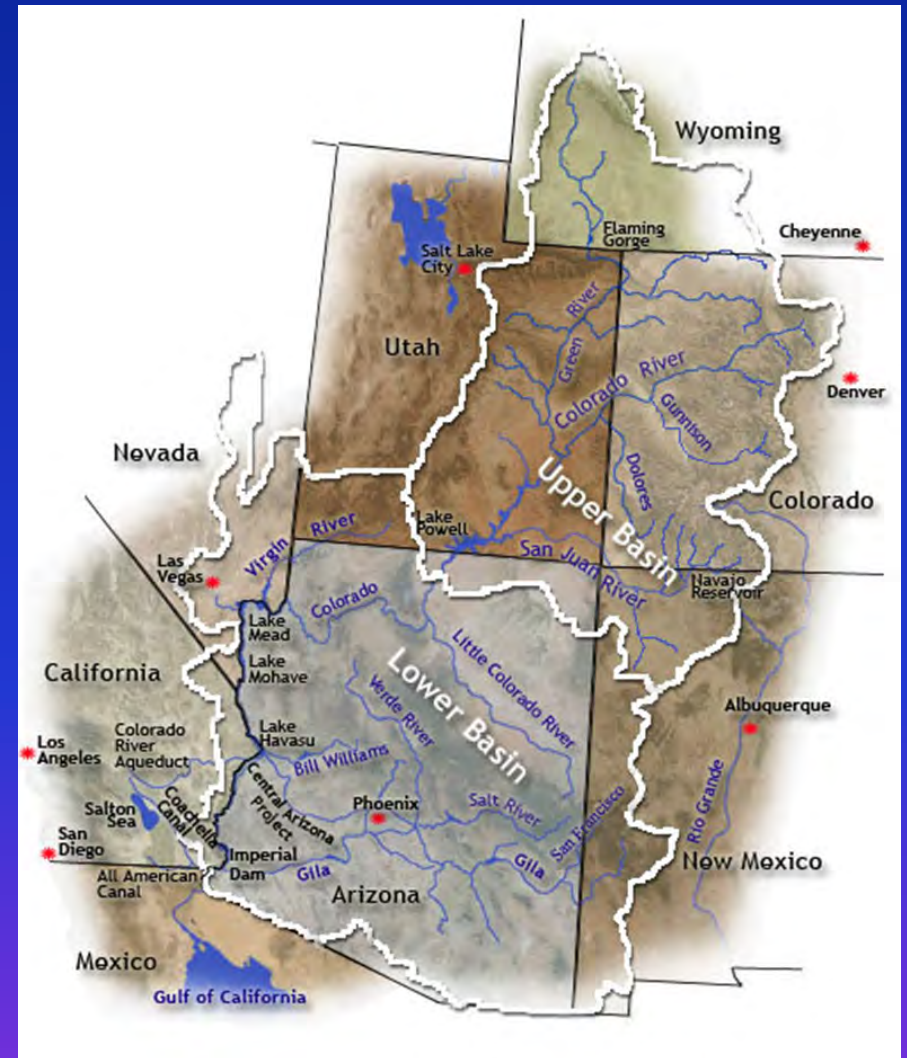


Sharing More than a Border: The U.S. and Mexico Working Together on the Colorado River

- Robert Snow (U.S. Dept. of the Interior)



Colorado River Basin



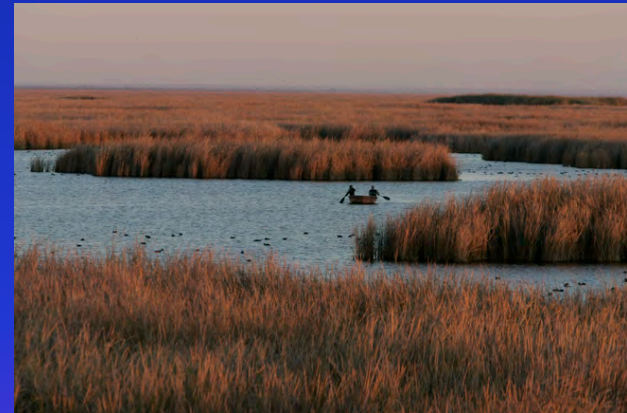
1944 Water Treaty – Colorado River

- **Apportions 1,500,000 acre-feet annually**
 - No “carryover storage”
- **Addresses surpluses & shortages**
 - US has never delivered less than the 1.5 MAF
- **Administered by the International Boundary and Water Commission**
 - Mechanism of “Minutes”

