTH	CONJOS RIVER AT MONTHS BEAR LOS SAUCES RIVER	TOTAL FLOW AT LOBATOS LESS CONJOS RIVER	ACTUAL DELIVERY AT LOBATOS GAGE	ADJUSTMENTS PER COMPACT
	LOS PINOS RIVER AT MOCOTE	SAN ANTONIO RIVER NEAR ORTIZ	LOS PINOS RIVER NEAR ORTIZ	TOTAL MEASURED FLOW										
JAN	2.6	—	—	2.6	—	2.6	—	9.9	0	0.2	3.3	14.1	17.4	—
FEB	2.4	—	—	2.4	—	2.4	—	9.6	0	0.2	3.8	13.6	17.4	—
MAR	3.5	—	—	3.5	—	3.5	—	12.7	0	0.2	3.4	17.2	20.6	—
APR	8.5	—	—	8.5	—	8.5	—	32.2	0	—	10.5	44.9	55.4	—
MAY	9.7	4.9	3.9	18.4	—	18.4	—	29.4	+0.1a	0.5	4.6	11.9	16.5	—
JUN	90.2	59.5	19.2	168.9	—	168.9	—	135.7	—	0.5	89.8	19.6	109.4	0.20
JUL	83.0	20.3	0.8	104.1	—	104.1	—	160.6	0	0.5	29.1	11.4	40.5	—
2ND QTR	191.4	84.6	23.9	299.9	—	299.9	—	357.9	+0.3	—	134.0	37.8	221.8	0.80
AUG	25.0	4.2	0.1	29.3	—	29.3	—	82.0	0	0.5	1.7	7.4	9.1	—
SEP	10.0	1.8	0.4	12.2	—	12.2	—	44.7	0	0.5	1.1	3.3	4.4	—
OCT	3.2	0.7	0	3.9	—	3.9	—	17.7	0	0.5	0.7	2.1	2.8	—
3RD QTR	229.6	91.3	24.4	345.3	—	345.3	—	499.2	+0.3	—	137.5	100.6	238.1	0.20
NOV	3.9	1.0	0.1	5.0	—	5.0	—	20.6	0	0.5	1.4	4.5	5.9	—
DEC	3.0	—	—	3.0	—	3.0	—	11.0	0	0.5	2.3	15.6	17.9	—
4TH QTR	2.6	—	—	2.6	—	2.6	—	7.2	0	0.5	2.6	12.5	15.1	—
YEAR	299.1	92.3	24.5	355.9	—	355.9	—	539.0	+0.3	—	213.8	133.2	277.0	0.20
YEAR	299.1	92.3	24.5	355.9	—	355.9	—	539.0	+0.3	—	213.8	133.2	277.0	0.20

Remarks: Storage in reservoir constructed after 1937 only.

a. Adjustment for change in storage.

b. Adjustment for transmission diversion.

c. Increased debit due to revision of records of Los Pinos near Ortiz, Colorado for May 1943.

SUMMARY OF DEBITS AND CREDITS

ITEM	DEBIT	CREDIT	BALANCE
C1 Balance at Beginning of Year	—	—	131.8
C2 Scheduled Delivery from Conchos River	—	—	131.8
C3 Actual Delivery from Rio Grande	—	—	131.8
C4 Actual Delivery of Lobatos plus 10000 acre feet	—	—	131.8
C5 Reductions per Compact Item 18	—	—	131.8
C6 Reductions of Credits per Article VI	—	—	131.8
C7 Reductions of Credits per Article VI	—	—	131.8
C8 Balance at End of Year	—	—	131.8

RIO GRANDE COMPACT DELIVERIES BY NEW MEXICO AT SAN MARCIAL

YEAR 1945

Quantities in Thousands of Acre Feet to Nearest Hundred

M O N T H	OTOMI INDEX SUPPLY				STORAGE OF WATER IN RESERVOIRS				DELIVERIES AND CREDITS			
	ADJUSTMENTS		EQUIVALENT		TOTAL STORAGE AT END OF MONTH	GAIN (+) OR LOSS (-) AT END OF MONTH	OTOMI INDEX SUPPLY	TOTAL STORAGE AT END OF MONTH	RECORDED FLOW AT SAN MARCIAL	ACTUAL DELIVERY DURING SCHEDULE TO OTOMI	ADJUSTMENTS DURING JULY, AUGUST, SEPTEMBER TO OTOMI	OTHER ADJUSTMENTS PER COMPACT
	ADJUSTMENTS ACCOUNT STORAGE AT OTOMI	OTHER ADJUSTMENTS PER COMPACT	OTOMI INDEX SUPPLY	OTOMI INDEX SUPPLY								
JAN	4.4	—	—	4.4	—	—	—	91.3	1.7	1.7	—	—
FEB	4.4	—	—	4.4	—	—	—	91.3	1.7	1.7	—	—
MAR	5.1	—	—	5.1	—	—	—	101.9	1.4	1.4	—	—
1ST QTR	14.9	—	—	14.9	—	—	—	136.3	136.3	—	—	—
APR	94.0	—	—	94.0	—	—	—	142.2	69.7	—	—	—
MAY	135.6	—	—	135.6	—	—	—	203.6	380.0	—	—	—
JUN	152.1	—	—	152.1	—	—	—	203.6	97.3	—	—	—
2ND QTR	382.6	—	—	382.6	—	—	—	689.3	—	—	—	—
JUL	74.4	—	—	74.4	—	—	—	172.1	16.0	—	—	—
AUG	64.8	—	—	64.8	—	—	—	137.9	22.0	—	—	—
3RD QTR	55.7	—	—	55.7	—	—	—	99.3	7.4	—	—	—
SEP	1.016.5	—	—	1.016.5	—	—	—	—	728.7	—	—	—
4TH QTR	1.016.5	—	—	1.016.5	—	—	—	—	—	—	—	—
OCT	1.016.5	—	—	1.016.5	—	—	—	—	—	—	—	—
NOV	37.5	—	—	37.5	—	—	—	85.5	23.9	—	—	—
DEC	34.3	—	—	34.3	—	—	—	85.5	21.1	—	—	—
4TH QTR	1.131.5	—	—	1.131.5	—	—	—	—	140.1	—	—	—
YEAR	1.131.5	—	—	1.131.5	—	—	—	—	813.8	768.4	—	—

Remarks: Storage in reservoirs constructed after 1929 only.

a. Adjustment for net evaporation from reservoirs, Lobatos to Otomi

b. Adjustment for Stock Tanks

c. Does not include San Mateo Reservoir which capacity during 1945 was less than 50 acre feet.

