

No. 141, Original

In the
SUPREME COURT OF THE UNITED STATES

STATE OF TEXAS,

Plaintiff,

v.

STATE OF NEW MEXICO and
STATE OF COLORADO,

Defendants.

OFFICE OF THE SPECIAL MASTER

**CONSENT DECREE SUPPORTING
THE RIO GRANDE COMPACT**

November 14, 2022

DECREE

The Court exercised original jurisdiction over this controversy involving the States of Colorado, New Mexico, and Texas (hereinafter “Compacting States”). This matter comes before the Court on the Third Report of the Special Master and the Compacting States’ Joint Motion of the State of Texas, State of New Mexico, and the State of Colorado to Enter Consent Decree Supporting the Rio Grande Compact (Decree). This Decree is consistent with the Rio Grande Compact.

Based upon the Third Report of the Special Master and the Compacting States’ Joint Motion for Adoption of a Decree, IT IS HEREBY ORDERED, ADJUDGED, AND DECREED AS FOLLOWS:

I. DEFINITIONS

When used in this Decree and the attachments and appendices hereto, the following definitions apply. All of the terms defined below shall be construed as consistent with the terms defined in the Rio Grande Compact.

“Accrued Index Departure” means the sum of all Annual Index Departures as defined in more detail in Appendix 1. This may result in an accrued Negative Departure or an accrued Positive Departure.

“Annual Allocated Water” is the quantity of Project Supply that is allocated each water year for delivery to the irrigation districts in New Mexico and Texas, and to the United States for delivery to Mexico (pursuant to the Convention of 1906). The Annual Allocated Water allocated to water users within the United States represents the equitable apportionment of Rio Grande water to Texas and New Mexico below Elephant Butte Reservoir consistent with this Decree.

“Annual Index Departure” means the difference between the Index Delivery and the Index Obligation in any calendar year as described in

Appendix 1. This may result in an annual Negative Departure (under-delivery) or an annual Positive Departure (over-delivery).

“Bureau of Reclamation” or **“Reclamation”** means the Bureau of Reclamation within the United States Department of the Interior.

“Caballo Release” means the official flow record as measured at the Rio Grande Below Caballo Dam stream gage (USGS 08362500) used in calculating the Index Obligation.

“Compact” means the Rio Grande Compact, approved by Congress in the Act of May 31, 1939, ch. 155, 53 Stat. 785.

“Convention of 1906” means the Convention Between the United States and Mexico Providing for the Equitable Distribution of the Waters of the Rio Grande for Irrigation Purposes, May 21, 1906, U.S.-Mex., 34 Stat. 2954

“D2 Period” means the period January 1, 1951, through December 31, 1978.

“Depletion of Project Supply” means the annual volumetric reduction of Project Supply in New Mexico and Texas, in acre-feet, resulting directly or indirectly from surface water use and groundwater use.

“Effective El Paso Index” or **“EEPI”** means the index-based methodology for assessing compliance with this Decree described in Appendix 1.

“El Paso Gage” means the Rio Grande at El Paso, Texas stream gage (USGS 08364000).

“Excess Flow” means Rio Grande streamflow at the El Paso Gage, excluding the delivery to Mexico, that is excluded from the Index Delivery as defined in Appendix 1.

“Index Accounting” means the determination of the annual Index Obligation, annual Index Delivery, and annual and accrued Index Departures as described in Appendix 1.

“Index Delivery” means the sum of:

- (i) the annual streamflow at the El Paso Gage, after subtracting delivery to Mexico and Excess Flow; and
- (ii) the estimated Depletion of Project Supply caused by groundwater and surface water use in the Texas Mesilla, as determined by the methodology in Appendix 1.

“Index Departure” or **“Departure”** means the difference between the Index Delivery and the Index Obligation; when the Index Delivery is greater than the Index Obligation it is a “Positive Departure,” when the Index Delivery is less than the Index Obligation it is a “Negative Departure.”

“Index Obligation” means the volume of water calculated to be delivered to Texas as quantified using the EEPI, and subject to Index Departures and other provisions in this Decree.

“Mesilla Basin” means the part of the Rio Grande Basin that contains the Mesilla Valley. The Mesilla Basin is located in both New Mexico and Texas, as depicted in Appendix 2.

“Modified D2 Equation” means the multiple regression equation derived from annual flow and diversion data from the D2 Period. The Modified D2 Equation is a calculation of net diversions for one year (net diversions include both diversions to Project canals and deliveries to Mexico at the Acequia Madre), as a function of the Caballo Release of the same year, and the Caballo Release of the previous year.

“New Mexico Escrow Account” means the account that tracks the volume of Project allocation transferred to the irrigation district in New Mexico by the Bureau of Reclamation under the procedures for addressing Positive Departures described in Section II.D.

“Project Accounting” for the purposes of this Decree means the calculation by the Bureau of Reclamation of credits and charges relative to the allocation of Project Supply.

“Project Carryover Water” means the Annual Allocated Water allotment balance remaining at the end of a given calendar year.

“Project Supply” means the water supply for the Rio Grande Project as defined and administered by applicable State law. Project Supply generally consists of:

- (i) Usable Water, as defined in Article I(*l*) of the Compact, which excludes Rio Grande credit water and imported waters such as San Juan Chama Project water;
- (ii) Usable Water released from Caballo Reservoir in accordance with irrigation demands, including deliveries to Mexico; and
- (iii) Inflows and Project return flows that reach the bed of the Rio Grande or Project conveyances, but excluding flows from imported water.

“Rincon Basin” means the part of the Rio Grande Basin that contains the Rincon Valley in New Mexico, as depicted in Appendix 2.

“Rio Grande Project” or **“Project”** means the federal reclamation project, authorized in the Reclamation Act of June 17, 1902, 32 Stat. 390 and the Rio Grande Project Act of February 25, 1905, 33 Stat. 814, operated by the United States through the Bureau of Reclamation and irrigation districts located in New Mexico and Texas.

“Texas Mesilla” means the land in the State of Texas that overlies the Mesilla Basin, as depicted in Appendix 2.

“Texas Escrow Account” means the account that tracks the volume of Project allocation transferred to the irrigation district in Texas by the Bureau of Reclamation under the procedures for addressing Negative Departures described in Section II.D.