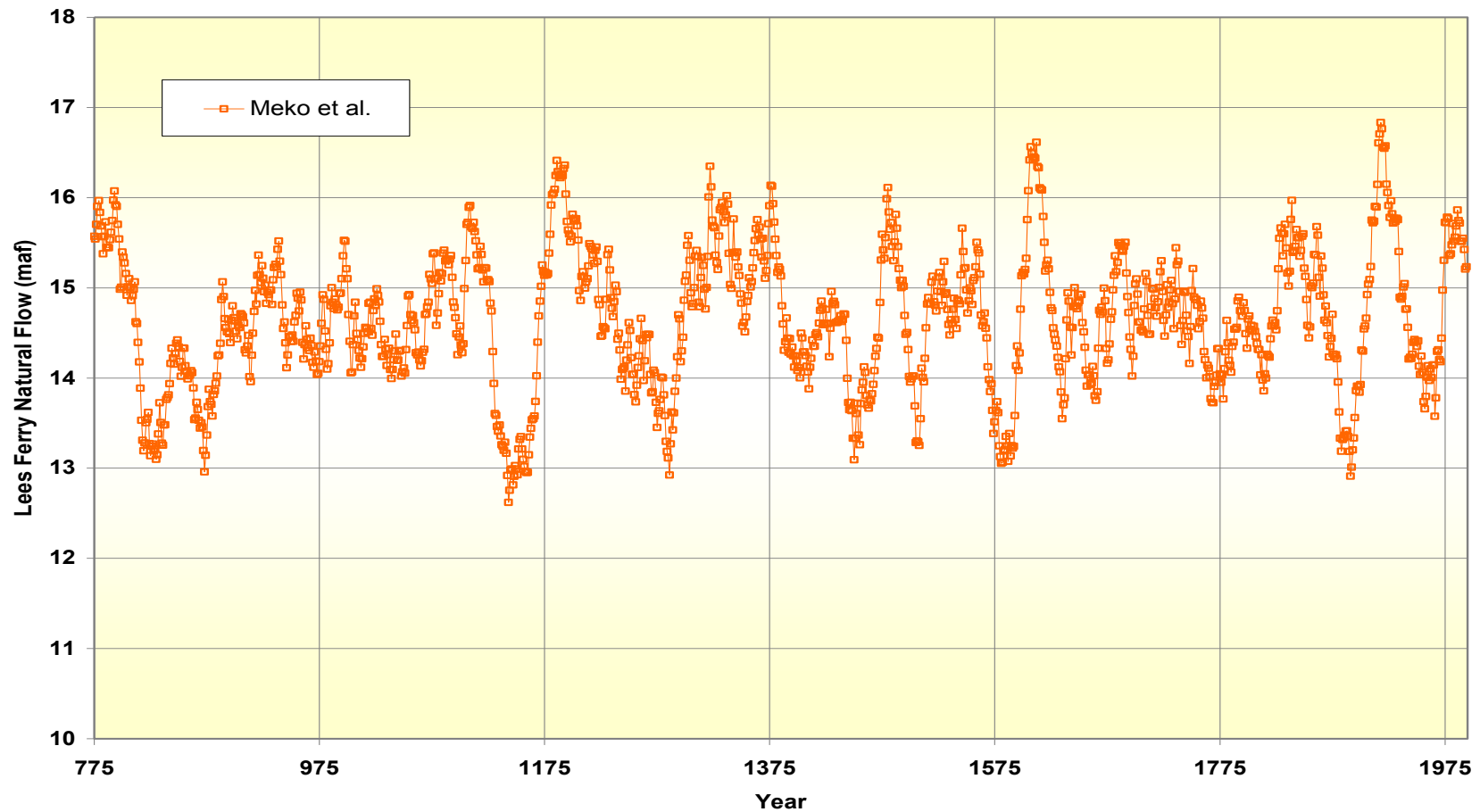
1994 – 2014 US/Mexico Extraordinary Period

- **1990's: Environmental Focus on the Colorado River Delta**
- **1990's-2006: Intense litigation**
 - Lake Mead Flycatcher
 - Mexican Delta Litigation
 - All American Canal
- **2007-2014: Cooperative Engagement & Successful Agreements**

Colorado River Delta



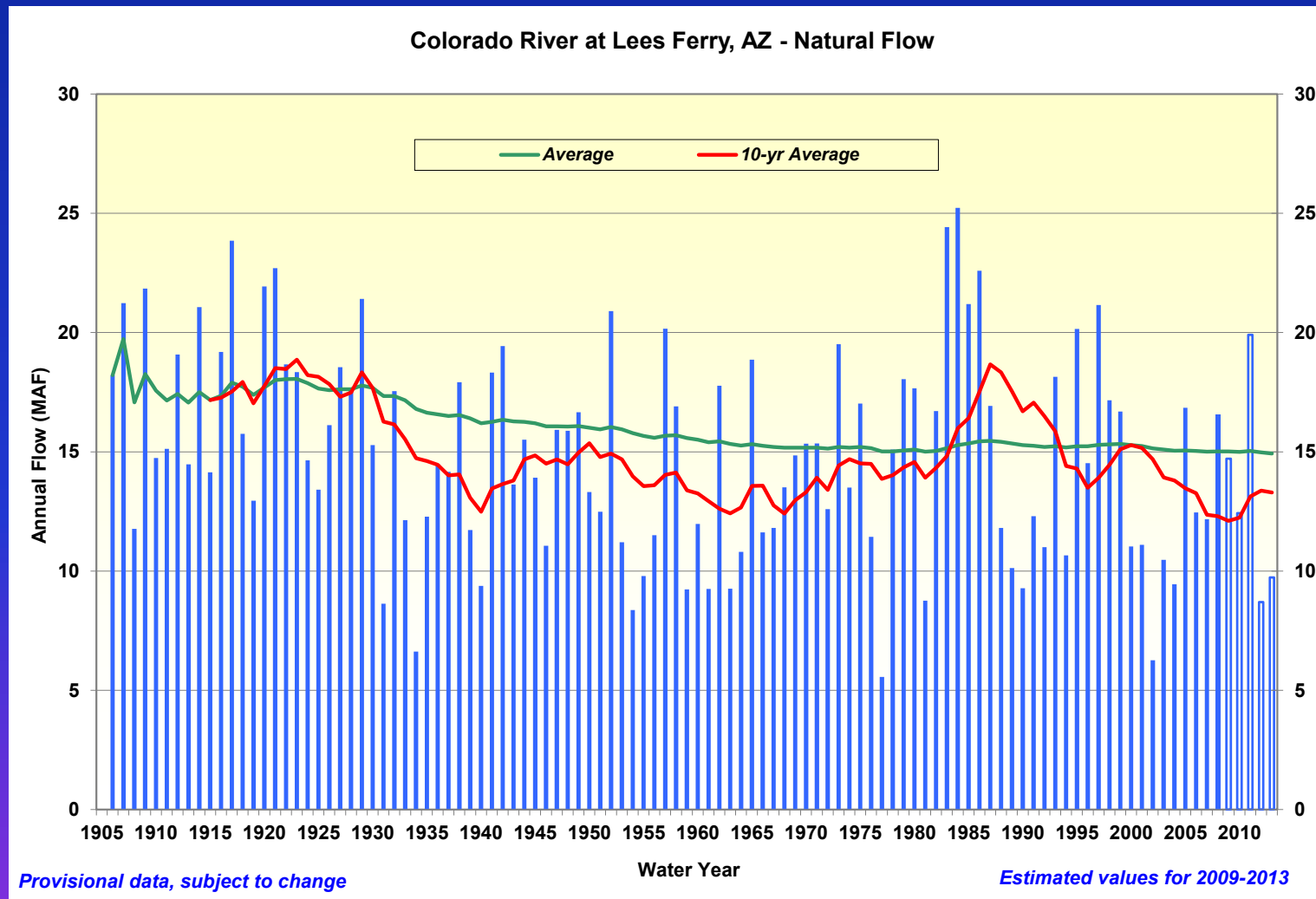
Annual Natural Flow at Lees Ferry Tree-ring Reconstruction (Meko et al., 2007) 25-Year Running Mean



