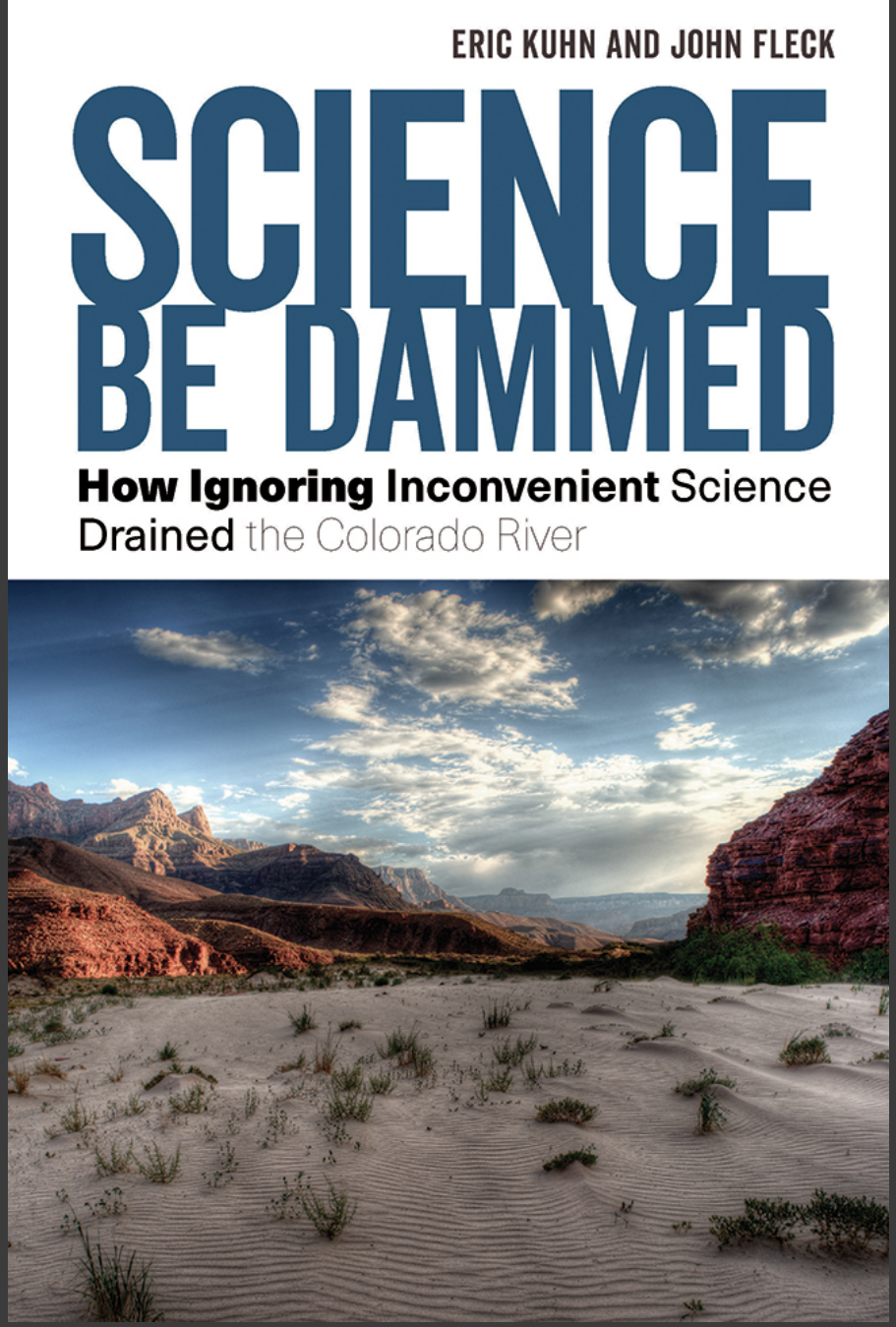
University of Arizona Press

Dec 12, 2019
Eric Kuhn & John Fleck



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BOOK'S BASIC MESSAGES

- THE RIVER'S FLOW – WHAT DID WE KNOW, WHEN DID WE KNOW IT, AND HOW DID WE USE IT?
- THAT THE COMPACT NEGOTIATORS DID THE BEST THEY COULD WITH A LIMITED BUT WET RECORD (1899-1920) IS LARGELY A MYTH.
- FOR THE 1922 COMPACT, 1928 BCPA, & MEXICAN TREATY- AVAILABLE SCIENCE SUGGESTED A SMALLER RIVER (ABOUT 15 MAF @ LEE FERRY).
- DECISIONS ABOUT SUPPLY WERE TOO OFTEN DRIVEN BY POLITICS AND THE "MARKETING" OF PROJECTS NOT THE AVAILABLE DATA.