II. INJUNCTION

A. General Provisions:

1. The Rio Grande Compact effects an equitable apportionment of the waters of the Rio Grande above Fort Quitman, Texas among the States of Colorado, New Mexico, and Texas. The Compacting States must comply with the Compact.
2. Pursuant to Article IV of the Compact and the unanimous Resolution of the Rio Grande Compact Commission adopted February 14-16, 1948, New Mexico is obligated to deliver Rio Grande water as measured at Elephant Butte Reservoir in amounts that are based on flows measured at the stream gaging station located at Otowi Bridge near San Ildefonso.
3. Elephant Butte Reservoir is the major storage reservoir for the Rio Grande Project. The Compact is inextricably intertwined with the Rio Grande Project because the Rio Grande Project is the mechanism by which Rio

Grande water apportioned to Texas and New Mexico for use below Elephant Butte Reservoir is delivered.

4. The United States is responsible for operating the Project in a way that assures that the Compact's equitable apportionment to Texas and New Mexico below Elephant Butte Reservoir is achieved consistent with the terms of this Decree.
5. The division of Rio Grande water between New Mexico and Texas below Elephant Butte Reservoir is based upon the percentage of the total authorized irrigable acreage of the Rio Grande Project situated in each State at the time of the Compact, approximately 57% in New Mexico and 43% in Texas.
6. This Decree specifies procedures to ensure the proper apportionment of Rio Grande water between Texas and New Mexico below Elephant Butte Reservoir.
7. Compliance with this Decree represents compliance with the Compact with respect to the division of Rio Grande water below Elephant Butte Reservoir.

B. Division of Water Below Elephant Butte Reservoir:

- (i) The procedures for calculating the water to be delivered to Texas at the El Paso Gage are contained in the Effective El Paso Index documented in Appendix 1.

- (ii) The Effective El Paso Index:
- a. The State of New Mexico shall manage and administer water in a manner that is consistent with this Decree, including satisfying the Effective El Paso Index requirements.
 - b. The Index is the calculation of Rio Grande water that Texas is entitled to receive. New Mexico is entitled to use the balance of the Rio Grande water released from Caballo Dam so long as its use complies with the other provisions of this Decree.
 - c. The Index was developed to ensure Texas and New Mexico receive the amounts of water each is entitled to under the Compact below Elephant Butte Reservoir based upon Project operations during the D2 Period.
 - d. The methodology for calculating and determining the Index Delivery and Index Obligation is documented in Appendix 1.
 - e. The Index Obligation is calculated annually and is based on a regression analysis of Caballo Releases and volumes of water reaching the El Paso Gage during the D2 Period plus the historical D2 Period average agricultural and domestic, commercial, municipal, and industrial (“DCMI”) depletions to the Rio Grande caused by surface and ground water use in the Texas Mesilla, upstream of the El Paso Gage, subtracting out deliveries to Mexico. The Index Obligation is described in detail in Appendix 1.

- f. The Index Delivery should equal the Index Obligation. However, Project operations, hydrologic conditions, the distance between the release of Project water below Caballo Dam and the El Paso Gage and other factors may affect the Index Delivery. As a consequence, this Decree provides for departures from the Index Obligation, “triggers” for water management responses, and provisions for ensuring that Project operations effectuate the equitable apportionment of water between the Compacting States.
- g. The United States operates and maintains the Rio Grande Below Caballo Dam and El Paso gages used for providing the official daily flow record for use in calculating the Index Delivery. The gages will continually meet the Rules and Regulations for Rio Grande Compact Administration regarding Gaging Stations. Colorado shall not be responsible for the costs of the gages and measurements needed for Index Accounting.

(iii) Index Departures:

- a. As set forth in this Decree, an annual Negative Departure:
 - (i) will be used to reduce an accrued Positive Departure at the beginning of the year by the amount of the annual Negative Departure; or
 - (ii) will be added to the accrued Negative Departures at the beginning of the year.

- b. As set forth in this Decree, an annual Positive Departure:
 - (i) will be used to reduce an accrued Negative Departure at the beginning of the year by the amount of the annual Positive Departure; or
 - (ii) will be added to the accrued Positive Departures at the beginning of the year.

C. **Index Departure Limits:**

- 1. New Mexico is in compliance with this Decree if New Mexico is within the accrued Negative Departure Limits. Exceedance of accrued Negative Departure Limits means New Mexico is in violation of this Decree.
- 2. Cap on annual Positive Departure. The maximum annual Positive Departure is 67,500 acre-feet; an annual Positive Departure in excess of 67,500 acre-feet shall be treated as the equivalent of 67,500 acre-feet for the purposes of calculating Accrued Index Departures.
- 3. Negative Departures:
 - a. Limits:
 - (i) For the first full five (5) calendar years following entry of this Decree, New Mexico may accrue Negative Departures up to, but not in excess of 150,000 acre-feet.
 - (ii) For the first full five (5) calendar years following entry of this Decree, in calculating the Accrued Index Departures, annual Negative Departures in excess of 112,500 acre-feet shall be treated as the equivalent of 112,500 acre-feet.

- (iii) Beginning the sixth full calendar year after entry of this Decree, and thereafter, New Mexico may accrue Negative Departures up to, but not in excess of 120,000 acre-feet.
 - (iv) Beginning the sixth full calendar year after entry of this Decree, and thereafter, in calculating the Accrued Index Departures, annual Negative Departures in excess of 90,000 acre-feet shall be treated as the equivalent of 90,000 acre-feet.
- b. Additional Index adjustments for exceedances of the Negative Departure limit:
 - (i) In addition to the other provisions of this Decree, if New Mexico exceeds the accrued Negative Departure limit of 150,000/120,000 acre-feet in three consecutive years, New Mexico shall provide 12,000 acre-feet of water in excess of its Index Obligation for each year that it exceeds the accrued Negative Departure limit. New Mexico shall have three years to provide the full 36,000 acre-feet. With the agreement of Texas, New Mexico shall have the option to transfer part of the water apportioned to New Mexico from the irrigation district in New Mexico to the irrigation district in Texas in order to satisfy this obligation.
 - (ii) If New Mexico exceeds the accrued Negative Departure limit of 150,000/120,000 acre-feet in four or more

consecutive years, New Mexico shall provide 15,000 acre-feet of water in excess of its Index Obligation for each additional year over the three years addressed in the above paragraph that it exceeds the accrued Negative Departures limit. The 15,000 acre-feet in excess of Index Obligation amounts shall be provided during the year immediately following the violation of the accrued Negative Departure limit. With the agreement of Texas, New Mexico shall have the option to transfer part of the water apportioned to New Mexico from the irrigation district in New Mexico to the irrigation district in Texas in order to satisfy this obligation.

- c. In any year in which the three-year rolling average of the end of year Project Carryover Water for the irrigation district in Texas is greater than 180,000 acre-feet, all accrued Negative Departures shall be extinguished.

