



INTERNATIONAL BOUNDARY AND WATER COMMISSION

COMISIÓN INTERNACIONAL DE LÍMITES Y AGUAS

Status Update on Mexico's Five-Year Cycle Rio Grande Water Deliveries to the United States

Lower Rio Grande Citizens Forum

May 13, 2015

1944 WATER TREATY BASICS

- ◆ Covers Rio Grande from Ft. Quitman to the Gulf
- ◆ Mexico delivers water to the US from 6 tributaries
- ◆ US receives 1/3 of flows arriving in the Rio Grande from the 6 tributaries
- ◆ 1/3 shall not be less, as an average amount in cycles of 5 consecutive years, than 350,000 acre-feet annually

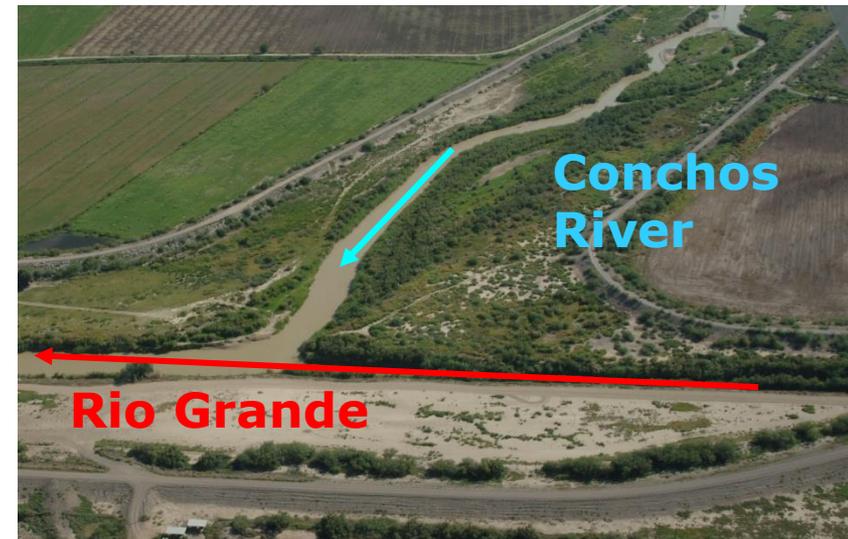


Rio Grande at Ft. Quitman



1944 WATER TREATY

- ◆ Mx tributaries allotted 1/3 to US, 2/3 to Mx:
 - ▶ Conchos, Arroyo las Vacas, San Rodrigo, Escondido, Salado, San Diego
- ◆ Mx tributaries allotted 100% to Mx
 - ▶ Alamo, San Juan
- ◆ All major US tributaries allotted 100% to US



Conchos-Rio Grande confluence



1944 WATER TREATY

MEXICO'S TREATY TRIBUTARIES



Excellence through teamwork.

Mexico's Watershed

◆ Mexican Basin Characteristics

- ▶ 12 Reservoirs on 6-Named Tributaries
 - ~4,290 kaf usable storage
- ▶ 3 Reservoirs on downstream tributaries
 - Rio Alamo & Rio San Juan
 - ~1,612 kaf useable storage



**El Cuchillo Stilling Basin
(Rio San Juan)**

◆ Irrigation Districts

- ▶ Reservoirs service local irrigation district
- ▶ Allocation to users based on local reservoir storage

◆ Treaty Deliveries

- ▶ Volumes supplied generally from run-off downstream of lowest reservoir on Tributary



1944 WATER TREATY INFRASTRUCTURE



Amistad Dam



Falcon Dam

- ◆ Waters for both countries are stored at the 2 international reservoirs
 - ▶ Falcon Dam – near Falcon Heights, TX
 - Total Cons.- 2,647 KAF
 - ▶ Amistad Dam – at Del Rio-Ciudad Acuña
 - Total Cons.- 3,276 KAF



PRESENT STATUS OF DELIVERIES

- ◆ Current 5-year cycle began 10/25/10
- ◆ Mexico has until 10/24/15 to deliver 1.75 maf
- ◆ Exceptions:
 - ▶ Extraordinary drought
 - ▶ Serious accident
 - ▶ When US conservation capacity fills in the reservoirs, all debts are canceled and a new cycle begins
- ◆ If a cycle ends in deficit, Mexico repays next cycle



**USIBWC measurement activity
@ San Benito**



MINUTE 234 (1969)