COLORADO RIVER BASIN

HEARINGS

BEFORE THE

COMMITTEE ON IRRIGATION AND RECLAMATION

UNITED STATES SENATE

SIXTY-NINTH CONGRESS

"The flow of Colorado River and its tributaries is not sufficient…."

– Eugene Clyde LaRue, to the U.S. Senate Committee on Irrigation and Reclamation, December 1925

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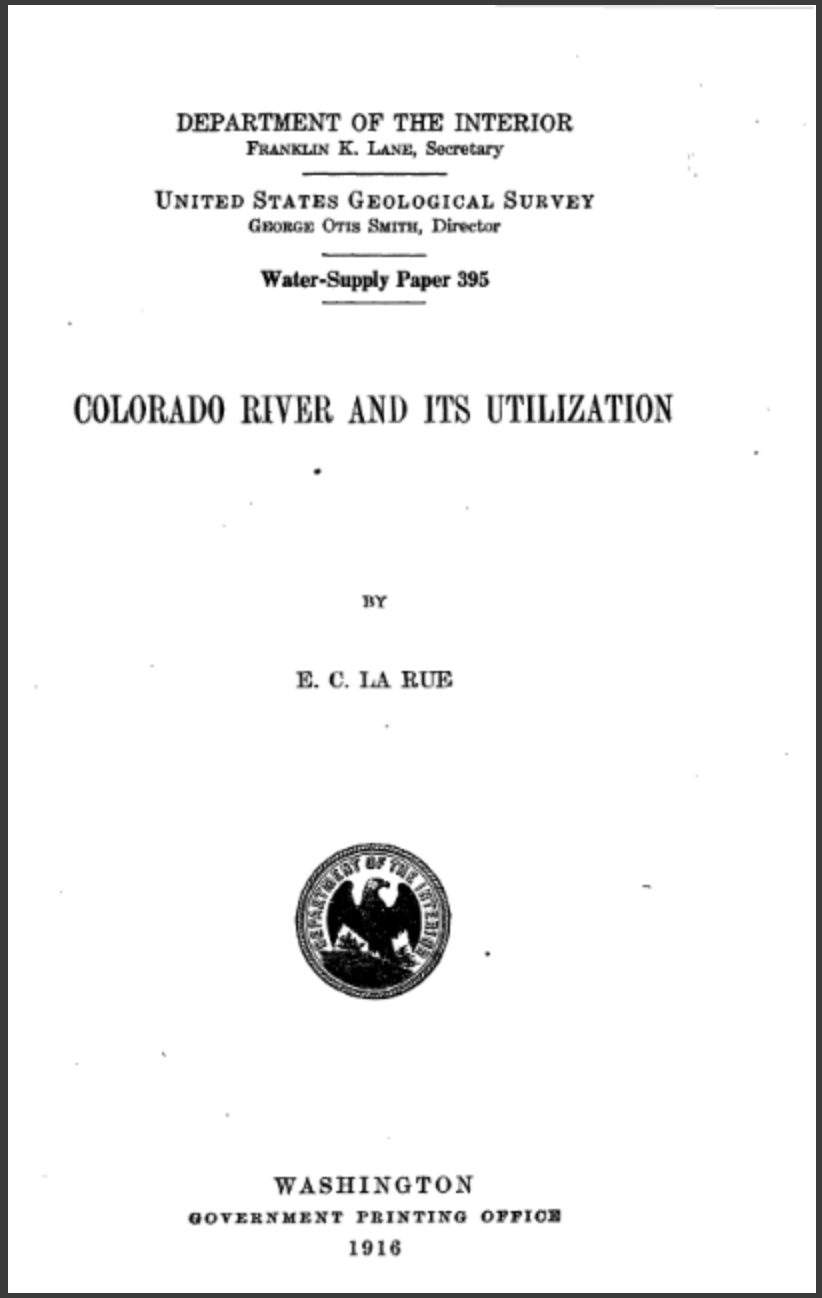
1916 – six years *before* the Compact