SUMMARY OF DEBITS AND CREDITS

ITEM	DEBIT	CREDIT	BALANCE
D1 Balance at Beginning of Year	—	—	136.6
D2 Scheduled Delivery from Rio Grande	—	—	136.6
D3 Actual Delivery in Schedule Months	—	—	136.6
D4 Actual Delivery in Schedule Months	—	—	136.6
D5 Other Adjustments - Item 18	—	—	136.6
D6 Reduction of Credits per Article VI	—	—	136.6
D7 Reduction of Credits per Article VI	—	—	136.6
D8 Balance at End of Year	—	—	136.6

The U. S. Geological Survey in cooperation with the New Mexico Interstate Streams Commission and the Middle Rio Grande Conservancy District furnished the record of storage in El Vado Reservoir near Tierra Amarilla, New Mexico.

The New Mexico Power Company at Santa Fe, New Mexico furnished the record of storage in Granite Point Reservoir near Santa Fe, New Mexico.

The United Pueblos Agency, Albuquerque, New Mexico, furnished the records of storage in:

Acomita Reservoir near San Fidel, New Mexico.
New Laguna Reservoir at Laguna, New Mexico.
Pagate Reservoir near Laguna, New Mexico.

The U. S. Section of the International Boundary and Water Commission, El Paso, Texas furnished the records of discharge of Rio Grande at San Marcial, New Mexico.

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

Discharge of Rio Grande below Elephant Butte Dam, New Mexico.
Discharge of Rio Grande below Caballo Dam, New Mexico.
Storage in Elephant Butte Reservoir.
Storage in Caballo Reservoir.

The Rio Grande Compact Commission acknowledges the cooperation received from these agencies and individuals.

RIO GRANDE COMPACT COMMISSION

MONTHLY SUMMARY OF DISCHARGE

RIO GRANDE NEAR DEL NORTE, COLORADO

Location - Water stage recorder in Sec. 29, T. 40 N., R. 5E., 6 miles upstream from Pinos Creek, and 8 miles west of Del Norte, at State Bridge. From 1889 to September 1907, station maintained at site four miles downstream, records are comparable.

Drainage area - 1,320 square miles. Zero of gage is 7,982.21 feet above mean sea level, datum of 1929.

Records available - October 11, 1889 to December 31, 1945.

Maximum discharge - During period 1889-1945, 18,000 second feet October 5, 1911, from rating curve extended above 6,000 second feet. Gage height 6.80 feet. Year 1945, 4,030 second feet, June 15. Gage height, 3.90 feet.

Accuracy - Records considered excellent except those for period of ice effect, January 1, 1945 to March 14, 1945, which were computed on basis of six discharge measurements, weather records, and are fair.

Remarks - Diversions for irrigation above station. Flow regulated by three reservoirs above station, total capacity 117,600 acre feet, and by several smaller ones.

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in Acre-feet	
January	5,005	190	132	161	9,930	
February	4,816	190	150	172	9,550	
March	6,416	270	168	207	12,730	
April	14,794	993	215	493	29,340	
May	68,400	3,520	1,240	2,206	135,700	
June	81,010	3,360	2,050	2,700	160,700	
July	41,369	2,050	682	1,334	82,050	
August	21,022	1,020	452	678	41,700	
September	8,912	477	240	297	17,680	
October	10,409	526	255	336	20,650	
November	5,533	280	125	184	10,970	
December	3,610	182	75	116	7,150	
Year	1945	271,295	3,520	75	743	536,200

RIO GRANDE NEAR LOBATOS, COLORADO

Location - Water stage recorder in Sec. 22, T. 35 N., R. 11 E., 6 miles north of Colorado-New Mexico State line, 7 miles downstream from Culebra Creek, a highway bridge 10 miles east of Lobatos.

Drainage area - 7,700 square miles (includes 2,940 square miles in closed basin). Zero of gage is 7,426.79 feet above mean sea level, datum of 1929.

Records available - June 28, 1899 to December 31, 1945.

Maximum discharge - During period 1899-1945, 13,100 second feet June 8, 1905, from rating curve extended above 6,000 second feet. Year 1945, 2,880 second feet May 12. Gage height 4.08 feet.

Accuracy - Records considered excellent except those for period of ice effect, January 1, 1945 to February 28, 1945, which were computed on basis of four discharge measurements, weather records, and are fair.

Remarks - Diversions for irrigation above station. Flow regulated by many reservoirs on headwaters.

Month	Second-foot-days	Maximum	Minimum	Mean	run-off in acre-feet	
January	8,780	345	220	283	17,380	
February	8,798	345	275	314	17,460	
March	10,369	454	242	334	20,570	
April	6,303	537	180	277	16,470	
May	55,152	2,730	414	1,779	109,400	
June	20,422	1,070	408	681	40,510	
July	4,586	341	66	168	9,120	
August	2,207	134	44	71.2	4,380	
September	1,405	66	35	46.8	2,790	
October	2,976	172	68	96.0	5,900	
November	9,027	447	154	301	17,900	
December	7,603	421	200	245	16,060	
Year	1945	159,617	2,730	55	583	277,000

RIO GRANDE COMPACT COMMISSION
MONTHLY SUMMARY OF DISCHARGE

RIO GRANDE AT OTOWI BRIDGE, NEAR SAN ILDEFONSO, NEW MEXICO

Location - Water-stage recorder, Lat. 36°52'25" N., in San Ildefonso Pueblo Grant, 100 feet downstream from highway bridge, 1 3/4 miles southwest of San Ildefonso Pueblo, 2 1/2 miles downstream from Rio Pajarito and 7 miles west of Pajarito. Datum of gage is 5,486.48 feet above mean sea level, datum of 1929.

Drainage area - 14,300 square miles (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colorado).

Records available - February 1896 to December 1906, June 1909 to December 1914 and October 1930 to September 1945 in reports of Geological Survey. February 1896 to December 1906 and June 1909 to December 1931 in reports of New Mexico State Engineer. January 1941 to December 1945 in reports of the Rio Grande Compact Commission.

Extremes - Maximum discharge during year, 10,400 second feet May 8 (gage height, 8.62 feet); minimum daily, 430 second feet Nov. 24.
1930-45: Maximum discharge, 22,500 second feet May 16, 1941; maximum gage height, 13.70 feet May 14, 1941; minimum daily discharge, 128 second feet June 21, 1934.

Remarks - Records good. Flow partially regulated by operation of El Vado Reservoir on upper Rio Chama which stores water for irrigation. Diversions above station for irrigation.