Per Minute 234, Mexico could transfer water at Falcon Dam

- ◆ 1969 IBWC agreement
- ◆ Describes the means for Mexico to make up a deficiency after a 5-year cycle ends in deficit
 - ▶ 1/3 U.S. share from the 6 tributaries
 - ▶ Allot to the US part of Mexico's 2/3 share
 - ▶ Transfer of water from Mexican ownership to U.S. ownership at Falcon and Amistad reservoirs



FIVE YEAR CYCLE DELIVERIES

◆ Cycle Delivery

- ▶ 1,235,576 AF

◆ Cycle Deficit

- ▶ 345,896 AF
- ▶ 78% of target cycle schedule

◆ Trib. Volumes

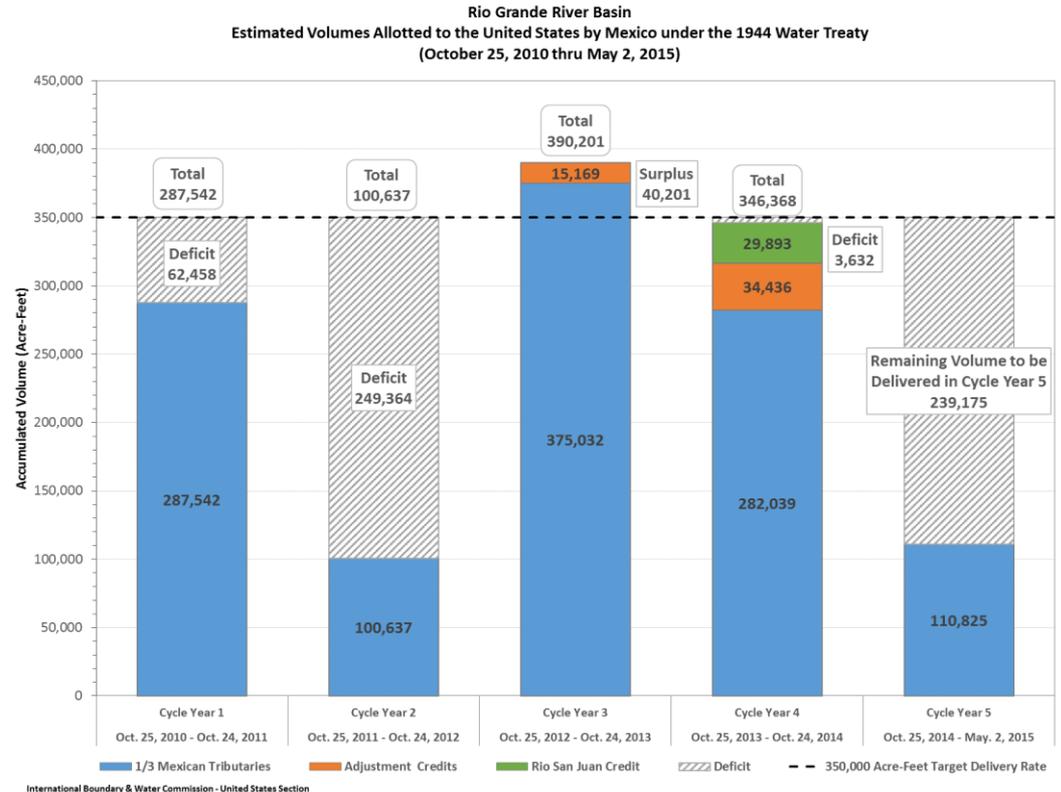
- ▶ Year 1 – 287,542 AF
- ▶ Year 2 – 100,637 AF
- ▶ Year 3 – 375,032 AF
- ▶ Year 4 – 282,039 AF
- ▶ Year 5 – 110,825 AF