E.C. LaRue's first attempt to go beyond the gauge record



DEPARTMENT OF THE INTERIOR
FRANKLIN K. LANE, Secretary

UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, Director

Water-Supply Paper 395

COLORADO RIVER AND ITS UTILIZATION

BY

E. C. LA RUE

WASHINGTON
GOVERNMENT PRINTING OFFICE
1916

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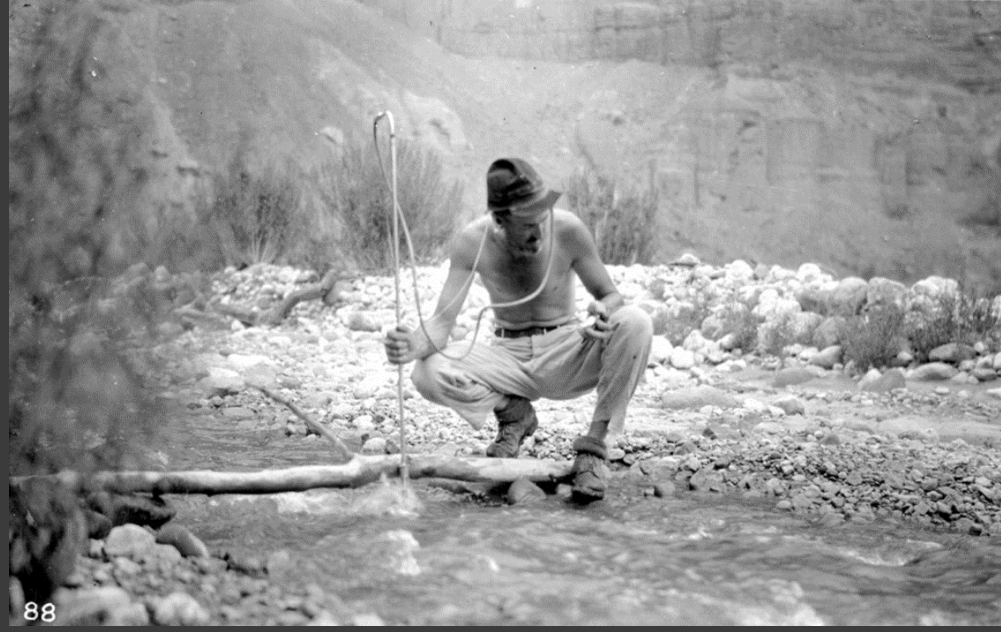

“The flow of the Colorado River and its tributaries is not sufficient to irrigate all the irrigable lands lying within the basin.”

- E.C. LaRue, USGS Water Supply Paper 395, 1916

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“sufficient water for the irrigation of all the lands”
– A.P. Davis, 1922

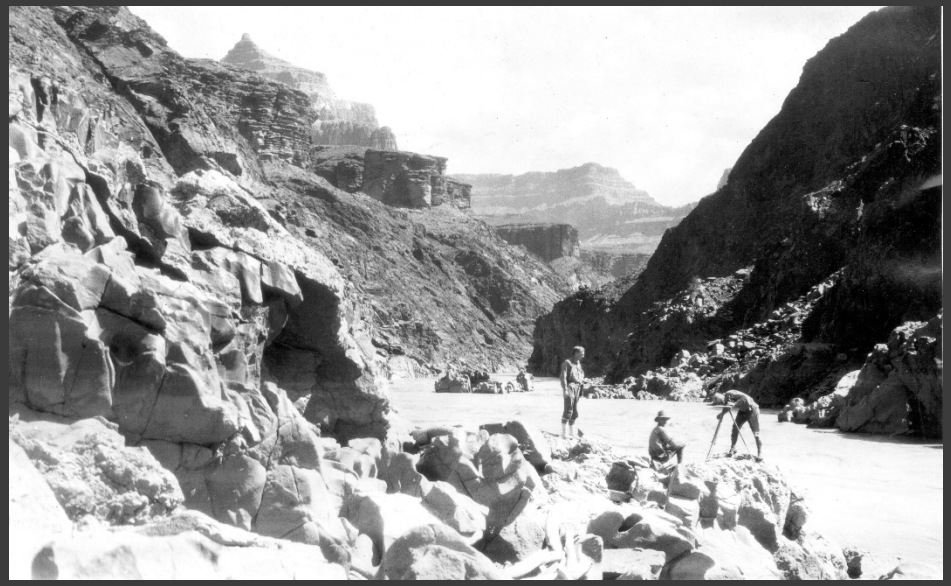
investigations had reached a point where I felt confident that with proper and sufficient conservation which was thought advisable there would be sufficient water for the irrigation of all the lands that could be favorably reached from the standpoint of economics within or adjacent to the Colorado Basin, not only by gravity but by reason-