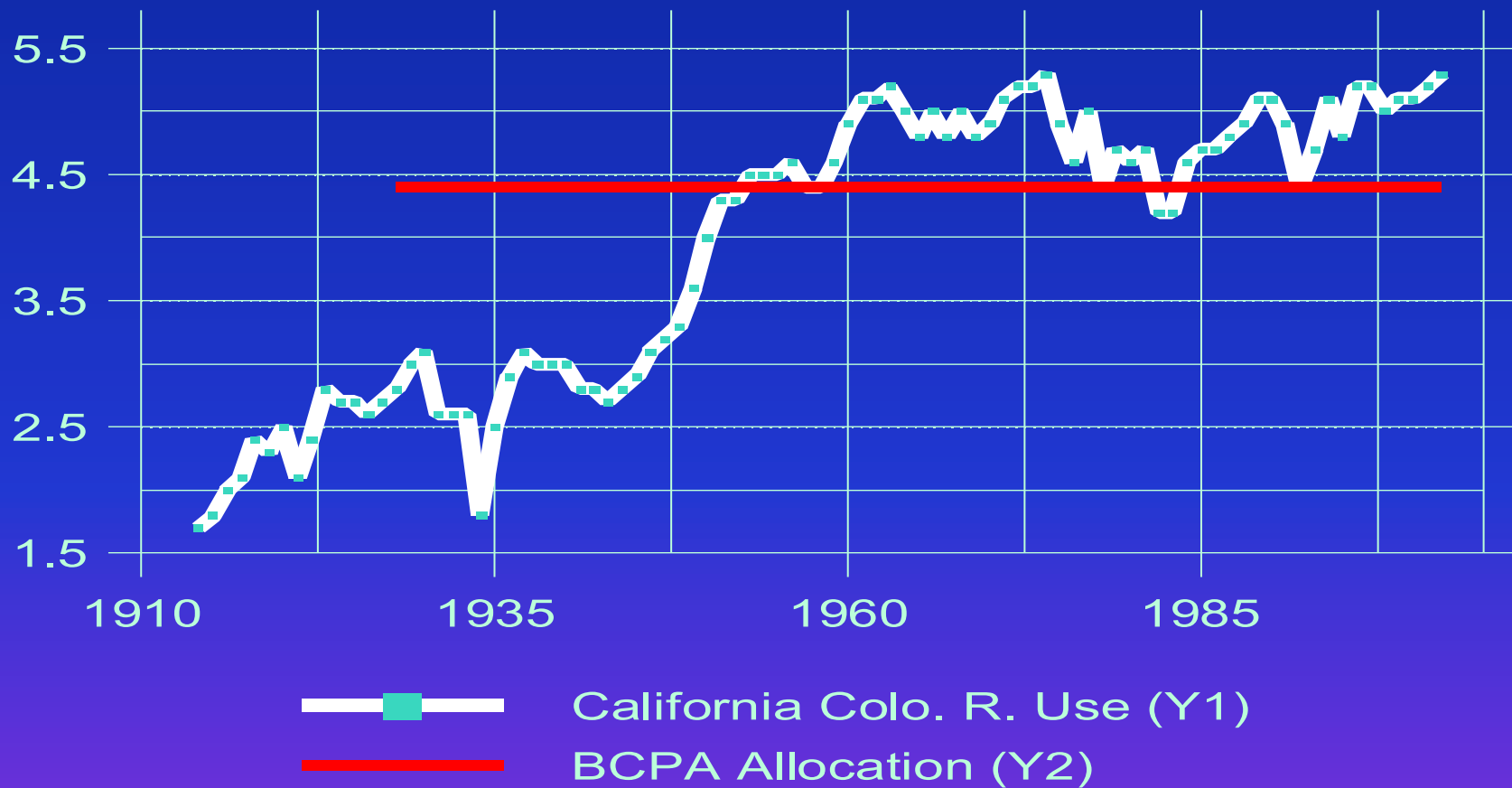
Natural Flow

Colorado River at Lees Ferry Gaging Station, Arizona

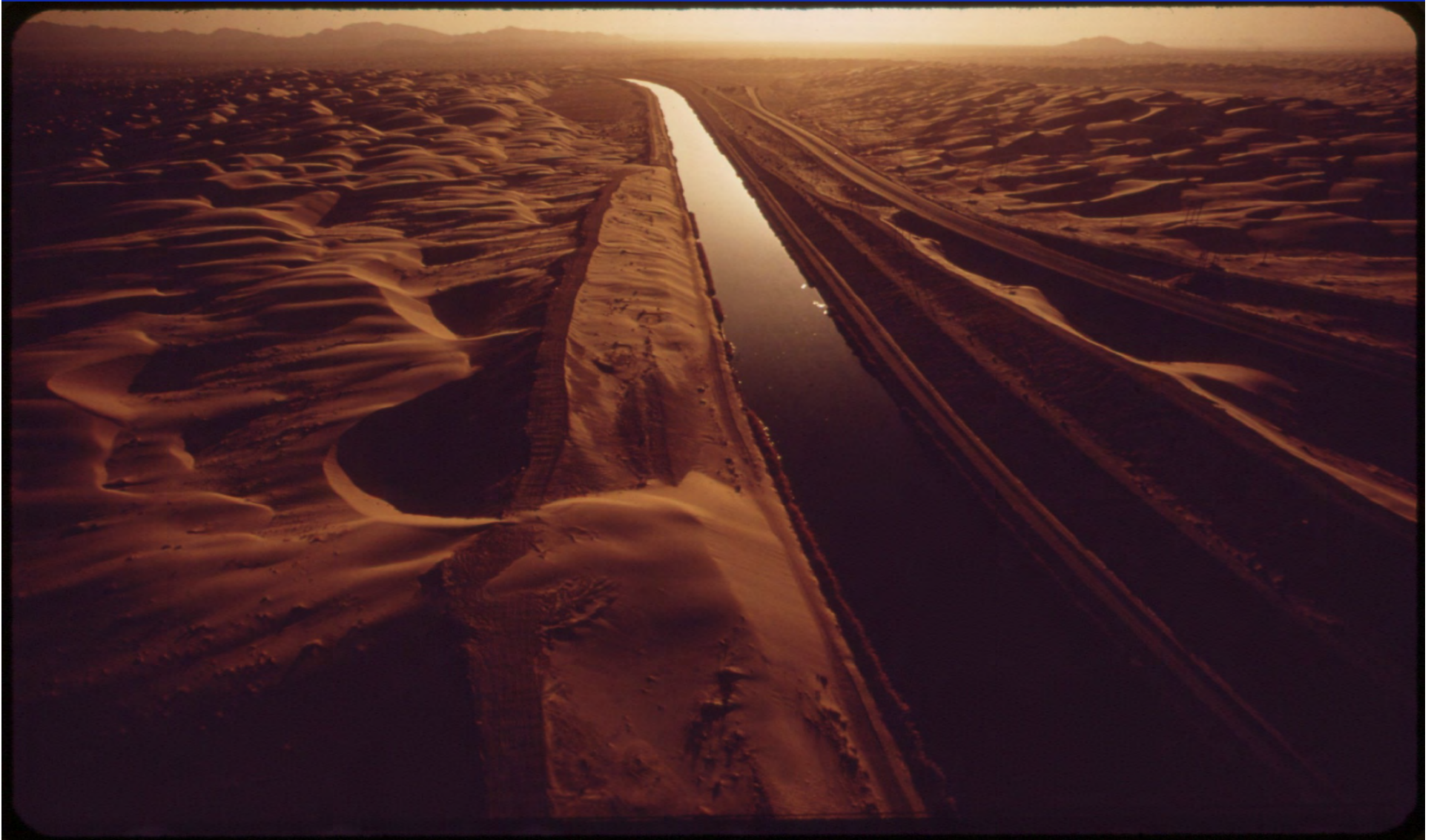
Water Year 1906 to 2013



California's Annual Use from Colorado River



Unlined All-American Canal



2007-2009 – Joint US/Mexico Commitment to Cooperation

- Goal: identify innovative water management measures to meet needs of both countries
- Work through Treaty mechanism: International Boundary and Water Commission



2009-2010 – Memorializing Progress through IBWC Minutes

INTERNATIONAL BOUNDARY AND WATER COMMISSION UNITED STATES AND MEXICO	
	Yuma, Arizona, April 16, 2010
MINUTE NO. 316	
UTILIZATION OF THE WELLTON-MOHAWK BYPASS DRAIN AND NECESSARY INFRASTRUCTURE IN THE UNITED STATES FOR THE CONVEYANCE OF WATER BY MEXICO AND NON-GOVERNMENTAL ORGANIZATIONS OF BOTH COUNTRIES TO THE SANTA CLARA WETLAND DURING THE YUMA DESALTING PLANT PILOT RUN	
The Commission met at the offices of the Yuma Desalting Plant in Yuma, Arizona, at 1:00 PM on April 16, 2010, to consider the utilization of the Wellton-Mohawk Bypass Drain and necessary infrastructure in the United States for the conveyance of water by Mexico and non-governmental organizations of both countries through said Drain to the Santa Clara Wetland during the Yuma Desalting Plant (YDP) Pilot Run, scheduled by the United States Government to commence in May 2010. The Commissioners noted the duties, powers and responsibilities entrusted by the Governments of the United States and Mexico to the International Boundary and Water Commission, specifically, those provisions concerning the rights and obligations assumed by the United States and Mexico in the "Treaty for Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande," signed February 3, 1944. The Commissioners reviewed the report entitled "Joint Report of the Principal Engineers Concerning U.S.-Mexico Joint Cooperative Actions Related to the Yuma Desalting Plant (YDP) Pilot Run and the Santa Clara Wetland," dated July 17, 2009, signed by Principal Engineers Alfredo J. Riera of the U.S. Section and Luis Antonio Rascon of the Mexican Section, an original copy of which is attached and forms an integral part of this Minute. Both Commissioners observed that according to said Joint Report, the United States, Mexico, and the non-governmental organizations each intend to arrange for 10,000 acre-feet (12.3 million cubic meters (mcm)) of water to convey to the Santa Clara Wetland, and that they intend to convey all or part of these volumes through the Wellton-Mohawk Bypass Drain. They further observed that according to the Joint Report "it is recommended that the U.S. and Mexico coordinate regarding system operations to ensure conveyance of the water volumes described in 2 (b) and 2 (c) above to the Santa Clara Wetland, including consideration of the feasibility of delivering Mexican water to the Santa Clara Wetland through the Wellton-Mohawk Bypass Drain or by means of other infrastructure owned or operated by the United States. It is recommended that the Commission develop a new	