◆ Rio San Juan Credit

- ▶ 29,893 AF

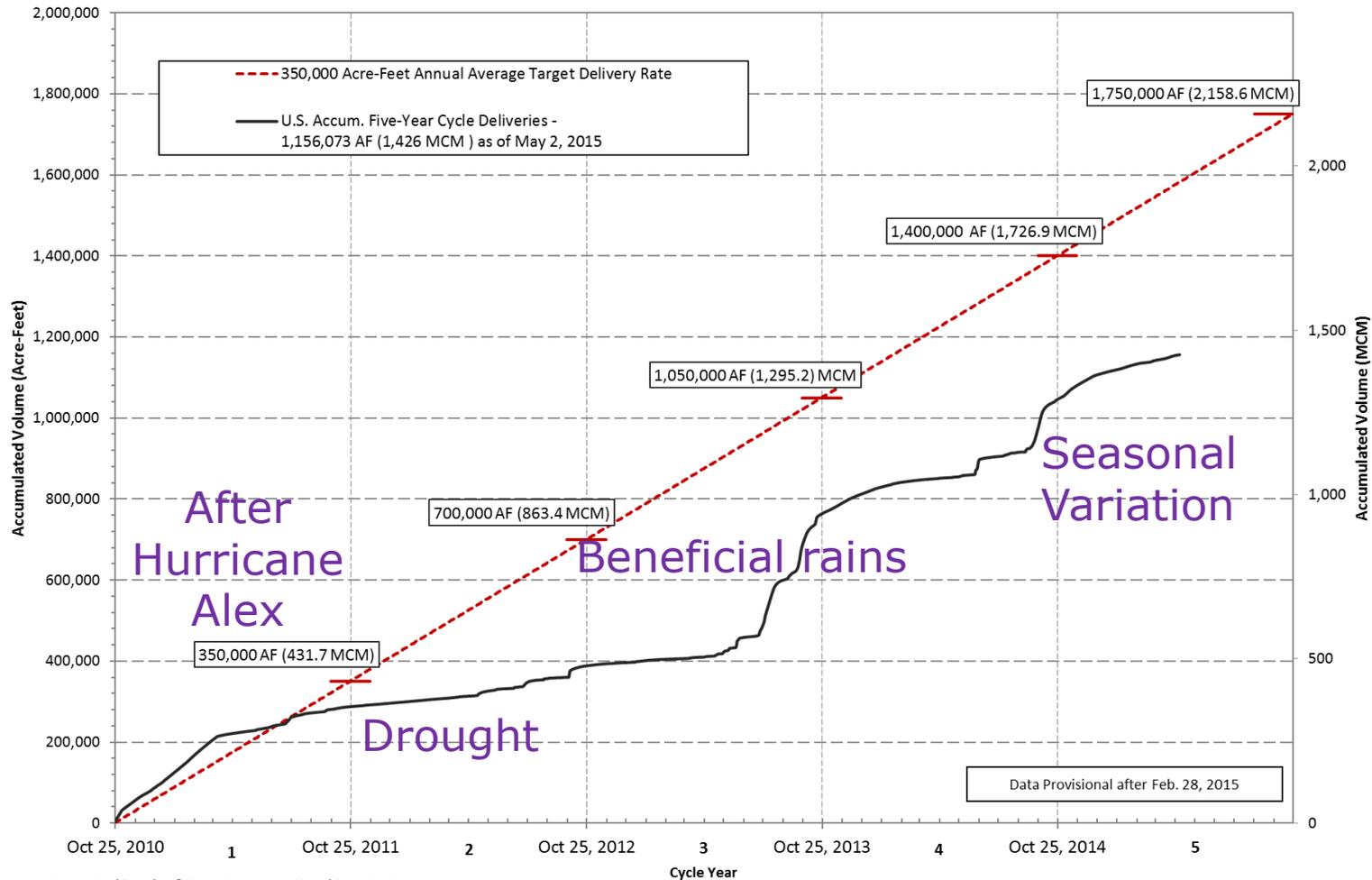
◆ Adjustment Credit

- ▶ 49,605 AF



NAMED TREATY TRIBUTARY DELIVERIES ONLY

Rio Grande River Basin
 Estimated Volumes Allotted to the United States by Mexico from Six Named Mexican Tributaries
 under the 1944 Water Treaty
 (October 25, 2010 thru May 2, 2015)



TREATY COMPLIANCE

- ◆ Commission has been meeting regularly to address the deficit
- ◆ Working to implement short- and long-term strategies
 - ▶ Short-term – Rio San Juan
 - ▶ Long term – Naturalized flow
- ◆ Mexican Stakeholders working on long-term domestic solution to resolve shortfalls in the Basin.



Commission meeting in Mercedes, TX



SHORT TERM SOLUTION (Accept San Juan Deliveries)

- ◆ **San Juan Reservoirs Full**
 - ▶ Marte R. Gomez
 - ~129% conservation
 - ▶ El Cuchillo
 - ~134% conservation
- ◆ **Treaty Provisions**
 - ▶ Article 9
 - ▶ Minute No. 234
- ◆ **Valley was wet.**
 - ▶ Little water used to date
 - ▶ Mexico evacuating excess water in preparation for flood season.