D. Triggers for Water Management Actions:

- 1. To avoid excessive Accrued Index Departures and to ensure that the equitable apportionment is achieved, certain volumes of accrued Negative and Positive Departures (“Triggers”) require the following water management actions, adjustments in Project operations, or adjustments in Project Accounting.

2. Negative Departure Trigger. If accrued Negative Departures are greater than 80,000 acre-feet at the end of any calendar year, the following provisions shall apply:
 - a. New Mexico shall take water management actions to reduce the accrued Negative Departures to less than 16,000 acre-feet within three calendar years (years 1-3) following the exceedance of the Negative Departure Trigger. New Mexico shall have discretion to determine what water management actions are necessary and appropriate. With the agreement of Texas, New Mexico shall have the option to transfer part of the water apportioned to New Mexico from the irrigation district in New Mexico to the irrigation district in Texas during years 1-3 to reduce the accrued Negative Departures to less than 16,000 acre-feet.
 - b. If the accrued Negative Departures have not been reduced to 16,000 acre-feet within three calendar years of the exceedance of the Negative Departure Trigger, then part of the water apportioned to New Mexico shall be transferred to Texas to reduce the accrued Negative Departures to less than 16,000 acre-feet by the end of three additional calendar years (years 4-6).
 - c. An adjustment in Project allocations that transfers water from one district to the other shall reduce the accrued Negative Departures by the same amount of the allocation transfer. Project allocation

adjustments shall be accounted for in the Texas Escrow Account beginning in the year the first allocation transfer is made.

- (i) During years 4-6 following the year the Negative Departure Trigger is reached, Reclamation will implement Allocation Transfers by transferring water from the current-year diversion allocation for the New Mexico district to the current-year diversion allocation for the Texas district, and then, simultaneously with the transfer, the accrued Negative Departures shall be reduced by an amount equal to the transfer.
 - (ii) At the same time, the Texas Escrow Account shall be increased by the same amount as the Allocation Transfer.
 - (iii) In determining the Annual Index Departure for years 4-9, any positive Annual Index Departure will be reduced by the lesser of that year's annual Positive Departure or the balance of the Texas Escrow Account, and the Texas Escrow Account shall be reduced by the same amount.
 - (iv) Water in the Texas Escrow Account must be used within three years of the last year of allocation transfer; volumes not used within that time shall be set to zero.
3. Positive Departure Trigger. If accrued Positive Departures are greater than 30,000 acre-feet for two consecutive calendar years, the following provisions shall apply:

- a. Part of the water apportioned to Texas shall be transferred to New Mexico to reduce the accrued Positive Departures to less than 16,000 acre-feet by the end of three calendar years following the exceedance of the Positive Departure Trigger.
- b. An adjustment in Project allocations that transfers water from one district to the other shall reduce the accrued Positive Departures by the same amount of the allocation transfer. Project allocation adjustments shall be accounted for in a New Mexico Escrow Account beginning in the year the first allocation transfer is made.
 - (i) During years 1-3 following the year when the accrued Positive Departure Trigger is reached, Reclamation will implement Allocation Transfers by transferring water from the current-year diversion for the Texas irrigation district allocation to the New Mexico irrigation district's current-year diversion allocation, and then, simultaneously with the transfer, the positive Accrued Index Departure shall be reduced by an amount equal to the transfer.
 - (ii) At the same time, the New Mexico Escrow Account shall be increased by the same amount as the Allocation Transfer.
 - (iii) In determining the Annual Index Departure for years 4-6, any negative Annual Index Departure will be reduced by the lesser of that year's annual amount of Negative

Departure or the balance of the New Mexico Escrow Account, and the New Mexico Escrow Account shall be reduced by the same amount.

- (iv) Water in the New Mexico Escrow Account must be used within three years of the last year of Allocation Transfer; volumes not used within that time shall be set to zero.

E. Additional Index Provisions:

1. Scope of the Index Obligation. In addition to the above specific terms and conditions related to the Index:
 - a. The EEPI shall not apply in those years in which annual Caballo Releases are less than 200,000 acre-feet. In those years, releases for irrigation demands shall be without reference to the Index and the Annual Index Departure shall be set at zero acre-feet.
 - b. When annual Caballo Releases are 790,000 acre-feet or greater, the Index Obligation shall be calculated using a 790,000 acre-foot release for the year.
2. If there is an Accrued Index Departure at the end of the fifth year following entry of this Decree, or if a Trigger is reached pursuant to Paragraph II.D.2 in the first five years, then the Accrued Index Departures (either Positive or Negative) shall be reduced by the amount of the Index Departure up to, but not to exceed, 20,000 acre-feet or until the Index Accounting reflects zero Index Departures.

3. Aridity adjustment. The Index will be adjusted annually for estimated change, since the D2 period, in open water evaporation and riparian evapotranspiration between the Rio Grande Below Caballo gage and the El Paso gage. *See, Appendix 1.*
4. In any year in which an actual or hypothetical spill occurs, as determined by the Rio Grande Compact Commission, all accrued Index Departures, both Positive and Negative Departures, shall be extinguished.

F. Index Projections and Index Accounting:

1. The Compacting States shall cooperate in providing necessary data to support calculation of the Index Obligation Projection and the Index Accounting as described in the attached Appendix 1.
 - a. Index Obligation Projection. The Index Obligation shall be estimated before Caballo Releases begin. A list and sources of necessary data to calculate the estimated Index Obligation for purposes of this Index projection is included in Section 7 of Appendix 1.
2. Index Accounting:
 - a. The data required for calculating the initial Index Accounting for the prior year shall be reported to the Engineer Advisors for the Compacting States following the Compact accounting schedules in the “Schedule for Review and Approval of Rio Grande Compact Accounting Records for the Previous Year.”

- b. The initial Index Accounting for the prior year shall be annually prepared using the methodologies contained in Appendix 1 and provided in the “Schedule for Review and Approval of Rio Grande Compact Accounting Records for the Previous Year”.
- c. The Engineer Advisors shall review the initial Index Accounting, and include the final Index Accounting for the prior year in their annual report to the Rio Grande Compact Commission.
- d. The Rio Grande Compact Commission shall review the Engineer Advisors’ report and act as provided for in Article XII of the Compact.

III. PROJECT OPERATIONS TO ENABLE COMPACT COMPLIANCE

- A.** Project operations and Project Accounting must be consistent with this Decree. Project operations and Project Accounting, including Project Carryover Water, must be undertaken in a manner that does not interfere with New Mexico’s or Texas’s rights and entitlements defined in the Compact and this Decree, including by causing Negative Departures or causing a Trigger to be exceeded. Examples of procedures to maintain consistency between Project operations, Project Accounting, and this Decree are included in Section 8 of Appendix 1. Except as required to facilitate compliance with the Compact, this Decree does not otherwise alter the discretion of the United States to operate the Project.
- B.** Project operations and Project Accounting must not interfere with Compact administration.