	1

Min. 316
*Yuma Desalting
Plant Operation*

INTERNATIONAL BOUNDARY AND WATER COMMISSION UNITED STATES AND MEXICO	
	June 17, 2010 Ciudad Juarez, Chihuahua
Minute No. 317	
CONCEPTUAL FRAMEWORK FOR U.S.-MEXICO DISCUSSIONS ON COLORADO RIVER COOPERATIVE ACTIONS	
The Commissioners met at the offices of the Mexican Section in Ciudad Juarez, Chihuahua at 10:00 a.m. on June 17, 2010 to discuss the conceptual framework for cooperative actions and mechanisms between the United States and Mexico on the Colorado River. The Commissioners observed that Articles 10, 11 and 15 of the United States - Mexico Treaty for Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, signed February 3, 1944, allot a portion of the Colorado River waters to Mexico and stipulate that specified deliveries shall be made by the United States. Additionally, they noted that Article 24, paragraph (a) of the Treaty specifies additional powers and duties of the Commission, including "To initiate and carry on investigations and develop plans for the works which are to be constructed or established in accordance with the provisions of this and other treaties or agreements in force between the two Governments dealing with boundaries and international waters..." The Commissioners referred to Minute No. 242, entitled "Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River," signed August 30, 1973, which states under Resolution 6 that "the United States and Mexico shall consult with each other prior to undertaking any new development of either the surface or the groundwater resources, or undertaking substantial modifications of present developments, in its own territory in the border area that might adversely affect the other country." They also referred to Minute No. 306, entitled "Conceptual Framework for United States-Mexico Studies for Future Recommendations Concerning the Riparian and Estuarine Ecology of the Limnithic Section of the Colorado River and its Associated Delta," signed December 12, 2000, which recognizes each country has laws and regulations concerning the preservation of riparian and estuarine system habitat that are executed by authorities that are provided such responsibility in their respective country. Pursuant to Minute No. 306, the Commission established a framework for cooperation between the United States and Mexico through the development of joint studies that include possible approaches to ensure use of water for ecological purposes in the Colorado River limnithic reach and its associated delta, and created a forum for the exchange of information and advice among the different government and non-governmental organizations with an interest in the	