Arthur Powell Davis, director, U.S. Reclamation Service, first meeting of the Colorado River Compact Commission, Jan. 26, 1922

Herman Stabler, USGS,1923

Uses river stage measurements at the Yuma railroad bridge to estimate actual flows

1878 - 1920



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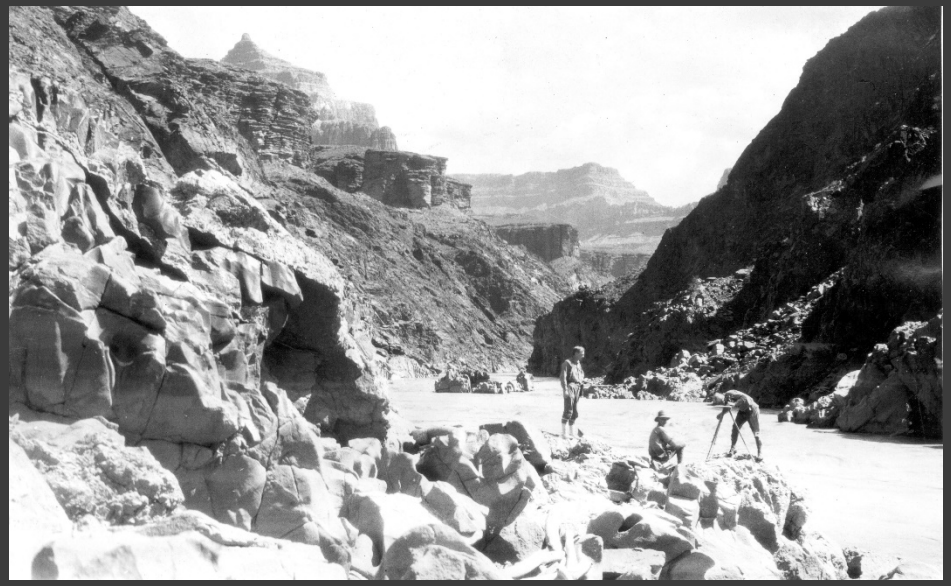
Herman Stabler, USGS, 1923



Stabler's numbers suggest an average annual flow of 14.3 maf

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The first “natural flow” calculation

- 18.1 million acre feet at Lee Ferry
- Arthur Powell Davis, 1923
- Period of record: 1903 - 1920