Marte R. Gomez spillway 2015



SHORT TERM SOLUTION

- ◆ Mexico has assured a minimum of 350 KAF in Cycle Year 5.
- ◆ If wet conditions continue, cycle could end without a deficit.
- ◆ If cycle ends in deficit, Minute 234 will be applied to pay off the debt.



Rio Grande



LONG TERM SOLUTION (Naturalized Flow Concept)

Naturalized Flow Definition: the flow that would naturally reach the Rio Grande without man-made influences within the basin.

Objectives:

- ◆ Statistical Analysis to Incorporate Natural Flow
- ◆ Identify a Surrogate Data Set (reservoir inflow) for use in Operations
- ◆ Develop Implementation Method

Texas strongly supports concept.

Mexico appears favorable of concept.

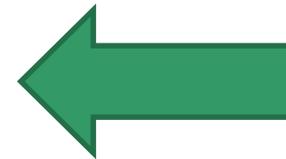


NATURALIZED FLOW BY BASIN

Six-Named Tributaries Statistics

▶ Rio Conchos

- Median Annual NF Volume: 1,344 kaf
- Percentage of Total NF: 61.7%



▶ Arroyo de las Vacas

- Median Annual NF Volume: 9 kaf
- Percentage of Total NF: 0.4%

▶ Rio San Diego

- Median Annual NF Volume: 150 kaf
- Percentage of Total NF: 6.9%



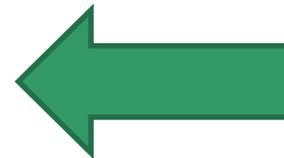
NATURALIZED FLOW BY BASIN

Six-Named Tributaries Statistics

- ▶ Rio San Rodrigo
 - Median Annual NF Volume: 63 kaf
 - Percentage of Total NF: 2.8%

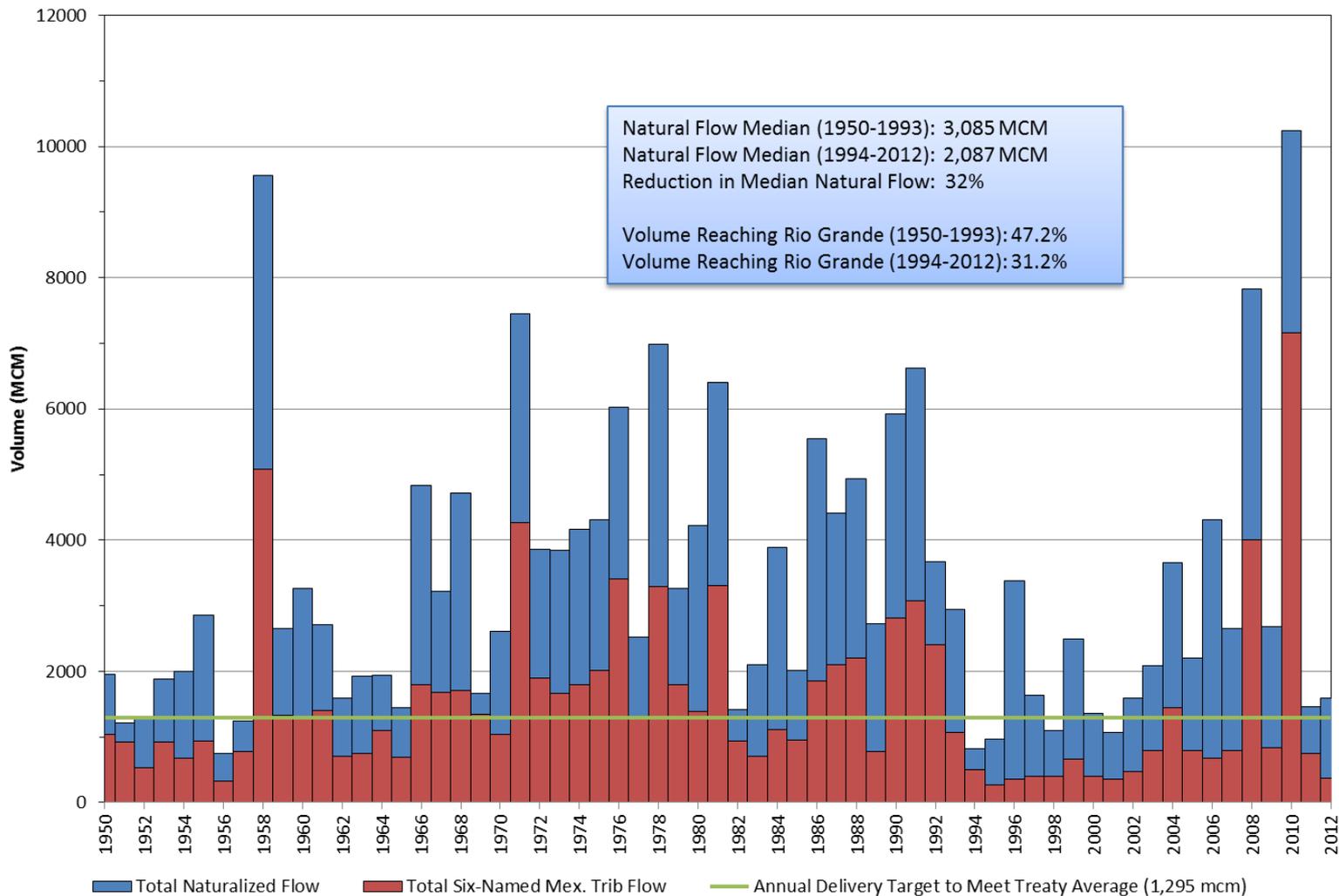
- ▶ Rio Escondido
 - Median Annual NF Volume: 36 kaf
 - Percentage of Total NF: 1.7%