Month		Second-foot-days	Maximum	Minimum	Mean	Run-off in Acre-feet
January		29,890	748	592	674	41,430
February		24,922	1,190	658	890	49,480
March		25,774	928	754	831	51,120
April		47,393	3,180	652	1,680	94,000
May		218,590	9,900	3,440	7,061	433,800
June		78,890	4,990	1,510	2,556	152,100
July		37,613	1,480	900	1,210	74,410
August		32,861	1,480	676	1,054	64,780
September		28,017	1,260	676	934	56,870
October		21,780	1,170	525	703	43,200
November		18,923	942	430	631	37,530
December		17,298	588	465	558	34,310
Year	1945	570,451	9,900	430	1,563	1,131,000

RIO GRANDE AT SAN ACACIA, NEW MEXICO

Location - Water-stage recorder, Lat. 34°15'20" N., Long. 106°53'30" W., in NE 1/4 Sec. 1, T. 18., R. 1 W., 0.2 mile downstream from San Acacia diversion dam, half a mile east of San Acacia, and 2 miles downstream from Rio Salado. Datum of gage is 4,660.16 feet above mean sea level, datum of 1929.

Drainage area - 26,770 square miles (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colorado).

Records available - April 1936 to September 1945 in reports of Geological Survey. February to December 1925, January 1926 to September 1927 (gage heights and discharge measurements only) in reports of State Engineer. January 1941 to December 1945 in reports of Rio Grande Compact Commission.

Extremes - Maximum discharge during year, 11,000 second-feet May 14; maximum gage height, 6.80 feet May 10; minimum daily discharge, 80 second-feet September 13.
1936-45: Maximum discharge, 27,400 second-feet Aug. 5, 1936 (gage height, 6.35 feet, datum of gage, 4,662.56 feet), from rating curve extended above 18,000 second-feet by logarithmic plotting; minimum daily, 1 second-foot June 23, 1939.

Remarks - Records good. Socorro main canal north diverts 0.2 mile above gage. Diversions above station for irrigation.

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in Acre-feet	
January	23,992	1,110	584	774	47,890	
February	25,450	1,320	705	909	50,480	
March	20,315	872	375	655	40,790	
April	38,797	3,360	244	1,293	78,980	
May	200,270	9,730	2,310	6,460	397,800	
June	54,980	5,110	338	1,833	109,190	
July	11,222	584	102	362	29,970	
August	16,108	1,970	96	487	33,280	
September	6,495	555	80	223	13,280	
October	15,955	961	250	451	27,730	
November	11,415	825	180	380	22,640	
December	23,578	957	331	761	46,770	
Year	1945	445,788	9,730	80	1,221	884,890

RIO GRANDE COMPACT COMMISSION
MONTHLY SUMMARY OF DISCHARGE

RIO GRANDE AT SAN MARCIAL, NEW MEXICO

Location - Water-stage recorder, lat. 33°40'50" N., long. 106°59'15" W., in Pedro Armendaris Grant 35, at Atchison, Topeka and Santa Fe Railway Bridge, 1.1 miles downstream from San Marcial, Socorro County. Datum of gage is 4,455.38 feet above mean sea level (levels by International Boundary Commission).

Drainage area - 27,700 square miles (including 2,940 square miles in closed basin in northern part of San Luis Valley, Colorado).

Records available - January 1896 to December 1945. Prior to January 1922 at a site 0.3 mile upstream; January 1922 to February 1932 at highway bridge half mile northeast of San Marcial and 1.8 miles above present site.

Average discharge - 31 years (1896-1945) 1,550 second-feet.

Extremes - 1896-1945: Maximum discharge, about 50,000 second-feet Oct. 11, 1904; no flow at times.

Remarks - Records good. Flow modified by El Vado and smaller reservoirs and many diversions and drainage returns.

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in Acre-feet	
January	24,007	856	708	774	47,600	
February	24,005	1,180	705	857	47,600	
March	20,714	818	429	658	41,100	
April	35,163	3,400	289	1,170	69,700	
May	191,820	9,620	1,900	6,190	380,000	
June	49,066	4,790	184	1,640	97,300	
July	8,052.8	895	74.6	260	16,000	
August	11,092.3	1,840	39.8	358	22,000	
September	3,704.6	445	9.0	123	7,350	
October	12,060	900	110	389	23,900	
November	10,661	797	96.5	355	21,100	
December	20,218	2,010	138	652	40,100	
Year	1945	410,590.7	9,620	9.0	1,120	815,800

RIO GRANDE BELOW ELEPHANT BUTTE DAM, NEW MEXICO

Location - Water-stage recorder in SW 1/4 Sec. 25, T. 13 S., R. 4 W. (projected), in Pedro Armendaris Grant, about 5,500 feet downstream from Elephant Butte Dam outlets.

Records available - October 1916 to December 1945.

Average discharge - 29 years, 1,206 second-feet.

Extremes - 1916-45: Maximum daily discharge 8,220 second-feet May 22, 1942; no flow at times.

Remarks - Records excellent. Flow regulated by Elephant Butte reservoir.

Month	Second-foot-days	Maximum	Minimum	Mean	run-off in acre-feet
January	32,241	1,250	890	1,105	67,920
February	31,142	1,220	950	1,112	61,770
March	36,141	1,340	903	1,166	71,680
April	32,829	1,220	871	1,094	65,120
May	31,762	1,130	894	1,025	63,000
June	36,044	1,380	986	1,201	71,490
July	38,202	1,470	992	1,232	75,770
August	42,700	1,660	1,160	1,377	84,690
September	35,287	1,560	867	1,178	69,990
October	35,087	1,250	915	1,132	69,590
November	34,338	1,330	946	1,145	68,100
December	35,580	1,440	689	1,148	70,570
1946	423,351	1,660	689	1,160	839,700

RIO GRANDE COMPACT COMMISSION

MONTHLY SUMMARY OF DISCHARGE

RIO GRANDE BELOW CABALLO DAM, NEW MEXICO

Location - Water-stage recorder, lat. 32°55'05", long. 107°17'50", in NE 1/4 Sec. 30, T. 16 S. R. 4 W., 600 feet upstream from Bojarques bridge, 4,200 feet downstream from Caballo Dam, 1 1/8 miles upstream from Percha diversion dam, 3 miles northeast of Arroyo, and 5 miles south of Caballo. Datum of gage is 4,145.9 feet above mean sea level.

Records available - January 1938 to December 1945.

Extremes - Maximum daily discharge during year, 2,680 second-feet July 28; minimum daily 3.5 second-feet Dec. 31.

1916-45: Maximum daily discharge, 7,650 second-feet May 20, 1942; minimum daily, 1.3 second-feet Nov. 18-21, Dec. 12-27, 1940.

Remarks - Records good. Flow regulated by Elephant Butte and Caballo Reservoirs.

NOTE: The diversion into Bonita ditch (shown below) is not included in the discharge of this station. The sum of the two records represents the total outflow from Caballo Reservoir.