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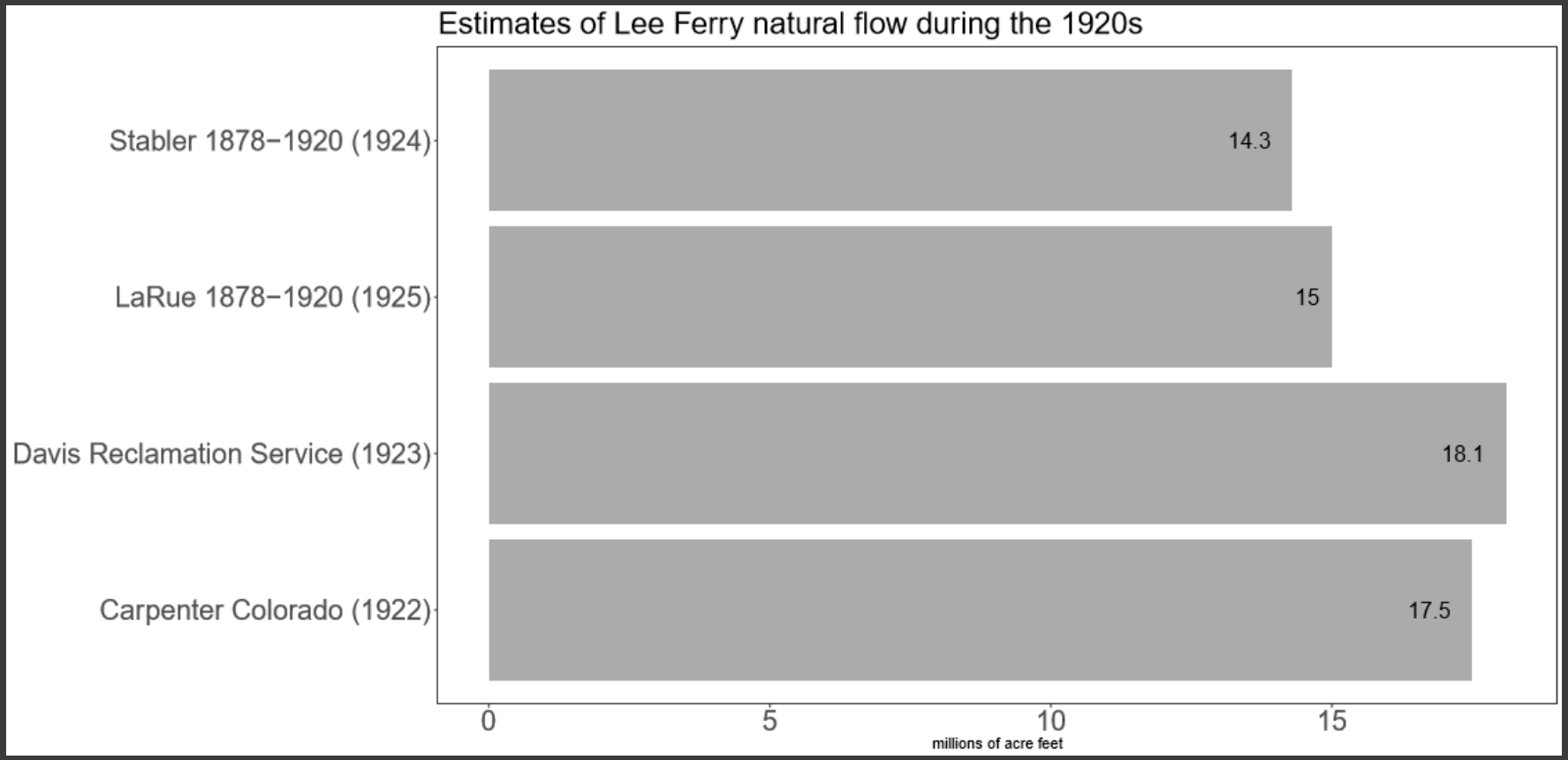