Min. 317
*Cooperative
Process*

April 2010 – Mexicali Valley Devastating Earthquake (Mag. 7.2)

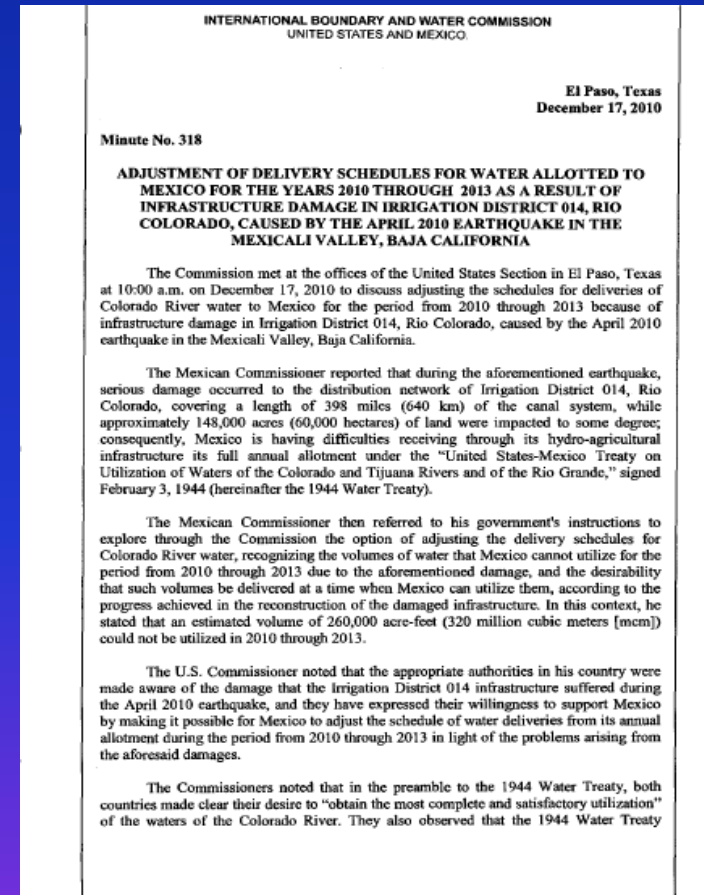


April 2010 – Mexicali Valley Devastating Earthquake (Mag. 7.2)



Min. 318 – Bi-national Agreement to address damage

- Signed in 2010
- Humanitarian response
- Effective 2011-2013
- Repair period
- Defer 260,000 acre-feet



Key Agreement: “Minute 319”

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

Coronado, California
November 20, 2012

MINUTE NO. 319

**INTERIM INTERNATIONAL COOPERATIVE MEASURES
IN THE COLORADO RIVER BASIN THROUGH 2017 AND
EXTENSION OF MINUTE 318 COOPERATIVE MEASURES TO ADDRESS THE
CONTINUED EFFECTS OF THE APRIL 2010 EARTHQUAKE IN THE
MEXICALI VALLEY, BAJA CALIFORNIA**

The Commissioners met in the City of Coronado, California on November 20, 2012 at 1:00 p.m., in order to consider interim international joint cooperative measures to address water management in the Colorado River Basin.

I. BACKGROUND

The Commissioners referred to the interest of both countries in identifying cooperative opportunities that would help ensure that the Colorado River system is able to continue to meet the needs of both nations, consistent with the declarations in the August 13, 2007 Joint Statement by officials from both governments, and the Joint Declaration by the United States Secretary of the Interior and Mexico's Ambassador on January 15, 2009, which noted that, based on the principles of mutual respect and bilateral collaboration, the United States and Mexico have sought to address areas of common interest and support the efforts of the Commission to identify innovative opportunities for water conservation and environmental protection.

The Commissioners observed that in this context, in early 2008 the Commission prepared the terms of reference to be applied, established a framework for discussion, and coordinated binational work groups in order to explore opportunities for cooperation on the Colorado River, in furtherance of the provisions of the "United States-Mexico Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Río Grande," signed February 3, 1944 (hereinafter the 1944 Water Treaty).

The Commissioners also referred to Minute 317, "Conceptual Framework for U.S.-Mexico Discussions on Colorado River Cooperative Actions," dated June 17, 2010, which stipulates that the Commission "shall in particular explore opportunities for binational cooperative projects that: minimize the impacts of potential Colorado River shortage conditions; generate additional volumes of water using new water sources by investing in infrastructure such as desalinization facilities; conserve water through investments in a variety of current and potential uses, including agriculture, among others; and envision the possibility of permitting Mexico to use United States infrastructure to store water."

The Commissioners recognize that various considerations exist in both countries with respect to the implementation of some of the long-term options and activities that have

- Nov. 2012 – Dec. 2017
- Innovative Agreements with US Basin States and Urban Areas
- Complementary agreements within Mexico with NGOs

Minute 319 – Nov. 20, 2012



I	SKED	
II	NEW	
	CONFIRM	✓
	P. 1000	✓
	(SUNDAY)	
1	5:15	✓
2	5:45	✓
3	6:15	✓
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96	4:45	✓
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98	5:45	✓
99	6:15	✓
100	6:45	✓

Who had to agree?

Everyone....

- Mexican Federal Government
- US Federal Government
 - State & IBWC
 - DOI (BOR & FWS)
- Key water districts/funders
 - (MWD, SNWA, CAWCD)
- Multiple NGOs/funders
 - US & Mexican

Minute 319 – Achieving Balance of Benefits for Mexico & US

- **Extension of period allowing deferral of Mexican allotment (approx. max of 1 million acre-feet)**
- **Operational Agreements**
 - High & Low Reservoir operations
- **Deferral of Mexican Allotment (ICMA)**
- **US \$ 21 M Investment in Mexicali Valley for Canal linings, etc ... with US benefits**
- **Environmental Flows to Colorado River Delta**
- **Prioritize Conveyance of Mexican Water through lined All-American Canal to Tijuana**



*The Governments of the United States and Mexico
through the
International Boundary and Water Commission,
United States and Mexico,
have the honor of inviting you to participate in the
Minute 319 Pulse Flow Event, a
Celebration of water for the environment in the Colorado River*

Date: March 27, 2014

Time: 10:00 a.m.

Location: Morelos Dam, Los Algodones, B.C.