IV. CONSTRUCTION OF THE DECREE

- A.** Nothing in this Decree as a whole, nor any part hereof, modifies or otherwise requires modification of the Compact. This Decree clarifies but does not alter the Compact rights and obligations of the signatory States and the United States.
- B.** Nothing in this Decree 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.
- C.** The following appendices are attached:

“Appendix 1” is the Index Appendix

“Appendix 2” is a map showing the Mesilla basin, the Rincon basin, and the Texas Mesilla area

To the extent any conflict exists between the language of this Decree and the appendices or any ambiguity is created by the language of the appendices, the language in this Decree controls. The Compact and Decree govern the legal rights and obligations of the Compacting States. The technical appendices provide procedures and methodologies for ensuring proper implementation of this Decree.

- D.** This Decree creates no third-party beneficiaries, express or implied.

V. MODIFICATION OF APPENDICES TO THE DECREE

Appendices may be modified only by unanimous agreement of the Compacting States or subsequent order of this Court.

VI. RETENTION OF JURISDICTION

Any of the Compacting States may file a motion with the Court for amendment of the Decree or for further relief. The Court retains jurisdiction of this suit for the purpose

of any order, direction, or modification of the Decree, or any supplementary decree, that may at any time be deemed proper in relation to this Decree or an action by the Compacting States for the enforcement of the Decree.

APPROVED AS TO FORM:

//s// Stuart L. Somach
STUART L. SOMACH
*Counsel for the
State of Texas*

Dated: November 14, 2022

//s// Jeffrey J. Weschler
JEFFREY J. WESCHLER
*Counsel for the
State of New Mexico*

Dated: November 14, 2022

//s// Chad M. Wallace
CHAD M. WALLACE
*Counsel for the
State of Colorado*

Dated: November 14, 2022

THE SPECIAL MASTER HEREBY RECOMMENDS THE ABOVE DECREE:

Dated: _____

HON. MICHAEL J. MELLOY
UNITED STATES CIRCUIT JUDGE

Appendix 1

Effective El Paso Index

Consent Decree Supporting the Rio Grande Compact

Section 1: Introduction

The Effective El Paso Index (EEPI) is an index-based methodology used to assess compliance with the Consent Decree Supporting the Rio Grande Compact (Consent Decree or Decree). The EEPI was developed for the purpose of quantifying and assessing the division of Rio Grande water below Elephant Butte Reservoir. This document provides a summary of the EEPI methodology and describes the procedures for calculating the elements included within the EEPI. Defined terms used in this Appendix have the same meaning as in the Consent Decree. To the extent this Appendix presents any inconsistencies with the Consent Decree, the Consent Decree controls.

The EEPI includes provisions for calculating the annual calendar year volume of water obligated to Texas (Index Obligation), the annual volume of water actually delivered to Texas (Index Delivery), and the difference between the delivery and obligation, both on an annual and accrued basis (index Departure).

The EEPI methodology consists of six elements:

- **Index Obligation** described in Section 2.
- **Index Delivery** described in Section 3.
- **Annual Index Departure** described in Section 4.
- **Accrued Index Departure** described in Section 5.
- **Data for EEPI Calculations** described in Section 6.
- **Review and Revision** described in Section 7.

The Effective El Paso Index represents the Texas apportionment of the Rio Grande below Caballo Dam. It is comprised of the Rio Grande flows delivered at the El Paso Gage for use in Texas plus the depletions to the Rio Grande resulting from agricultural and DCMI¹ water uses in the Texas portion of the Mesilla basin upstream of the El Paso Gage, and adjusted for Excess Flows as follows:

¹ DCMI means Domestic, Commercial, Municipal, and Industrial.

$$\begin{aligned}
\text{Effective El Paso Index Supply} &= + \text{Streamflow in the Rio Grande at El Paso}^2 \\
&+ \text{Texas Mesilla}^3 \text{ Agricultural Depletions} \\
&+ \text{Texas Mesilla DCMI Depletions} \\
&- \text{Delivery to Mexico at the Acequia Madre}^4 \\
&- \text{Excess Flow}
\end{aligned}$$

Section 2. Index Obligation

2.1 Definition of the Index Obligation

The **Index Obligation** is the annual target volume of water calculated for delivery to Texas, subject to adjustment for changes in open water evaporation and riparian evapotranspiration and other provisions.

The calculation of the **Index Obligation** is based on a regression analysis relating annual **Caballo Releases**⁵ to the annual **Index Supply** during the 1951-1978 period (**D2 Period**)

2.2 Annual Index Obligation

The following equation (*Equation 1*) will be used each year to compute the **Index Obligation**:

Equation 1

$$\begin{aligned}
\text{Index Obligation [y]} &= 0.485886 \cdot \text{Minimum}(Q_{\text{Caballo}}[\text{y}]; 790,000) \\
&+ 0.113382 \cdot \text{Minimum}(Q_{\text{Caballo}}[\text{y}-1]; 790,000) \\
&- 90,149 \\
&+ 26,860 \text{ AF (Average Texas Mesilla Agricultural Depletions)} \\
&+ 12,224 \text{ AF (Average Texas Mesilla DCMI Depletions)}
\end{aligned}$$

Where,

- Q_{Caballo} is the annual **Caballo Release** for a given year in acre-feet.
- $[\text{y}]$ indicates the year (e.g., $Q_{\text{Caballo}}[1970]$ refers to the annual Caballo release for 1970).

The annual calculation of the **Index Obligation** is subject to the following conditions:

- 1) No **Index Obligation** will be determined in extreme dry years, or when Q_{Caballo} is less than 200,000 acre-feet.

² **El Paso Gage** means the Rio Grande at El Paso, Texas stream gage (USGS 08364000).

³ **Texas Mesilla** means the land in the State of Texas that overlies the Mesilla Basin.

⁴ **Acequia Madre** is the canal through which deliveries of Rio Grande water are made to Mexico under the provisions of the Convention of 1906 between the United States and Mexico.

⁵ **Caballo Release** means the official flow record as measured at the Rio Grande Below Caballo Dam stream gage (USGS 08362500) used in calculating the **Index Obligation**.

- 2) In extreme wet years, or when $Q_{Caballo}$ is greater than 790,000 acre-feet per year, the **Index Obligation** will be determined using *Equation 1*, but the value for $Q_{Caballo}$ will be capped at 790,000 acre-feet.