Kuhn and Fleck, *Science be Dammed*

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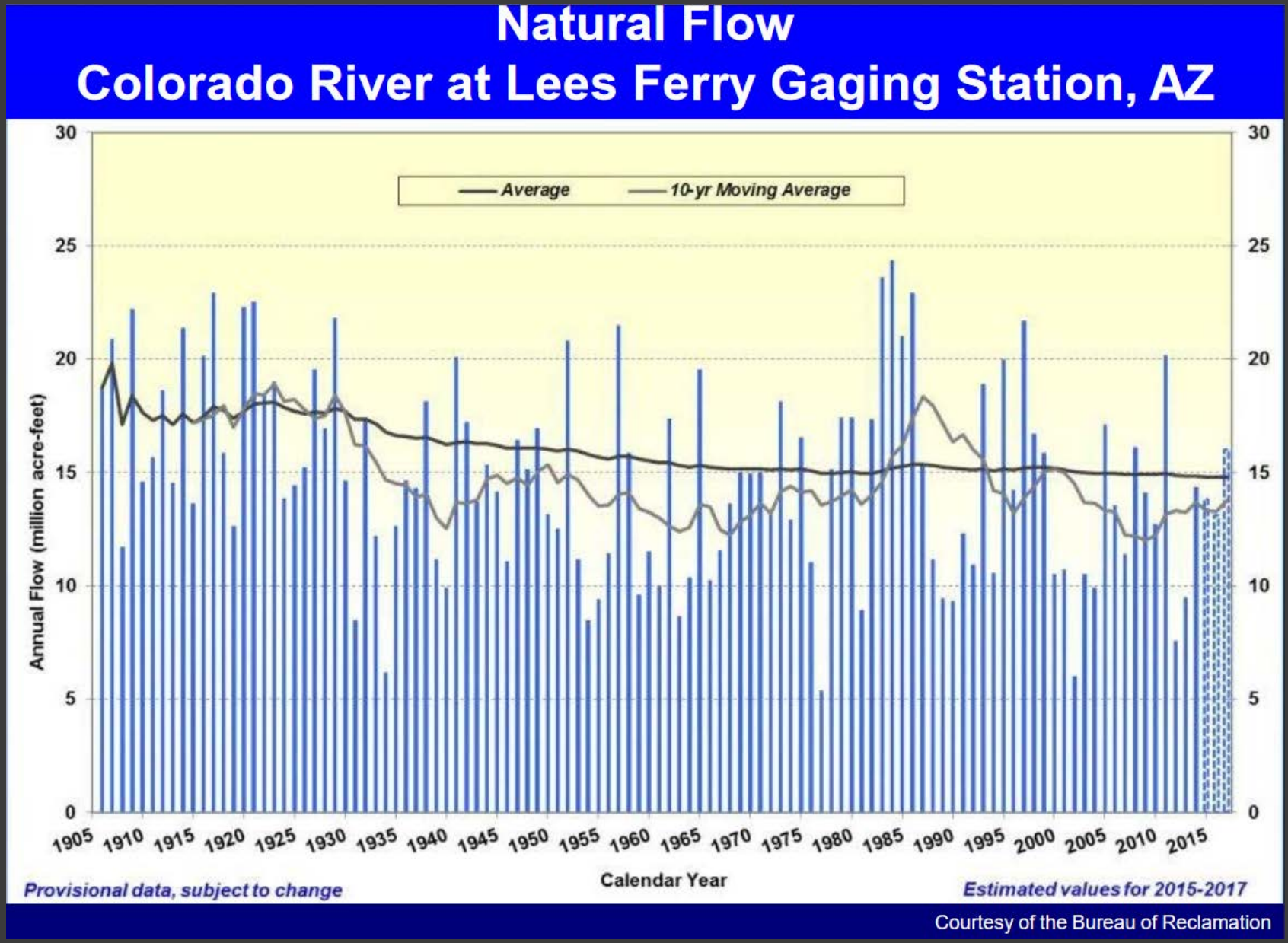
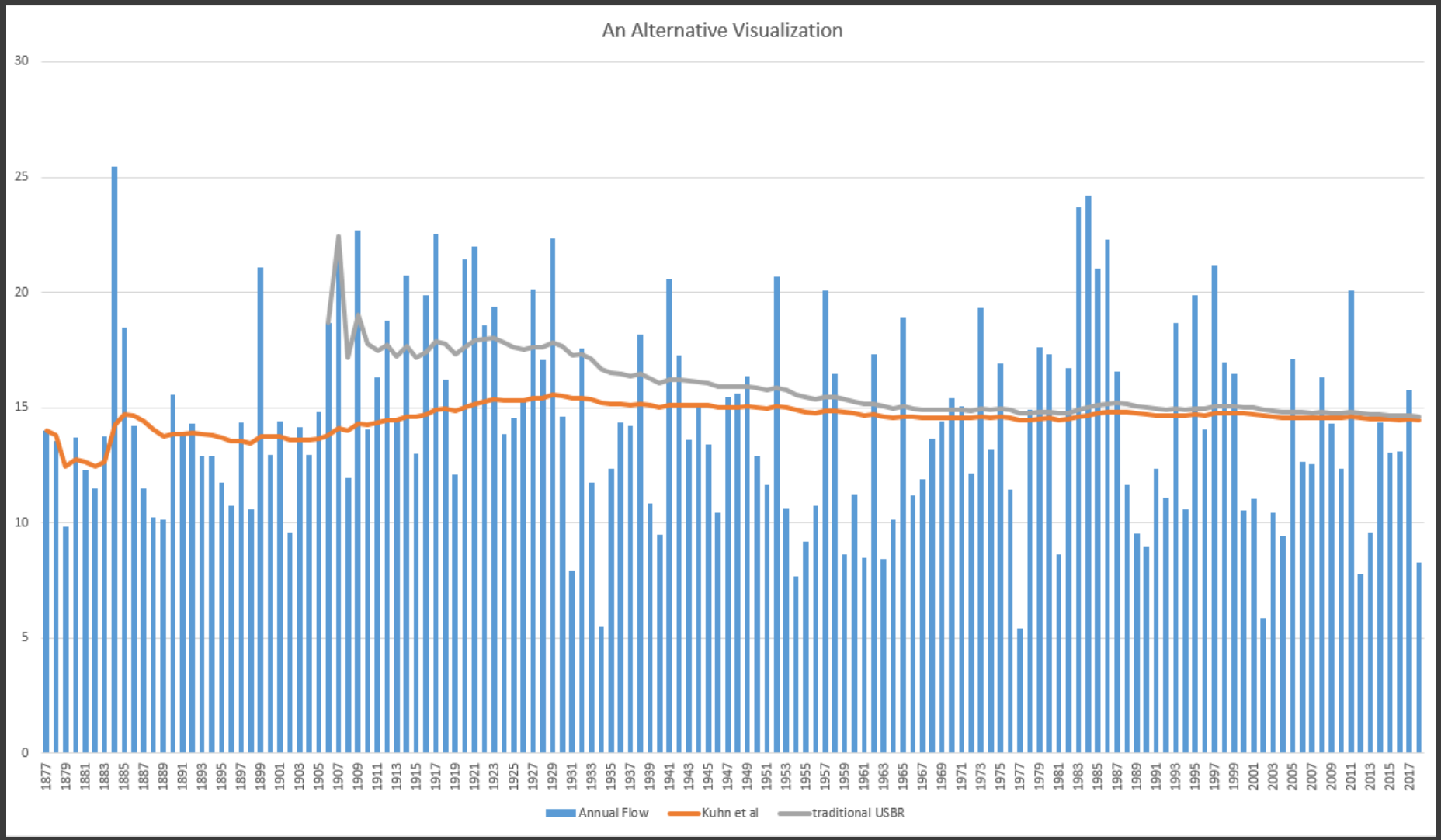