Month	BONITA DITCH Acre-feet	Second-foot-days	Maximum	Minimum	Mean	Run-off in Acre-feet
January	0	337.6	28.1	6.0	108.9	670
February	53	11,555	913	29.4	413	22,920
March	89	42,977	2,250	626	1,386	85,240
April	240	65,290	2,470	1,800	2,175	129,440
May	260	86,350	2,180	1,330	1,818	111,770
June	275	61,440	2,580	1,760	2,048	121,860
July	186	71,310	2,680	1,600	2,800	141,440
August	200	68,400	2,410	1,810	2,142	131,700
September	200	49,840	2,590	1,020	1,651	98,180
October	14	5,572.9	1,020	3.1	180	11,050
November	42	4,788.4	899	4.3	180	9,500
December	52	9,614.5	1,100	3.3	310	19,070
Year	1,587	445,145.4	2,680	3.1	1,220	882,900

COHEJOS RIVER NEAR MORGUE, COLORADO

Location - Water-stage recorder in SE 1/4 Sec. 34, T. 35 N., R. 7 E., 3/4 mile downstream from Fox Creek, 5 1/2 miles northwest of Morgue at Broyles Bridge 12 miles west of Antonito.

Drainage Area - 282 square miles. Altitude 8,500 feet above mean sea level.

Records available - September 1, 1899 to March 31, 1900; April 17, 1903 to October 31, 1905 at a point one mile downstream from present site; from March 21, 1907 to October 5, 1911, at site three miles upstream; from January 1, 1912 to December 31, 1945 at present site.

Maximum discharge - During period 1899-1900, 1903-1905, 1907-1945, 9,000 second feet October 5, 1911, from rating curve extended above 3,500 second feet. Gage height 8.50 feet, site and datum then in use. Year 1945, 2,170 second feet May 29. Gage height 4.36 feet.

Accuracy - Records considered good.

Remarks - No diversions or regulations above station.

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in Acre-feet
January	1,333	50	34	43.0	2,440
February	1,212	50	36	43.3	2,400
March	1,778	71	41	57.4	3,520
April	4,887	94	59	105	9,890
May	45,455	1,990	645	1,465	80,180
June	41,834	1,880	780	1,398	82,980
July	12,623	770	204	407	25,040
August	5,067	270	88	163	10,080
September	1,615	96	40	53.8	3,800
October	1,978	82	52	55.6	3,900
November	1,513	62	32	50.4	2,680
December	1,336	51	34	43.0	2,680
Year	120,623	1,990	32	330	239,300

RIO GRANDE COMPACT COMMISSION

MONTHLY SUMMARY OF DISCHARGE

COHEJOS RIVER NEAR LOS (LA) SAUDES, COLORADO

Location - Two water stage recorders on two channels in Sec. 2, T. 35 N., R. 11 E., 1/2 mile upstream from mouth, and 2 miles north of Los (La) Sauces. Stream enters Rio Grande River through two channels and published record is combined flow.

Drainage Area - 887 square miles. Zero of gage (North Channel) is 7,495.02 feet above mean sea level.

Records available - March 29, 1921 to December 31, 1945.

Maximum discharge - During period 1921-1945, 3,890 second feet May 15, 1941. Year 1945, 2,410 second feet May 12, 1945.

Accuracy - Records considered good.

Remarks - Diversions for irrigation above station.

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in Acre-feet
January	1,684	59	47	54.3	3,340
February	1,912	81	60	65.3	3,790
March	1,710	69	44	56.2	3,390
April	2,339	222	28	78.0	4,640
May	45,279	2,670	342	1,451	89,810
June	14,691	785	193	490	29,140
July	867.1	164	0.6	28.0	1,720
August	555.8	83	1.1	17.9	1,100
September	354.3	24	0.6	11.1	663
October	693.1	37	6	22.4	1,370
November	1,142	42	34	38.1	2,270
December	1,317	51	33	42.5	2,610
Year	72,524.3	2,670	0.6	199	143,800

SAN ANTONIO RIVER AT ORTIZ, COLORADO

Location - Water-stage recorder in New Mexico, in Sec. 19, T. 32 N., R. 9 E., 1/2 mile south of Colorado-New Mexico State line, 1/2 mile south of Ortiz, and 1/2 mile upstream from Los Pinos Creek.

Drainage area - 110 square miles

Records available - January 1 to October 31, 1916, May 1, 1919 to October 31, 1920, October 1, 1924 to December 31, 1945.

Maximum discharge - During period 1916, 1919-1920, 1924-1945, 1,750 second feet April 15, 1937, from rating curve extended above 1,100 second feet. Gage height 6.38 feet. Year 1945, 1,070 second feet May 6, 1945. Gage height 4.11 feet.

Accuracy - Records considered good except those estimated during winter periods, January 1 to April 17, 1945, which are fair.

Remarks - Small diversions for irrigation above station.

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in Acre-feet
January	62.0			2.00	125
February	70.0			2.50	139
March	175.6			5.60	344
April	1,955	250	14	65.2	3,880
May	9,658	774	45	312	19,160
June	410.3	39	0.8	15.7	814
July	39.3	7.2	0	1.27	73
August	221.1	21	0.5	7.13	439
September	10.4	4.0	0	0.35	21
October	69.3	4.7	0.3	2.20	135
November	72.2	4.7	1.2	2.41	145
December	24.8			.8	49
Year	12,765.1	774	0	35.0	25,320

RIO GRANDE COMPACT COMMISSION

MONTHLY SUMMARY OF DISCHARGE

LOS PINOS RIVER NEAR ORTIZ, COLORADO

Location - Water stage recorder in New Mexico in N¹/₂ Sec. 34, T. 32 N., R. 8 E., 1 mile south of Colorado-New Mexico state line, 2 miles southwest of Ortiz and 2¹/₂ miles upstream from mouth.

Drainage area - 167 square miles. Altitude 8,100 feet above mean sea level.

Records available - January 1, 1914 to November 30, 1920, October 1, 1924 to December 31, 1945.

Maximum discharge - During period 1914-1920, 1924-1945, 3,160 second feet May 12, 1941. Year 1945, 2,180 second feet, May 10, 1945. Gage height 5.13 feet.

Accuracy - Records considered excellent except those for period of ice effect, January 1, 1945 to March 25, 1945, which were computed on basis of discharge measurements and weather records, and are fair.

Remarks - Diversions for irrigation above station.