*RSVP: By March 18th to Terri Wilson,
tlwilson@usbr.gov, (602) 317-0762*

Dress: Business Casual

US/Mexico Border – Morelos Dam



March 27, 2013 – Morelos Dam, Mexico



US/Mexico Border – Morelos Dam\

March 2014







*Colorado River:
1 mile North of SIB
March 2014*



*Photos:
Dale Turner
The Nature Conservancy*

The Lasting Impact of Minute 319

-- Tuesday --

'Minute 319 demonstrated that the U.S. and Mexico, when they put their minds to it, can find a way to move from being ... accomplices to failure ... to becoming partners in shared success.'

- Fmr. Amb. Arturo Sarukhan



Drought in the Colorado River Basin

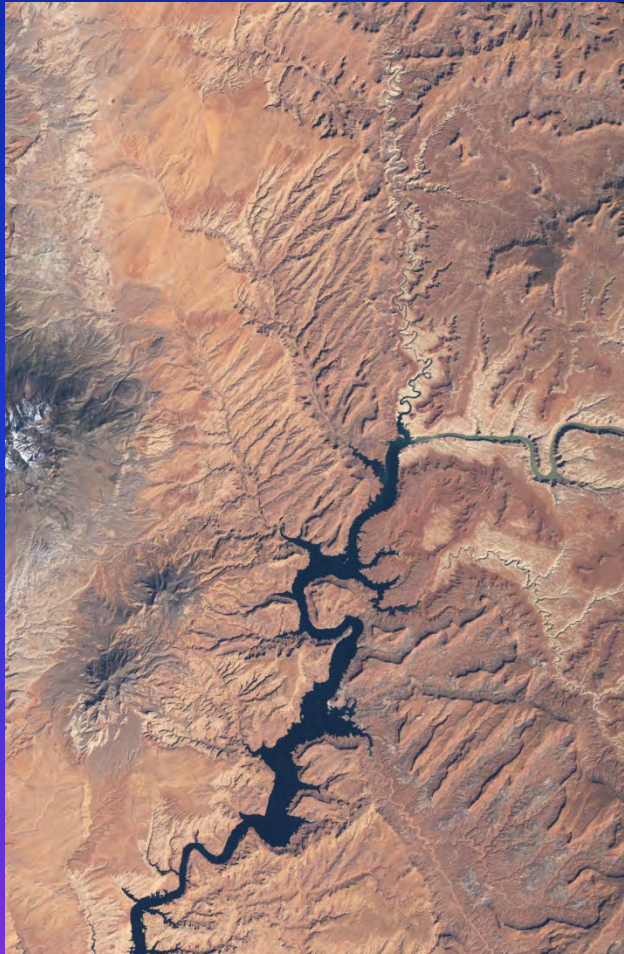


Colorado River Drought

- 2000-2014 was the driest 15-year period in the 105-year historical record
- Paleohydrology shows this as one of the worst droughts in 1200 years
- Projections indicate longer, deeper droughts anticipated under Climate change scenarios

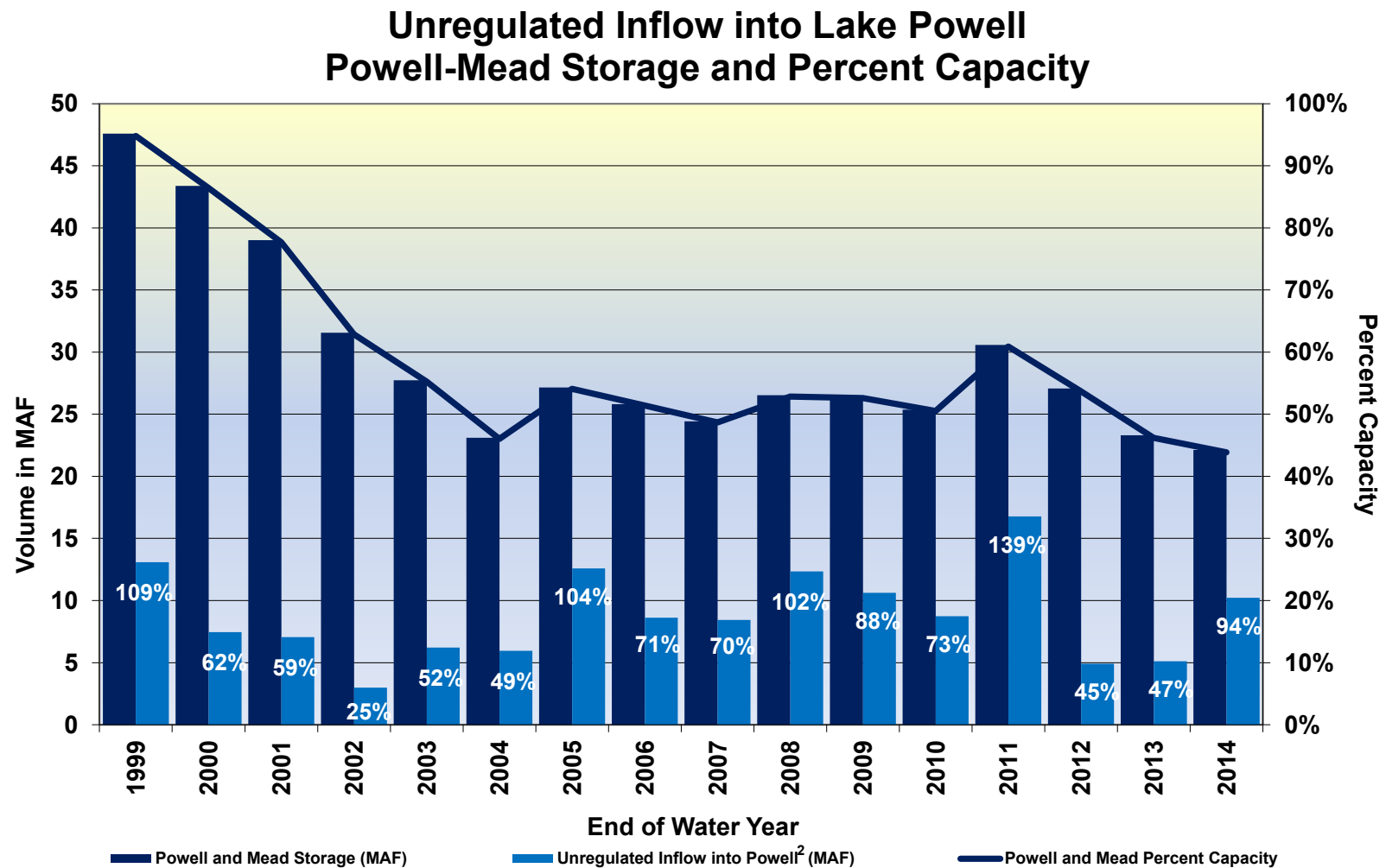
Drought from Space – Lake Powell

1999 - 2014



NASA Earth Observatory

State of the System (Water Years 1999-2014)¹



¹ Values for Water Year 2014 are projected. Unregulated inflow is based on the CBRFC forecast dated 8/18/14. Storage and percent capacity are based on the August 2014 24-Month Study.