Data for $Q_{Caballo}$ will be obtained from the Rio Grande Below Caballo Dam stream gage, which is operated and maintained by the United State Bureau of Reclamation (“Reclamation”).

Furthermore, the **Index Obligation** will be adjusted to account for any estimated change, since the D2 Period, in open water evaporation and riparian evapotranspiration between the Rio Grande Below Caballo Dam stream gage and the El Paso Gage using the following equation (*Equation 2*):

Equation 2

$$A[y] = 47,137 \cdot (1.0 - (ET_o[y] / ET_o[D2])) \cdot (67/155)$$

Where,

- $A[y]$ is the calculated adjustment to the **Index Obligation** for a given year in acre-feet.
- $ET_o[y]$ is the five-year running average of annual reference evapotranspiration (ET_o) for the five-year period ending in year y in inches per year, computed using the TR-21 modified Blaney-Criddle method and climate data from the Leyendecker II PSRC weather station, located at the New Mexico State University Leyendecker Plant Science Research Center. If climate data from Leyendecker II PSRC weather station is unavailable, the best available data should be used.
- $ET_o[D2]$ is the average annual reference evapotranspiration (ET_o) over the **D2 Period** in inches per year, computed using the TR-21 modified Blaney-Criddle method, equal to 53.0 inches per year.
- $[y]$ indicates the year (e.g., $ET_o [1970]$ refers to annual reference evapotranspiration in 1970).

The calculated annual open water evaporation and riparian evapotranspiration adjustment value ($A[y]$), whether negative or positive, will be added to the **Index Obligation**.

Section 3: Annual Index Delivery

3.1 Definition and Calculation of the Index Delivery

The **Index Delivery** is the sum of:

- The annual streamflow at the **El Paso Gage**, after subtracting delivery to Mexico and **Excess Flow**; and
- The estimated depletion of Project Supply⁶ caused by groundwater and surface water use in the **Texas Mesilla**.

The following equation (*Equation 3*) will be used each year to compute the **Index Delivery**:

Equation 3

$$\begin{aligned} \text{Index Delivery [y]} &= \text{Streamflow at the El Paso Gage [y]} \\ &+ \text{Texas Mesilla Agricultural Depletions [y]} \\ &+ \text{Texas Mesilla DCMI Depletions [y]} \\ &- \text{Delivery to Mexico at the Acequia Madre [y]} \\ &- \text{Excess Flow [y]} \end{aligned}$$

Where,

- **Streamflow at the El Paso Gage** as defined in Section 3.2.
- **Texas Mesilla Agricultural Depletions** as defined in Section 3.3.
- **Texas Mesilla DCMI Depletions** as defined in Section 3.4.
- **Delivery to Mexico at the Acequia Madre** as defined in Section 3.5.
- **Excess Flow** as defined in Section 3.6.

3.2 Streamflow at the El Paso Gage

The annual **Streamflow at the El Paso Gage** component of *Equation 3* will be based on the official daily flow record for the **El Paso Gage**.

The **El Paso Gage** is operated and maintained by the U.S. Section of the International Boundary and Water Commission (“US-IBWC”) and the official record of daily flows is maintained by US-IBWC.

3.3 Texas Mesilla Agricultural Depletions

The **Texas Mesilla Agricultural Depletions** component of the **Index Delivery** represents the annual volume of Rio Grande water depleted (consumed) by irrigation use of groundwater and surface water in the **Texas Mesilla**.

⁶ “Project Supply” means the water supply for the Rio Grande Project.

The following equation (*Equation 4*) will be used to compute **Texas Mesilla Agricultural Depletions**:

Equation 4

$$\textit{Texas Mesilla Agricultural Depletions [y]} = \textit{Acres [y]} \cdot \textit{CIR[y]}$$

Where,

- **Acres** is the total irrigated area in the **Texas Mesilla** in a given year, including acreage irrigated for crop production as well as non-crop irrigated acreage (e.g., lawns, parks, golf courses, etc.), in units of acres.
- **CIR** is the average consumptive use of irrigation water per acre (“CIR”) for the Texas Mesilla, equal to 2.8 acre-feet per acre per year.
- **[y]** indicates the year (e.g., **Acres[1970]** refers to the total irrigated acreage in the **Texas Mesilla** for 1970).

The annual irrigated acreage in the **Texas Mesilla** will be determined based on the sum of the acreage inside and outside of the El Paso County Water Improvement District No. 1 (EPCWID) boundary as follows:

- Annual crop irrigated acreage within EPCWID is monitored and periodically evaluated by analysis of satellite imagery by EPCWID.
- Annual irrigated acreage outside of EPCWID, including lawns, parks, and golf courses, is not routinely monitored but will be estimated based on analysis of satellite imagery.
- Texas will provide the annual irrigated acreage in the **Texas Mesilla** for use in calculating the **Index Delivery**, including documentation of the data and methods used to determine irrigated acreages within and outside of EPCWID.

3.4 **Texas Mesilla DDMI Depletions**

The **Texas Mesilla DDMI Depletions** component of the **Index Delivery** represents depletions to the Rio Grande above the **El Paso Gage** caused by groundwater pumping in the **Texas Mesilla** for DDMI uses. There are no surface water diversions for DDMI use in the **Texas Mesilla**.

Texas Mesilla DDMI Depletions include:

- Depletions caused by groundwater pumping from the City of El Paso’s Canutillo Well Field (**TX Mesilla DDMI CWF**).
- Depletions caused by groundwater pumping from all other DDMI wells in the **Texas Mesilla**, including municipalities, self-supplied domestics, mutual domestics, schools, commercial businesses, industrial facilities, and any other non-agricultural uses (**TX Mesilla DDMI Other**).

The sum of the following two equations (*Equation 5 and Equation 6*) will be used to compute total **Texas Mesilla DCMI Depletions**⁷, as presented in *Equation 7*:

Equation 5

$$TX\ Mesilla\ DCMI\ CWF\ [y] = (P_{CWF}[y] \cdot f_d)^8$$

Where,

- $P_{CWF} [y]$ is the total (gross) volume of water pumped from all wells in the Canutillo Well Field during a given year.
- f_d is a depletion factor that represents the fraction of total (gross) pumping that depletes the Rio Grande and Project conveyances, equal to 0.95.
- $[y]$ indicates the year (e.g., $P_{CWF}[1970]$ refers to the volume of groundwater pumped in 1970).