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in Acre-feet
January	573.5				1,140
February	518				1,220
March	824			25.6	1,630
April	2,410	263	29	80.3	4,780
May	30,008	1,800	419	968	59,520
June	10,229	535	145	341	20,290
July	2,127	138	38	68.6	4,220
August	917	53	14	29.6	1,820
September	364	22	11	12.1	722
October	522	21	14	16.8	1,040
November	495.0	39	4.8	16.6	964
December	372	21		12.0	728
Year 1945	49,459	1,600	4.8	136	96,100

RIO CHAMA NEAR TIERRA AMARILLA, NEW MEXICO

Location - Water-stage recorder, lat. 36°34'50" N., long. 106°43'30" W., in NW¹/₄ Sec. 18, T. 27N., R. 2 E. (projected), 1.6 miles downstream from El Vado Dam, 2.7 miles upstream from Rio Nutrias, and 13 miles southwest of Tierra Amarilla.

Records available - October 1935 to September 1945 in reports of Geological Survey. October 1913 to November 1916 at site 1.5 miles upstream (records of unregulated flow), published as Rio Chama near El Vado and near Tierra Amarilla, in reports of Geological Survey. October 1913 to September 1916 and February 1920 to December 1924 in reports of State Engineer. January 1941 to December 1945 in reports of Rio Grande Compact Commission.

Extremes (regulated) - Maximum discharge during year, 3,000 second-feet May 14 (gage height, 5.33 feet); minimum daily, 6.3 second-feet Jan. 29, 30, Feb. 1, 2. 1935-45: Maximum discharge, 6,010 second-feet May 17, 1941 (gage height, 6.89 feet); maximum gage height, 9.63 feet May 30, 1937, site and datum then in use; minimum daily discharge, 1.2 second-feet Dec. 3, 1939 and Feb. 12, 1944.

Remarks - Records good. Flow regulated by El Vado Reservoir. Diversions above station for irrigation.

Month		Second-foot-days	Maximum	Minimum	Mean	run-off in acre-feet
January		229.8	8.4	6.3	7.41	456
February		241.0	13	6.3	8.51	478
March		277.3	10	8.4	8.95	580
April		365	14	10	12.1	724
May		59,524	3,000	16	1,920	118,100
June		21,674	1,370	431	722	45,990
July		21,229	1,030	311	685	40,110
August		19,609	984	237	633	36,890
September		19,607	968	446	654	35,090
October		8,622	629	154	278	17,100
November		1,945.4	415	6.3	64.8	3,980
December		242.1	9.3	6.8	7.81	460
Year	1948	155,865.6	3,000	6.3	421	304,600

RIO GRANDE COMPACT COMMISSION

MONTHLY SUMMARY OF DISCHARGE

SANTA FE CREEK NEAR SANTA FE, NEW MEXICO

Location - Water-stage recorder and sharp-crested concrete control, lat. 35°41'15" N., Long. 105°50'10" W., in NW¹/₄ Sec. 24, T. 17 N., R. 10 E., about 500 feet downstream from Granite Point Dam, and 6 miles east of Santa Fe.

Records available - May to June 1910 (at site 3 miles downstream), April 1913 to December 1914 (at a site 2 miles downstream) and October 1930 to September 1945 in reports of Geological Survey. January 1913 to November 1930 (at a site 2 miles downstream) and November 1930 to December 1931 in reports of State Engineer. January 1943 to December 1945 in reports of Rio Grande Compact Commission.

Extremes - Maximum discharge during year, 56 second-feet May 6 (gage height 1.31 feet); minimum daily, 2.1 second-feet Jan. 24, Jan. 29 to Feb. 10. 1930-45: Maximum discharge, 418 second-feet Apr. 23, 1942 (gage height, 3.51 feet) from rating curve extended above 180 second-feet; minimum daily, 0.2 second foot Dec. 3-14, 18-29, 1943.

Remarks - Records good except those for periods of no gage-height record, which are fair. No diversion above station. Flow regulated by Granite Point Reservoir (capacity, 648 acre-feet).

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in Acre-feet	
January	77.5	3.2	2.1	2.50	154	
February	90.1	4.6	2.1	3.22	179	
March	226.8	13	3.9	7.31	449	
April	689	47	12	23	1,370	
May	1,201	53	28	38.7	2,380	
June	428.6	27	7.0	14.3	850	
July	164.3	6.7	4.4	5.30	326	
August	150.1	5.5	4.1	4.84	298	
September	135.9	4.9	4.4	4.53	270	
October	121.8	4.1	3.4	3.93	242	
November	90.9	3.4	2.3	3.03	180	
December	56.2	2.1	1.8	1.88	116	
Year	1945	3,435.9	53	1.8	9.41	6,810

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in Acre-feet
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					
Year					

RIO GRANDE COMPACT COMMISSION

STORAGE IN RESERVOIRS

1945

- SQUAW LAKE RESERVOIR.**— Dam and adjacent staff gage located in approximate Sec. 12, T. 39 N., R. 4 W., N. M. P. M., on Squaw Lake. Total capacity of reservoir, 158 acre-feet as determined by original survey. Water used for irrigation of lands below the Del Norte gaging station.
- TROUTVALE NO. 2 RESERVOIR.**— Dam and adjacent staff gage located in Sec. 10, T. 41 N., R. 3 W., N. M. P. M., on South Clear Creek. Total capacity of reservoir, 435 acre-feet as determined by original survey. Water is used for fish culture with only occasional sale for irrigation.
- FUCHS RESERVOIR.**— Dam and adjacent staff gage located in Secs. 2 and 11, T. 37 N., R. 4 E., N. M. P. M., on Pinos Creek. Total capacity of Reservoir, approximately 249 acre-feet. Water used for irrigation of lands adjacent to Pinos Creek.

Last Day of	SQUAW LAKE			TROUTVALE NO. 2			FUCHS					
	Gage Height Ft.	Contents Ac. Ft.	Change Ac. Ft.	Gage Height Ft.	Contents Ac. Ft.	Change Ac. Ft.	Gage Height Ft.	Contents Ac. Ft.	Change Ac. Ft.			
Jan.												
Feb.												
Mar.	8.0	140	-140	7.0	219	+72	17.15	249	+216			
Apr.	8.0	140	0	7.0	219	0	17.15	249	0			
May	8.0	140	0	7.0	219	0	17.15	249	0			
June	8.0	140	0	7.0	219	0		176	-75			
July	6.0	140	0	7.0	219	0		164	-22			
Aug.		100	-40	7.0	219	0		164	0			
Sept.		100	0	7.0	219	0		164	0			
Oct.		100	0	7.0	219	0		164	0			
Nov.												
Dec.												
Year			+100			+72			+121			

CARSON RESERVOIR.— Dam and water-stage recorder located in NW $\frac{1}{4}$ Sec. 12, T. 25 N., R. 10 E., N. M. P. M., on Aguaje de la Petaca. Total capacity of reservoir, 5,684 acre-feet as determined by survey of 1941. Water used for irrigation of lands of the Carson Reclamation District. Construction completed in 1940.