² Percentages at the top of the light blue bars represent percent of average unregulated inflow into Lake Powell for a given water year. Water years 1999-2011 are based on the 30-year average from 1971 to 2000. Water years 2012-2014 are based on the 30-year average from 1981-2010.

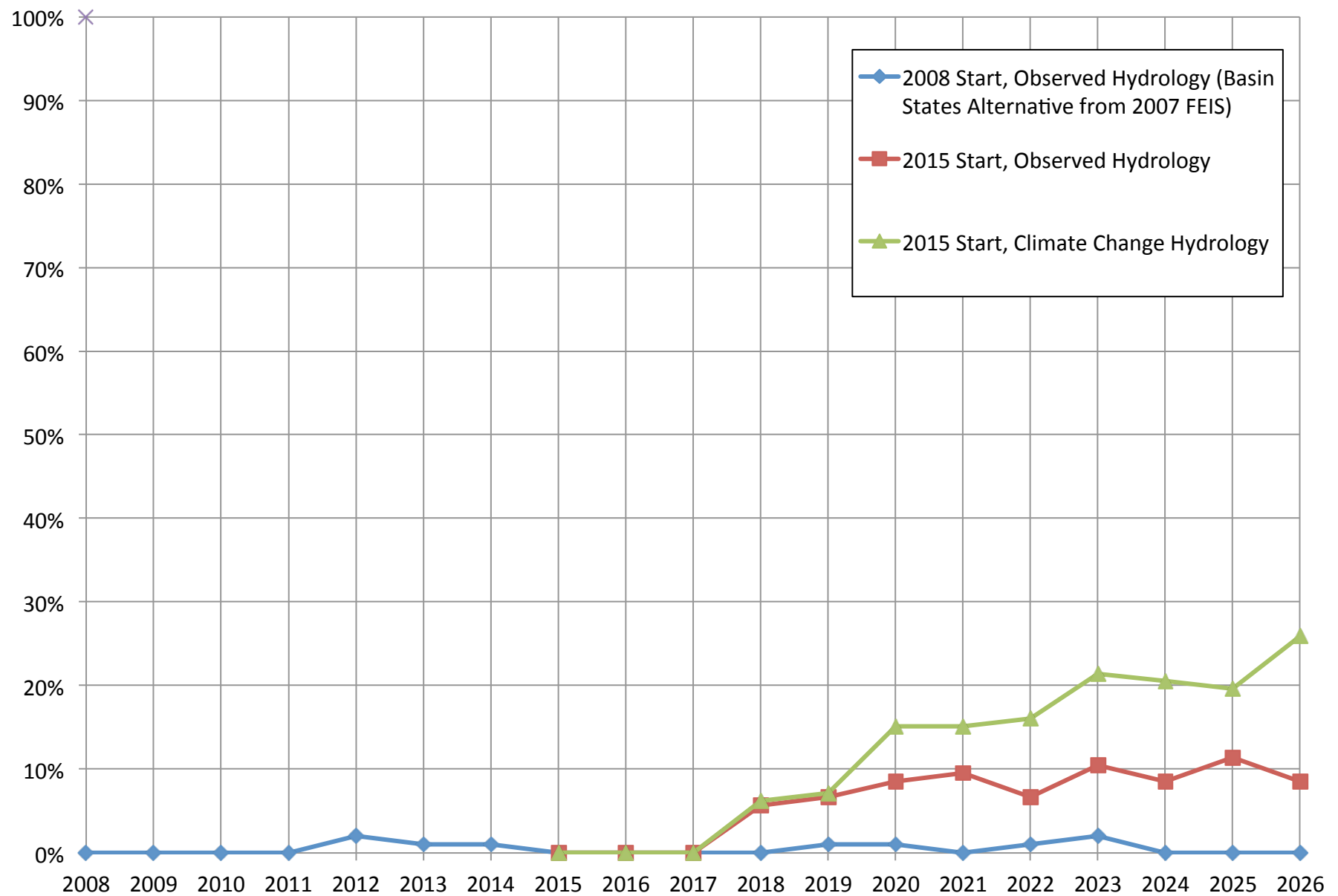
Colorado River Basin Storage

(as of August 24, 2014)