Equation 6

$$TX\ Mesilla\ DCMI\ Other\ [y] = (P_{Other}[y] \cdot f_d) - (P_{Other}[y] \cdot f_r)$$

Where,

- $P_{Other} [y]$ is the total (gross) volume of water pumped from all DCMI wells in the **Texas Mesilla** excluding wells in the Canutillo Well Field in a given year.
- f_d is a depletion factor that represents the fraction of total (gross) pumping that depletes the Rio Grande and Project conveyances, equal to 0.95.
- f_r is a return flow factor that represents the fraction of total (gross) pumping for by DCMI wells in the **Texas Mesilla**, excluding wells in the Canutillo Well Field, which returns to the Rio Grande above the **El Paso Gage** in the **Texas Mesilla**, equal to 0.33.
- $[y]$ indicates the year (e.g., $P_{Other}[1970]$ refers to the volume of groundwater pumping in 1970).

Equation 7

$$Texas\ Mesilla\ DCMI\ Depletions\ [y] = TX\ Mesilla\ DCMI\ CWF\ [y] + TX\ Mesilla\ DCMI\ Other\ [y]$$

⁷ Canutillo return flows associated with El Paso’s wastewater treatment plants are not included in this calculation, as the wastewater discharge returns to the Rio Grande below the **El Paso Gage**.

Data required to calculate the ***Texas Mesilla DCMI Depletions*** will be obtained as follows:

- Pumping from the Canutillo Well Field metered by El Paso Water (the municipal water utility for the City of El Paso).
- Pumping from other DCMI wells in the ***Texas Mesilla*** (*i.e.*, DCMI wells outside of Canutillo Well Field) is either not metered or, if metered, records are generally not readily available. Pumping from these wells is currently estimated at 2,611 acre-feet per year based on an average of 2007-2016 records and estimates.
- Texas will provide the pumping records for the Canutillo Well Field for use in calculating the Index Delivery.

3.5 Delivery to Mexico at the Acequia Madre

The ***Delivery to Mexico at the Acequia Madre*** component of the ***Index Delivery*** represents the annual volume of Rio Grande water delivered by the United States to Mexico pursuant to the Convention of 1906⁹. Deliveries to Mexico are included within the flows measured at the ***El Paso Gage*** and are therefore subtracted from the ***Index Delivery*** calculation in *Equation 3*.

The ***Delivery to Mexico at the Acequia Madre*** will be based on the official daily flow record of deliveries to Mexico as determined by US-IBWC.

3.6 Excess Flow

The ***Excess Flow*** component of the ***Index Delivery*** represents a portion of the annual volume of streamflow at the ***El Paso Gage***, which like the ***Delivery to Mexico at the Acequia Madre***, is subtracted from the ***Index Delivery*** calculation in *Equation 3*. It represents water that cannot be put to beneficial use in Texas. Compact spills, whether actual or hypothetical, are determined by the Rio Grande Compact Commission and are not controlled by the determination of Excess Flow.

Excess Flow is determined based on three criteria:

- ***Operational Capacity Criteria*** as further described in Section 3.6.1
- ***Excess Release Criteria*** as further described in Section 3.6.2
- ***Extraordinary Circumstances Criteria*** as further described in Section 3.6.3

⁹ The “Convention of 1906” means the Convention Between the United States and Mexico Providing for the Equitable Distribution of the Waters of the Rio Grande for Irrigation Purposes, May 21, 1906, U.S.-Mex., 34 Stat. 2954.

Any Rio Grande water that is put to beneficial use in Texas upstream of Ft. Quitman, Texas, is not considered **Excess Flow**.

Compact spills, whether actual or hypothetical, are determined by the Rio Grande Compact Commission and are not controlled by the determination of Excess Flow.

3.6.1 Operational Capacity Criteria

The **Operational Capacity Criteria** for **Excess Flow** quantifies streamflow at the **El Paso Gage**, excluding **Delivery to Mexico at the Acequia Madre**, that cannot be diverted and used in Texas due to the operational capacity of the American Canal and EPCWID distribution system in El Paso Valley, which is currently approximately 1,000 cubic feet per second (cfs).

The annual volume of **Excess Flow** based on this criterion is computed using *Equation 8* and *Equation 9*.

Equation 8

$$\begin{aligned} \text{IF: } & Q_{RGEP}[d] - Q_{MX}[d] > 1,000 \text{ cfs} \\ & Q_{Excess}[d] = (Q_{RGEP}[d] - Q_{MX}[d]) - 1,000 \\ \text{ELSE:} & \\ & Q_{Excess}[d] = 0.0 \end{aligned}$$

Equation 9

$$\text{Excess Flow [y]} = \text{SUM}[Q_{Excess}[d] \cdot (60 \cdot 60 \cdot 24 / 43560)]$$

Where,

- $Q_{RGEP}[d]$ is the daily average flow rate of streamflow at the **El Paso Gage** in cubic feet per second on a given day $[d]$.
- $Q_{MX}[d]$ is the daily average flow rate of water delivered to Mexico at the Acequia Madre in cubic feet per second on a given day $[d]$.
- $Q_{Excess}[d]$ is the excess flow in cubic feet per second on a given day $[d]$.
- **Excess Flow [y]** is the annual volume in of excess flow in acre-feet for a given year $[y]$.

3.6.1 Excess Release Criteria

The **Excess Release Criteria** for **Excess Flow** quantifies streamflow at the **El Paso Gage**, excluding **Delivery to Mexico at the Acequia Madre**, that is the result of an excess release from Caballo Dam and which is not put to beneficial use in Texas. These criteria may apply to flows that are less than the **Operational Capacity Criteria** of 1,000 cfs. Excess releases from Caballo Dam consist of water released for flood control purposes, as necessary to accommodate operations and maintenance activities, or for purposes other than to meet water orders by the Elephant Butte Irrigation District (“EBID”), EPCWID, and Mexico.

In the event of an excess release from Caballo Dam, available data and information will be used to determine the timing, duration, and volume of **Excess Flow** resulting from any excess release. Available data and information may include but are not limited to: discussion with staff from Reclamation, EBID, EPCWID, and IBWC; incident reports; emergency declarations; Project water orders; and metered or estimated flows in the IBWC, EPCWID, or Hudspeth County Conservation & Reclamation District distribution systems. Available data and information may differ between occurrences of excess releases.

In the case that these criteria result in an adjustment to the **Index Delivery** in a given year, the **Caballo Release** from that year must be adjusted accordingly.