EL VADO RESERVOIR.— Dam and water-stage recorder (staff gage used below elevation 6,876.0) located in SW $\frac{1}{4}$ Sec. 4, T. 27 N., R. 2 E., N. M. P. M., on Rio Chama. Total capacity of reservoir, 200,340 acre-feet as determined by original survey in 1927. Water used for irrigation of lands in Middle Rio Grande Conservancy District. Construction completed in 1935.

GRANITE POINT RESERVOIR ENLARGEMENT.— Dam and staff gage located in SW $\frac{1}{4}$ Sec. 24, T. 17 N., R. 10 E., N. M. P. M., in Santiago Ramirez Grant, on Santa Fe Creek. Capacity of original reservoir, completed in 1926, 561 acre-feet; capacity increased 89 acre-feet by enlargement completed in 1935.

NICHOLS RESERVOIR.— Dam, staff gage and water-stage recorder located in NW $\frac{1}{4}$ Sec. 21, T. 17 N., R. 10 E., N. M. P. M., on Santa Fe Creek. Total capacity of reservoir, 796 acre-feet as determined by original survey in 1942. Water is for municipal use in the City of Santa Fe, New Mexico. Construction completed in 1942.

Last Day of	CARSON			EL VADO			GRANITE POINT 1935 ENLARGEMENT			NICHOLS		
	Gage Height Ft.	Contents Ac. Ft.	Change Ac. Ft.	Gage Height Ft.	Contents Ac. Ft.	Change Ac. Ft.	Gage Height Ft.	Contents Ac. Ft.	Change Ac. Ft.	Gage Height Ft.	Contents Ac. Ft.	Change Ac. Ft.
Jan.	8.0	0	0	6857.7	88,180	+3,020	221.6	0	-41	166.4	655	-7
Feb.	8.0	0	0	6859.4	91,280	+3,100	224.2	31	+31	166.4	655	0
Mar.	8.0	0	0	6863.4	98,650	+7,370	226	89	+58	165.9	653	-15
Apr.	16.7	334	+334	6861.4	139,300	+40,650	228	89	0	167.5	701	+46
May	8.0	0	-334	6902.4	201,700	+62,400	228	89	0	167.4	698	-3
June	8.0	0	0	6902.6	202,300	+600	228	89	0	167.1	688	-10
July	8.0	0	0	6892.4	170,700	-32,200	221.6	0	-59	166.7	676	-12
Aug.	8.0	0	0	6890.5	157,000	-33,100	216.2	0	0	160.4	502	-174
Sept.	8.0	0	0	6863.3	99,650	-39,350	214.2	0	0	164.5	361	-147
Oct.	8.0	0	0	6855.8	84,610	-15,840	209.0	0	0	152.7	331	-34
Nov.	8.0	0	0	6854.9	83,280	-1,550	203.2	0	0	152.6	329	-2
Dec.	8.0	0	0	6855.7	84,640	+1,390	199.6	0	0	145.2	204	-125
Year		0	0			-520			-41			-158

RIO GRANDE COMPACT COMMISSION

STORAGE IN RESERVOIRS, CONT'D.

ACOMITA RESERVOIR.— Dam and staff gage located in SW $\frac{1}{4}$ Sec. 29, T. 10 N., R. 7 W., N. M. P. M., on San Fidel Arroyo; water for reservoir is diverted from Rio San Jose. Total capacity of reservoir, 850 acre-feet as determined by original survey in 1937. Water is used for irrigation of lands on the Acoma and Laguna Indian Reservations. Construction completed February 1938.

NEW LAGUNA RESERVOIR.— Dam and staff gage located in SW $\frac{1}{4}$ Sec. 1, T. 9 N., R. 6 W., N. M. P. M., on Rio San Jose. Total capacity of reservoir, 653 acre-feet as determined by survey in 1933. Water is used for irrigation of lands on the Laguna Indian Reservation. Construction completed in 1934.

PAGUATE RESERVOIR.— Dam and staff gage located in NE $\frac{1}{4}$ Sec. 26, T. 10 N., R. 5 W., N. M. P. M., on Paguate Creek. Total capacity of reservoir, 976 acre-feet as determined by original survey. Water is used for irrigation of lands on the Laguna Indian Reservation. Construction completed September 1938.

Last Day of	ACOMITA			NEW LAGUNA			PAGUATE					
	Gage Height Ft.	Contents Ac. Ft.	Change Ac. Ft.	Gage Height Ft.	Contents Ac. Ft.	Change Ac. Ft.	Gage Height Ft.	Contents Ac. Ft.	Change Ac. Ft.			
Jan.	156.0	850	+642	8631.2	500	+438	92.7	940	+122			
Feb.	156.0	850	0	8631.0	500	+183	92.5	958	+28			
Mar.	154.0	850	0	8629.5	500	0	92.5	965	0			
Apr.	154.0	755	-94	8629.5	200	-483	91.7	808	-157			
May	150.9	545	-211	8625.0	0	-200	89.5	530	-278			
June	150.9	380	-165	8625.0	0	0	87.7	220	-310			
July	122.6	265	-115	8625.0	0	0	87.8	245	+25			
Aug.	118.6	230	-35	8625.0	0	0	80.0	0	-245			
Sept.	122.6	185	-75	8625.0	0	0	80.0	0	0			
Oct.	114.9	111	-44	8625.0	0	0	80.0	0	0			
Nov.	122.6	235	+125	8625.0	0	0	80.0	0	0			
Dec.	125.5	318	+82	8625.0	0	0	80.0	0	0			
Year			+10			-62			-618			

ELPHANT BUTTE RESERVOIR.— Dam and gages located in NW $\frac{1}{4}$ Sec. 30, T. 15 S., R. 3 W., N. M. P. M., on Rio Grande. Total capacity of Reservoir, 2,219,000 acre-feet as determined by partial survey and estimate in 1940. Water is used for power development and irrigation in New Mexico and Texas.

CABELLO RESERVOIR.— Dam and gages located in SW $\frac{1}{4}$ Sec. 19, T. 16 S., R. 4 W., N. M. P. M., on Rio Grande. Total capacity of reservoir, 345,872 acre-feet as determined by original survey. Water is used to irrigate lands in New Mexico and Texas.

PROJECT STORAGE.— The combined storage in Elephant Butte and Cabello Reservoirs. Total Project Storage capacity, 2,564,872 acre-feet of which 100,000 acre-feet in Cabello is for flood control.