The Colorado River: the traditional view



Kuhn, Fleck, Udall, Kanzer, Science Be Dammed Working Paper 2019-01

MESSAGES FOR THE RIVER'S FUTURE

How will decision makers use the available science to inform their decisions?

Many of the disputed Compact issues from the 30s, 40s, 50s, 60s, & 70s have never been resolved – The UB's Mexican Treaty delivery, how apportionments are measured under the compact, the meaning of Articles III(a) & (b), and a LB compact that covers tributaries & res evaporation are a few.

Have they been forgotten? For the post 2026 River Management Guidelines, will these unresolved issues be resolved or ignored?

The concept of "equity" among states and between basins was a political driver, today the UB is using about 4.5 MAF/YR, the LB about 10 -11 MAF/YR

Much of the Law of the River was based on "certainty" – can we continue to have "fixed obligations" on a river plagued with deep uncertainty caused by climate change?

CAN WE HAVE FIXED OBLIGATIONS ON A DIMINISHING RIVER?

TOTAL SUPPLY	III(c)- 7.5 MAF	III(c &d)- 8.25 MAF	1.5 MAF
(nat Q @ Yuma)	(Upper Basin's obligation @ Lee Ferry)		(del to Mexico)
20 Million AF	37.5%	41.5%	7.5%
(estimated water available by 1922 compact negotiators)			
18 Million AF	41.7%	45.8%	8.3%
(estimated water available for Treaty w Mexico in 1944)			
16.5 Million AF	45.5%	50%	9.1%
(estimated water available for 1968 act –CAP)			
14.0 Million AF	53.6%	58.9%	10.7%
(estimated stress test supply below Yuma 1988-2018)			
12.0 Million AF	62.5%	68.8%	12.5%
(future under climate change)			