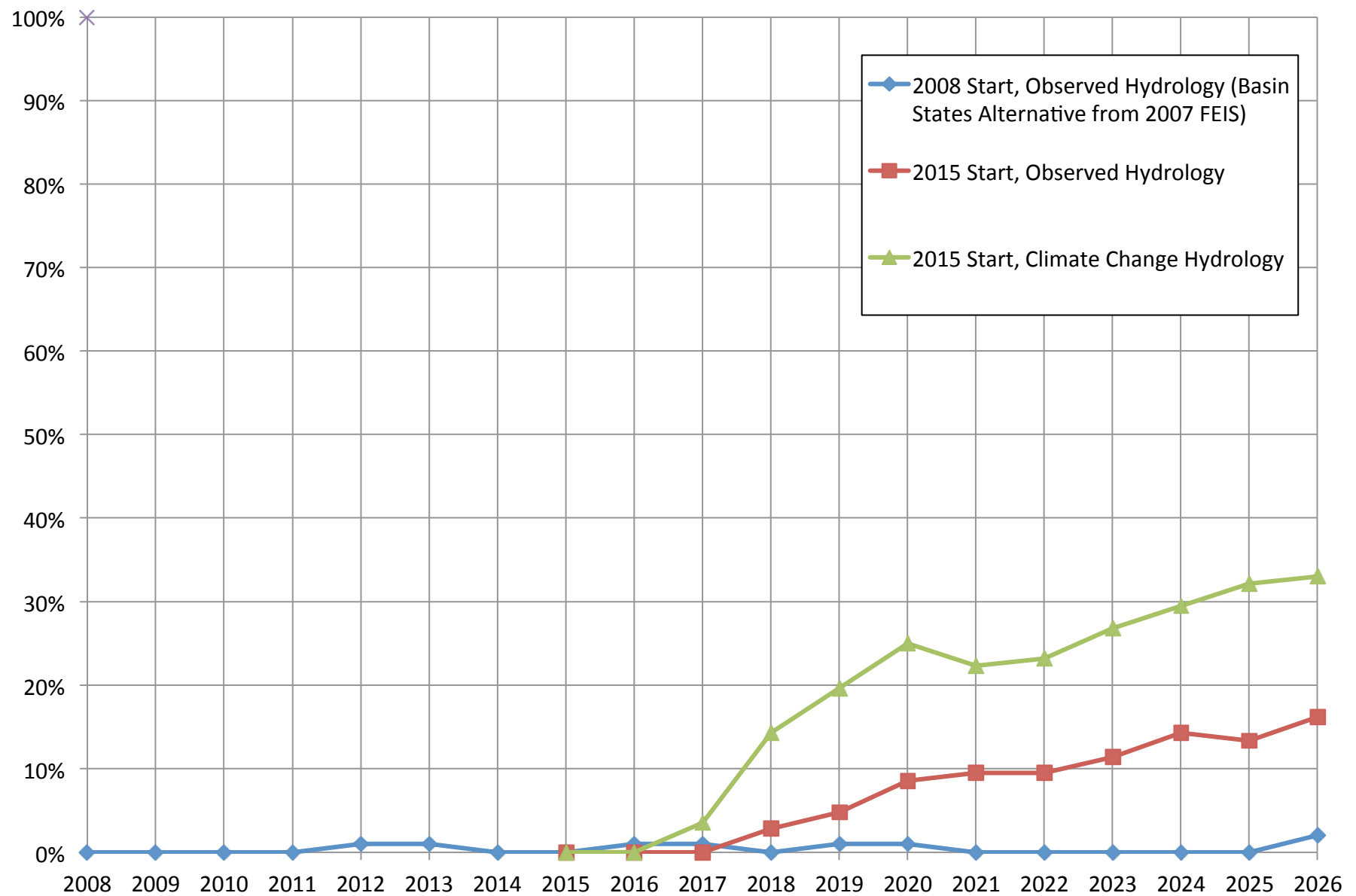
Current Storage	Percent Full	MAF	Elevation (Feet)
Lake Powell	51%	12.36	3,606
Lake Mead	39%	10.09	1,081
Total System Storage*	51%	30.27	NA

*Total system storage was 29.79 maf or 50% this time last year

Powell Elevation < 3,490 feet msl



Mead Elevation < 1,000 feet msl



Percent of Traces with Event or System Condition

Results from August 2014 CRSS^{1,2,3} (values in percent)

	Event or System Condition	2015	2016	2017	2018	2019
Upper Basin – Lake Powell	Equalization Tier	5	20	24	24	32
	<i>Equalization – annual release > 8.23 maf</i>	5	20	24	24	31
	<i>Equalization – annual release = 8.23 maf</i>	0	0	0	0	1
	Upper Elevation Balancing Tier	95	51	53	53	43
	<i>Upper Elevation Balancing – annual release > 8.23 maf</i>	58	43	41	41	34
	<i>Upper Elevation Balancing – annual release = 8.23 maf</i>	37	7	11	12	9
	<i>Upper Elevation Balancing – annual release < 8.23 maf</i>	0	1	1	0	0
	Mid-Elevation Release Tier	0	29	19	14	15
	<i>Mid-Elevation Release – annual release = 8.23 maf</i>	0	0	0	1	2
	<i>Mid-Elevation Release – annual release = 7.48 maf</i>	0	29	19	13	13
	Lower Elevation Balancing Tier	0	0	4	9	10
Lower Basin – Lake Mead	Shortage Condition – any amount (Mead ≤ 1,075 ft)	0	36	58	68	61
	<i>Shortage – 1st level (Mead ≤ 1,075 and ≥ 1,050)</i>	0	36	43	46	34
	<i>Shortage – 2nd level (Mead < 1,050 and ≥ 1,025)</i>	0	0	15	18	17
	<i>Shortage – 3rd level (Mead < 1,025)</i>	0	0	0	4	10
	Surplus Condition – any amount (Mead ≥ 1,145 ft)	0	0	5	7	14
	<i>Surplus – Flood Control</i>	0	0	0	1	2
	Normal or ICS Surplus Condition	100	64	37	25	25

¹ Reservoir initial conditions based on the most probable August 24-month Study projected levels for December 31, 2014.

² Hydrologic inflow traces based on resampling of the observed natural flow record from 1906-2010.

³ Percentages shown may not be representative of the full range of future possibilities that could occur with different modeling assumptions.

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	<i>Shortage – 3rd level (Mead < 1,025)</i>	0	0	0	4	10
	Surplus Condition – any amount (Mead ≥ 1,145 ft)	0	0	5	7	14
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³ Percentages shown may not be representative of the full range of future possibilities that could occur with different modeling assumptions.

Lower Basin Shortages

	2015	2016	2017	2018	2019
Shortage Condition – any amount (Mead $\leq$ 1,075 ft)	0	36	58	68	61

Secretary Jewell's Charge for 2014

"We all know that the best contingency plan would be the one that has broad consensus of both basins and all the states, and the 10 Tribes Partnership as well. That's our goal.

Anyone who needs proof that a contingency plan must be developed quickly need only look at Lake Mead. ... We don't seek consensus for its own sake. We seek consensus, because we all benefit when we work together. ...

But the Department's commitment to partnership cannot be an excuse for inaction. ... Like my predecessors, I'm not going to ignore my responsibility to act if conditions worsen and if states can't reach consensus on contingency actions. I know you don't want to work that way.

I know you want to get to the table and get to the answers yourself. We are happy to be there as a partner, but we're also going to make sure that you are held accountable to making that happen. That's why we need to work together, to identify a suite of coordinated actions, prioritized and tailored to meet local conditions in each basin. To be successful, contingency actions would be based on clearly understood triggering conditions with clearly understood goals. That's what we need.Our challenge is straightforward, even though the mix of solutions is not."