Last Day of	ELPHANT BUTTE			CABELLO			PROJECT STORAGE					
	Gage Height Ft.	Contents Ac. Ft.	Change Ac. Ft.	Gage Height Ft.	Contents Ac. Ft.	Change Ac. Ft.	Gage Height Ft.	Contents Ac. Ft.	Change Ac. Ft.			
Jan.	4378.68	1,378,100	-18,500	4174.68	268,260	+41,120		1,646,360	+42,620			
Feb.	4378.08	1,227,400	-14,700	4177.88	297,800	+29,540		1,555,200	+14,840			
Mar.	4373.56	1,223,900	-35,500	4176.01	281,000	-16,800		1,504,900	-50,800			
Apr.	4372.90	1,209,600	-14,300	4169.45	218,920	-62,080		1,425,520	-78,380			
May	4364.29	1,484,600	-275,000	4163.43	171,210	-47,710		1,655,810	+227,290			
June	4364.74	1,496,700	+12,100	4156.86	123,190	-48,020		1,619,890	-35,920			
July	4361.98	1,423,200	-73,500	4146.92	68,020	-57,170		1,489,220	-130,670			
Aug.	4379.07	1,831,200	+72,000	4133.23	27,550	-36,470		1,376,750	-110,470			
Sept.	4378.70	1,272,100	-79,100	4121.08	8,610	-21,940		1,277,710	-101,040			
Oct.	4375.44	1,221,700	-50,400	4144.78	83,030	+67,420		1,284,730	+7,020			
Nov.	4370.96	1,187,700	-34,000	4156.24	114,490	+61,460		1,282,190	-2,540			
Dec.	4369.14	1,110,100	-77,600	4162.80	164,050	+53,950		1,294,150	+11,960			
Year			-180,800			-45,080			-205,890			

RIO GRANDE COMPACT COMMISSION
TRANSMOUNTAIN DIVERSIONS
1945

WEMINUCHE PASS (East Ditch) FUCHS						WEMINUCHE PASS (West Ditch) RABER-LOHN						TABOR					
Bristol 8-day recorder and 2-foot wooden Parshall flume. Ditch crosses Continental Divide at Lat. 37°41' N., Long. 107°19' W., in Sec. 4, T. 39 N., R. 4 W., N. M. P. M. (projected survey) 25 miles southwest of Creede, Colorado. Diversion originates on North Fork of the Rio de los Pinos, a tributary to San Juan River; empties into Weminuche Creek, a tributary of the Rio Grande. Diversion is from Rio Grande above the Del Norte gaging station.						Bristol 8-day recorder and 2-foot wooden Parshall flume. Ditch crosses Continental Divide at Lat. 37°41' N., Long. 107°19' W., in Sec. 4, T. 39 N., R. 4 W., N. M. P. M., (projected survey) 25 miles southwest of Creede, Colorado. Diversion originates on left bank of Rincon la Vaca Creek, a tributary to the Rio de los Pinos in the San Juan River Basin; empties into Weminuche Creek, a tributary of the Rio Grande. Diversion is from Rio Grande above the Del Norte gaging station.						Bristol 8-day recorder and 2-foot wooden Parshall flume. Ditch crosses Continental Divide at Lat. 37°41' N., Long. 107°11' W., in Sec. 24, T. 40 N., R. 3 W., N. M. P. M., (projected survey), adjacent to Colorado State Highway No. 149, 14 miles northwest of Creede, Colorado. Diversion originates from right bank of Cobella Creek, a tributary to the Gunnison River; empties into Deep Creek, a tributary to Clear Creek in the Rio Grande Basin. Diversion is from Rio Grande above the Del Norte gaging station.					
Period of record June 8 to Sept. 2						Period of Record June 10 to Sept. 2						Period of Record June 2 to July 14					
Sec.-Pt. Days	May	June	July	Aug.	Sept.	May	June	July	Aug.	Sept.	May	June	July	Aug.	Sept.		
Mean	125.6	86.8	80.9	8.0		301.8	312.2	194.3	8.0		101.2	21.6					
Acro-Foot	5.68	2.80	1.64	1.00		14.8	10.1	6.27	4.00		8.49	1.54					
Maximum	249	172	101	4.0		598	619	385	16		201	43					
Minimum	7.2	8.1	2.6	1.0		16.2	11.8	8.1	4.0		4.5	1.5					
	4.0	1.7	1.2	1.0		12.0	8.0	4.7	4.0		2.4	1.5					
SUMMARY						SUMMARY						SUMMARY					
Sec.-Pt. Days	286.1					816.8					122.8						
Mean	5.06					9.60					4.86						
Acro-foot	328					1,620					244						
Maximum	7.2					16.2					4.5						
Minimum	1.0					4.0					1.5						

SQUAW PASS						TREASURE PASS						PIRERA PASS					
Bristol 8-day recorder and 2-foot wooden Parshall flume. Ditch crosses Continental Divide at Lat. 37°36' N., Long. 107°13' W., 24 miles southwest of Creede, Colorado. Diversion intercepts headwaters of Williams Creek, a tributary of Huerto Creek in the San Juan Basin; empties into Squaw Creek, a tributary of the Rio Grande. Diversion is from Rio Grande below the Del Norte gaging station.						Bristol 8-day recorder and 2-foot wooden Parshall flume. Ditch crosses Continental Divide at Lat. 37°29' N., Long. 106°48' W., in Sec. 32, T. 38 N., R. 2 E., N. M. P. M., (projected survey), adjacent to U. S. Highway No. 160 on the summit of Wolf Creek Pass, 17 miles southwest of South Park, Colorado. Diversion originates on Wolf Creek, a tributary to the San Juan River; empties into Middle Creek, a tributary to South Park in the Rio Grande Basin. Diversion is from the Rio Grande below the Del Norte gaging station.						Bristol 8-day recorder and 2-foot metal Parshall flume. Ditch crosses Continental Divide at Lat. 37°38' N., Long. 107°00' W., in Sec. 4, T. 38 N., R. 1 W., N. M. P. M., (projected survey), 20 miles south of Creede, Colorado. Diversion originates on headwaters of Piedra River, a tributary to the West Fork of the San Juan River; in the San Juan Basin; empties into South River, a tributary to the Rio Grande. Diversion is from the Rio Grande above the Del Norte gaging station.					
Period of record June 20 to July 30						Period of record June 28 to Aug. 4						Period of record July 2-15					
Sec.-Pt. Days	May	June	July	Aug.	Sept.	May	June	July	Aug.	Sept.	May	June	July	Aug.	Sept.		
Mean	45.1	47.8				14.0	111.4	8.2					23.2				
Acro-Foot	4.10	1.58				4.67	5.89	1.50					1.66				
Maximum	89	94				28	221	10					48				
Minimum	8.1	2.5				5.8	5.7	1.4					2.5				
	2.8	.6				4.1	1.5	1.2					1.1				
SUMMARY						SUMMARY						SUMMARY					
Sec.-Pt. Days	92.7					150.6					1.66						
Mean	2.28					5.44					48						
Acro-Foot	185					289					2.9						
Maximum	8.1					5.8					2.5						
Minimum	.6					1.2					1.1						

EVAPORATION AND PRECIPITATION

Evaporation records from eight stations, two in Colorado and six in New Mexico, and precipitation records from ten stations, three in Colorado and seven in New Mexico are shown on the following page.