3.6.2 Extraordinary Circumstances Criteria

The **Extraordinary Circumstances Criteria** for **Excess Flow** will be determined in consultation with the Engineer Advisers of Colorado, New Mexico and Texas. Extraordinary circumstances may occur, for example, if Rio Grande water quality above American Dam were hazardous. Available data, information, and methods will be used to determine the occurrence of extraordinary circumstances and to quantify the timing, duration, and quantity of **Excess Flow** resulting from such circumstances. Available data and information may differ between occurrences of extraordinary circumstances.

Section 4: Annual Index Departure

Annual Index Departure is the difference between the **Index Delivery** and the **Index Obligation** in any calendar year. This may result in an annual Negative Departure (under-delivery) or an annual Positive Departure (over-delivery).

The **Annual Index Departure** is calculated annually by subtracting the **Index Obligation** from the **Index Delivery**.

Section 5: Accrued Index Departure

Accrued Index Departure is calculated as a running sum of the **Annual Index Departures** subject to the other provisions of this section. The **Accrued Index Departure** may be negative (representing accrued net under-deliveries by New Mexico through time) or positive (representing accrued net over-deliveries by New Mexico through time).

The current-year **Accrued Index Departure** is calculated on an annual basis as the sum of the prior-year's **Accrued Index Departure** and the **Annual Index Departure** calculated for the prior year, subject to the following provisions described in Section 5.1 through Section 5.5.

5.1 Cap on Negative Annual Index Departures

In computing the **Accrued Index Departure**, any negative **Annual Index Departure** (under-delivery) greater than 112,500 acre-feet during any of the first five years in which the EEPI methodology is implemented will be taken as equal to 112,500 acre-feet. Any negative **Annual Index Departure** greater than 90,000 acre-feet in any year thereafter will be taken as equal to 90,000 acre-feet.

5.2 Cap on Positive Annual Index Departures

In computing the **Accrued Index Departure**, any positive **Annual Index Departure** (over-delivery) greater than 67,500 acre-feet will be taken as equal to 67,500 acre-feet.

5.3 Suspension of Annual Index Departures

In any year in which the **Caballo Release** is less than 200,000 acre-feet, no **Index Obligation** or **Annual Index Departure** will be computed. In computing the **Accrued Index Departure**, the **Annual Index Departure** for such years will be taken as zero acre-feet.

In any year in which the RGCC determines that there is an actual or hypothetical spill of Usable Water, the **Accrued Index Departure** at the beginning of that year, whether positive (accrued over-delivery) or negative (accrued under-delivery) will be cancelled and set to zero and no **Annual Index Departure** will be computed for that year. Therefore, the **Accrued Index Departure** at the end of the year in which the spill occurs will be equal zero.

5.4 Cancellation of Accrued Negative Departures by EPCWID Carryover

The Texas District's **End-of-Season Allocation Balance** for a given year is the part of the Texas District's Total Allocation that remains unused at the end of the Caballo Release Period, after that District's Carryover limit has been applied.

In any year in which the average of the Texas District's **End-of-Season Allocation Balance** over the previous three years is greater than 180,000 acre-feet, and the **Accrued Index Departure** at the beginning of that year is negative (accrued under-delivery), the **Accrued Index Departure** at the beginning of the year will be cancelled and set to zero and the **Accrued Index Departure** at the end of that year will be equal to the **Annual Index Departure** for that year.

5.5 Impact of Carryover on Index Compliance Determinations:

In the event that the accrued Negative Departure exceeds the accrued Negative Departure limit of 150,000/120,000 acre-feet, the impact, if any, of the Texas District's annual and accrued Project Carryover Water on the accrued Negative Departure will be considered.

Consideration of that impact will include the difference between the Index Obligation and the Index Delivery that would have occurred if the current balance in the Texas Carryover account had been released the previous year.

When determining whether New Mexico is in violation of the accrued Negative Departure Limit, or whether “Additional Index adjustments for exceedances of the Negative Departure limit” (see Decree Provision C.3.b.) apply, the impact of the Texas District’s Carryover will be added to the current Accrued Index Departure, thus reducing the apparent negative Accrued Index Departure for that year, and this apparent negative Accrued Index Departure will be used for determining whether New Mexico is in violation of the accrued Negative Departure Limit for that year. The current Accrued Index Departure will remain unchanged.

5.6 Triggers for Water Management Actions and Associated Adjustment of Accrued Index Departures

To reduce the likelihood of the **Accrued Index Departure** from reaching the specified limits, and as described in the Decree, certain management actions will be initiated, some of which include direct adjustment to the Accrued Index Departure, when the **Accrued Index Departure** exceed specified “trigger” amounts. See, Consent Decree Provisions II.D-F.

Section 6: Data for EEPI Calculations

The following data will be required annually for EEPI Calculations:

- 1) Daily stream flow data from the Rio Grande at El Paso, Texas, (USGS 08364000).
Data source: US-IBWC.
- 2) Daily flow data from the Rio Grande below Caballo Dam, New Mexico stream gage, (USGS 08364000). Data source: US-Reclamation.
- 3) Official daily flow records of Delivery to Mexico at the Acequia Madre. Data Source: US-IBWC.
- 4) Pumping records for the Canutillo well field, Texas. Data source: Texas.
- 5) Irrigated acreage within the Texas Mesilla. Data source: Texas.
- 6) Temperature data from the Leyendecker II PSRC weather station. Data source: New Mexico.

Section 7: Review and Revision

The following procedure will be used to review and revise, if needed, the data sources and methods used to determine inputs to the calculation of annual Index Deliveries:

- **Request for Review**

If any Compacting State identifies a significant error, bias, discrepancy, or other issue with the data sources and/or method used to determine any input to the annual **Index Delivery**, that Compact State may request that the RGCC initiate a review of the data sources and/or method in question. In making a request for review, the Compacting State making the request must provide documentation and technical evidence substantiating the suspected error, bias, discrepancy, or other issue.

- ***Evaluation of Request for Review***
The RGCC will evaluate the request for review and supporting documentation and evidence.
- ***Initiation of Review***
If the RGCC determines that a review is warranted, the RGCC will convene a Technical Committee to conduct the review. The RGCC will instruct the Technical Committee as to the scope of the review.
- ***Technical Review***
The Technical Committee will carry out the review as directed by the RGCC and will report their findings to the RGCC. If the Technical Committee recommends that the data sources and/or methods in question should be revised, the Technical Committee will recommend appropriate revisions. If warranted, the Technical Committee may recommend that previously approved annual and accrued Index Deliveries and Index Departures be corrected retroactively; if correction is recommended, the Technical Committee will identify a specified period over which the correction is recommended. If the Technical Committee fails to achieve consensus regarding recommended revisions or corrections, the opinion of committee members from each Party will be reported to the RGCC.
- ***Implementation of Revisions***
The RGCC will determine whether to accept and implement any revisions or corrections recommended by the Technical Committee.