- ▶ Rio Salado
 - Median Annual NF Volume: 522 kaf
 - Percentage of Total NF: 23.9%



REVIEW OF HISTORY

Total Annual Naturalized Flow - Six Named Tributaries



IMPLEMENTATION OF NATURALIZED FLOW CONCEPT

◆ Implementation Strategies

▶ 1. Annual Allocation to U.S. based on 1950-1993 Period

- Water allocation to U.S. based on previous year inflow
- Strong correlation between Natural Flow and Reservoir Inflows
- Allocate to U.S. the historical median inflow percentages for each tributary

▶ 2. Verification of Deliveries

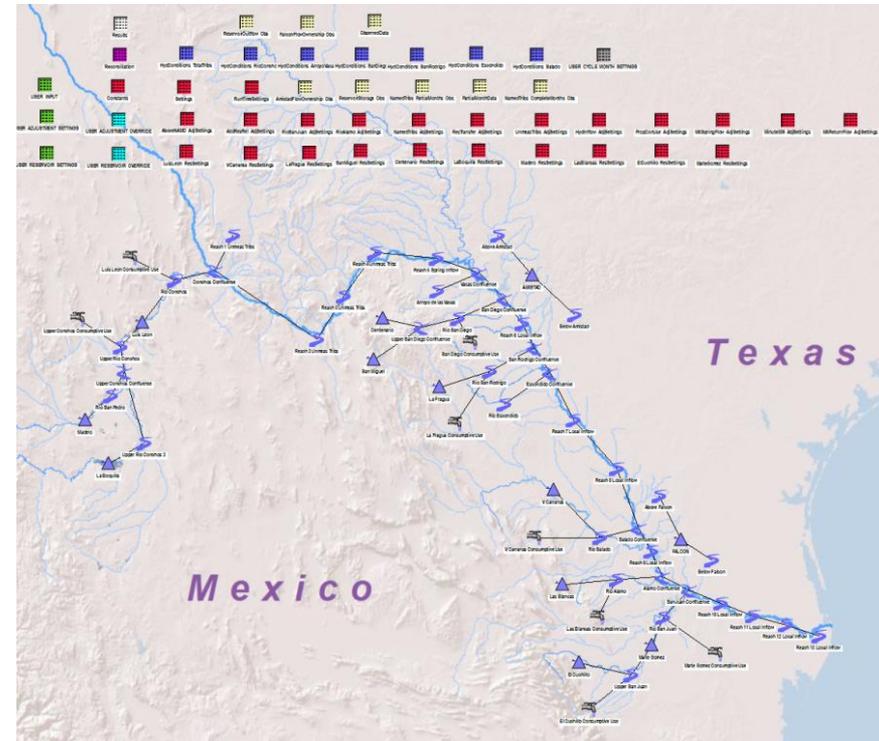
- Review U.S. deliveries annually based on naturalized flow or inflow
- Deficits to be corrected



MODELING TO SUPPORT TREATY COMPLIANCE

◆ RiverWare Conceptual Model Developed

- ▶ Simulate basin conditions using adjustments to 5-year cycle deliveries
- ▶ Implements options for Hydrologic (Naturalized) Inflow and Allocation
- ▶ Enable policy-makers to evaluate effects of methodologies and model options



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