In each case the unit of measure is the inch.

Measurements of evaporation are made in accordance with standard practice for the various pans in use.

Precipitation measurements are made in standard 8-inch rain gages and, in some places, with recording rain gages.

The records of evaporation and precipitation at Elephant Butte Dam and El Vado Dam and in the precipitation records at Caballo Dam, Pankey Ranch and San Marcial antedate the effective operation of the Compact. The station near Wagon Wheel Gap, near Conejos Dam and at Summitville were installed by the Weather Bureau at the request of the Commission. The evaporimeter at San Marcial, New Mexico was installed by the U. S. Section of the International Boundary and Water Commission, El Paso, Texas but the record since May 1945, affected by nearby vegetation, is subject to indeterminate weighting and accordingly is not herein published.

The Rio Grande Compact Commission acknowledges the cooperation of the Weather Bureau and the U. S. Section of the International and Boundary Commission in furnishing the records of evaporation and precipitation contained in this report.

AMENDED WATER SUPPLY RECORDS

Minutes of the Sixth Annual (Sixteenth) Meeting of the Rio Grande Compact Commission held in El Paso, Texas, February 9, 10 and 11, 1945 state in part:

"... factual data used in the compilation of reports of the Commission, which factual data had been revised and published by the U. S. G. S. or the U. S. Section of the International Boundary Commission subsequent to use by the Compact Commission in computing debits and credits, should be published in succeeding Annual Reports of the Commission, together with proper explanatory notes."

A check of records as published by the Commission with records as published by the U. S. Geological Survey and the U. S. Section of the International Boundary and Water Commission reveals that changes have been made in the following listed records:

Conejos River near Mogote, Colorado, 1943.
Conejos River near Los Sauces, Colorado, 1943.
Los Pinos River near Ortiz, Colorado, 1943.

It has been pointed out that the published values for "Unfilled Capacity" of Project Storage for 1943 are in error. This in no way affects the departures from normal release from Project Storage for 1943. Accordingly corrected values for "Unfilled Capacity" of Project Storage for 1943 are herewith presented.

Of the revised records only the record for Los Pinos River near Ortiz, Colorado changes sufficiently to be reflected in the computation of Colorado's credits and debits. This change has been accounted for and duly noted in the computations for 1945.

RIO GRANDE COMPACT COMMISSION

MONTHLY SUMMARY OF DISCHARGE

CONJOS RIVER NEAR MOGOTE, COLORADO

Location - Water stage recorder in SE $\frac{1}{4}$ Sec. 34, T. 33 N., R. 7 E., $\frac{3}{4}$ mile downstream from Fox Creek, $\frac{5}{8}$ mile northwest of Mogote at Broyles Bridge 12 miles west of Antonito.

Drainage area - 282 square miles. Altitude 8,300 feet above mean sea level.

Records available - September 1, 1899 to March 31, 1900; April 17, 1903 to October 31, 1905, at a point one mile downstream from present site, from March 21, 1907 to October 5, 1911, at site three miles upstream, from January 1, 1912 to December 31, 1943, at present site.

Maximum discharge - during period 1899-1900, 1903-1905, 1907-1943; 9,000 second feet (revised) October 5, 1911, from rating curve extended above 3,800 second feet. Gage height 8.50 feet, site and datum then in use. Year 1943, 1,830 second feet June 3. Gage height 4.15.

Accuracy - Records considered good except those during periods of ice effect from January 5 to February 4, 1943 which were computed on basis of discharge measurements, and weather records, and are fair.

Remarks - No diversions or regulations above station.

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in Acre-feet	
January	1,340	51	38	43.2	2,060	
February	1,428	61	41	51.0	2,850	
March	1,995	167	59	64.4	3,960	
April	16,480	1,350	163	549	32,690	
May	29,963	1,740	484	967	59,430	
June	27,958	1,710	649	932	55,450	
July	9,047	610	139	292	17,940	
August	4,158	214	102	134	8,250	
September	2,010	145	44	67.0	3,990	
October	2,040	96	52	65.8	4,050	
November	1,622	75	28	54.1	3,220	
December	1,211	60	21	39.1	2,400	
Year	1945	99,252	1,740	21	272	196,900

CONJOS RIVER NEAR LOS (LA) SAUCES, COLORADO

Location - Water stage recorders on two channels in Sec. 2 T. 35 N., R. 11 E., $\frac{1}{2}$ mile upstream from mouth, and 2 miles north of Los (La) Sauces. Stream enters Rio Grande River through two channels and published record is combined flow.

Drainage area - 887 square miles. Zero of gage (North Channel) is 7,495.02 feet above mean sea level.

Records available - March 29, 1921 to December 31, 1943.

Maximum discharge - during period 1921-1943; 3,890 second feet on May 15, 1941. Year 1943; 1,270 second feet May 3, 1943.

Accuracy - Records considered good.

Remarks - Diversions for irrigation above station.

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in Acre-feet	
January	1,468	55	38	47.0	2,890	
February	1,912	80	55	68.3	3,790	
March	1,708	80	35	55.1	3,350	
April	6,950	811	14	232	13,790	
May	12,528	1,080	84	404	24,860	
June	5,192	702	17	173	10,300	
July	1,004.1	234	6.8	32.4	1,990	
August	535	25	12	17.2	1,060	
September	684	27	20	22.8	1,860	
October	976	41	23	31.5	1,940	
November	1,335	50	41	44.5	2,650	
December	1,540	55	43	49.7	3,050	
Year	1943	55,820.1	1,080	6.8	98.1	71,060

Date		Time		Place		Remarks	
1911	10/1	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/2	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/3	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/4	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/5	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/6	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/7	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/8	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/9	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/10	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/11	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/12	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/13	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/14	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/15	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/16	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/17	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/18	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/19	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/20	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/21	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/22	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/23	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/24	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/25	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/26	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/27	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/28	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/29	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/30	10:00	10:15	10:30	10:45	11:00	11:15
1911	10/31	10:00	10:15	10:30	10:45	11:00	11:15