Section 8. Operational Consistency to Ensure Compliance with the EEPI

Project operations and Project Accounting must be consistent with the Decree and the Compact. At a minimum, the following are examples of procedures to ensure that Texas and New Mexico receive their equitable apportionment below Elephant Butte Reservoir as contemplated in the Decree:

8.1 Modified D2 Equation

The Annual Allocated Water allocated to water users within the United States represents the equitable apportionment of Rio Grande water to Texas and New Mexico below Elephant Butte Reservoir. To maintain consistency with the EEPI, the Project allocation should be based upon the Modified D2 Equation.

8.2 Project Accounting Charges

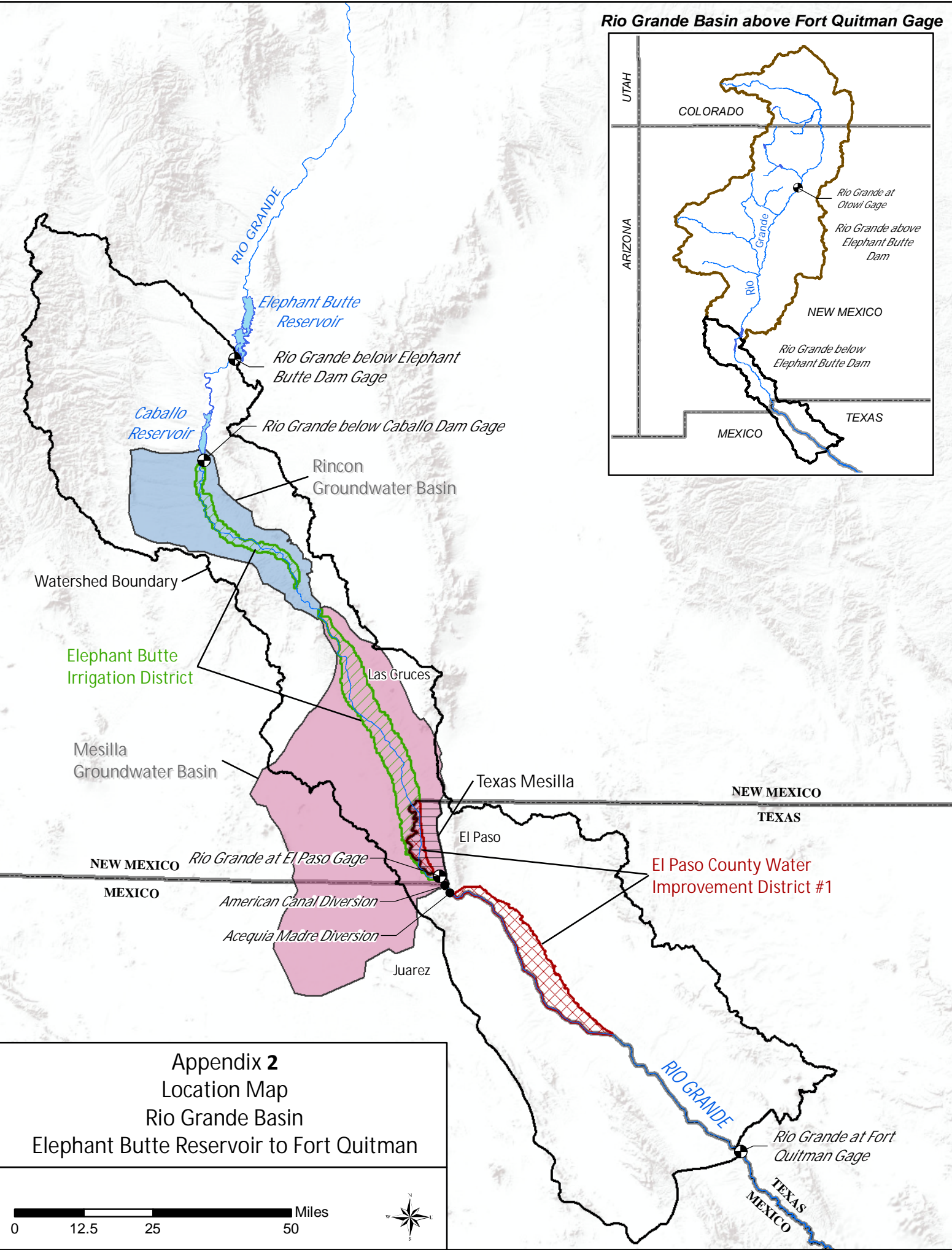
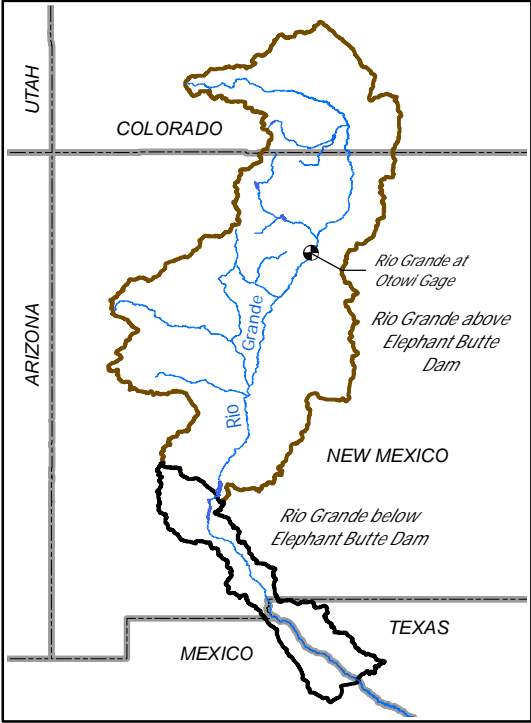
8.2.1 Charge Point for the Texas District

As described above, the EEPI measures compliance at the El Paso Gage. To maintain consistency with the EEPI, Project Accounting charges for deliveries to the Texas District below the El Paso Gage should also be determined and accounted for at the El Paso Gage.

8.2.2 Charges for Project Carryover Water

The Decree contemplates that each State is responsible for the water use of its own citizens, but not those of the other States. Accordingly, if the Districts carryover unused Project allocation from one year to the next, the Project Carryover Water should be reduced for evaporation, and should be adjusted for the difference in conveyance efficiency between the year in which the Project Carryover Water was accrued, and the year in which that water is ordered and delivered.

Rio Grande Basin above Fort Quitman Gage



Appendix 2
Location Map
Rio Grande Basin
Elephant Butte Reservoir to Fort Quitman

