Forgotten Law of the River

Section 603 and the Genesis of the Crisis on the Colorado, v3.5a

A Road Paved With Good Intentions

ze·ro-sum

1. a situation in which whatever is gained by one side is lost by the other

beggar-thy-neighbor

Decisions based on self interest leaving the region as a whole worse off

Path Forward: The IBCC's mission is to prevent this in Colorado

win-win

1. of or denoting a situation in which each party benefits in some way.

Disclaimers (added 11/18/19)

I'm a concerned West Slope water rights holder. My family has been farming and ranching in SW Colorado since the 1880's.

These are my views supported by the Montezuma County Commissioners who appointed me to the Southwest Basin Roundtable.

I don't speak for Southwest Basin Roundtable or IBCC, they require consensus.

The Southwest Basin Roundtable has debated some of these issues over the last year and passed one consensus motion, that Colorado should place equal priority on Forest Management, Phreatophyte removal and Weather Modification relative to Demand Management.

The IBCC has just begun working on these issues focused on Demand Management equity and Forest Management.

Colorado Compact 1922

Article I

The major purposes of this compact are to provide for the equitable division and apportionment of the use of the waters of the Colorado River System;

Article II

(a) The term "Colorado River System" means that portion of the Colorado River and its tributaries within the United States of America

Article III

(a) There is hereby apportioned from the Colorado river system in perpetuity to the upper basin and to the lower basin, respectively, the exclusive beneficial consumptive use of 7,500,000 acre-feet of water per annum, which shall include all water necessary for the supply of any rights which may now exist

Colorado Compact 1922

Article III

(b) In addition to the apportionment in paragraph (a), the Lower Basin is hereby given the right to increase its beneficial consumptive use of such waters by one million acre-feet per annum

Article IV

(b) Subject to the provisions of this compact, water of the Colorado River System may be impounded and used for the generation of electrical power, but such impounding and use shall be subservient to the use and consumption of such water for agricultural and domestic purposes and shall not interfere with or prevent use for such dominant purposes.

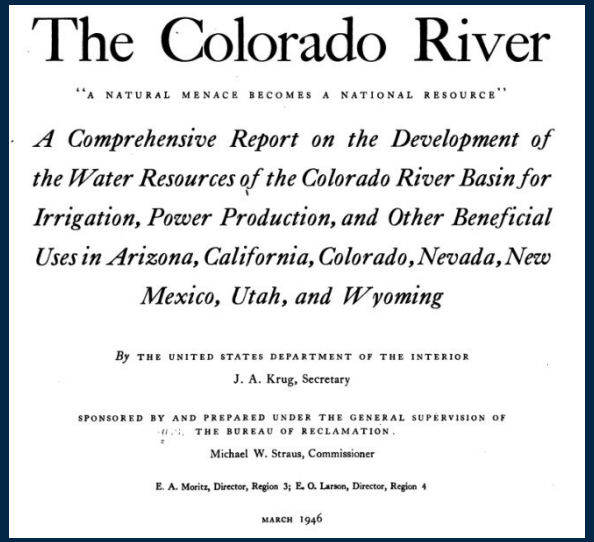
1928 Boulder Canyon Project Act

3. that **the State of Arizona shall have the exclusive beneficial consumptive use of the Gila River and its tributaries** …

4. that **the waters of the Gila River and its tributaries**, except return flow after the same enters the Colorado River, **shall never be subject to any diminution whatever by any allowance of water which may be made by treaty or otherwise to the United States of Mexico … the State of California shall and will mutually agree with the State of Arizona to supply, out of the main stream of the Colorado River, one-half of any deficiency which must be supplied to Mexico by the lower basin**

6. **that all of the provisions of said tri-State agreement shall be subject in all particulars to the provisions of the Colorado River compact**, and …

Lower Basin Tributaries



The Colorado River

"A NATURAL MENACE BECOMES A NATIONAL RESOURCE"

A Comprehensive Report on the Development of the Water Resources of the Colorado River Basin for Irrigation, Power Production, and Other Beneficial Uses in Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming

By THE UNITED STATES DEPARTMENT OF THE INTERIOR

J. A. Krug, Secretary

SPONSORED BY AND PREPARED UNDER THE GENERAL SUPERVISION OF THE BUREAU OF RECLAMATION.

Michael W. Straus, Commissioner

E. A. Moritz, Director, Region 3; E. O. Larson, Director, Region 4

MARCH 1946

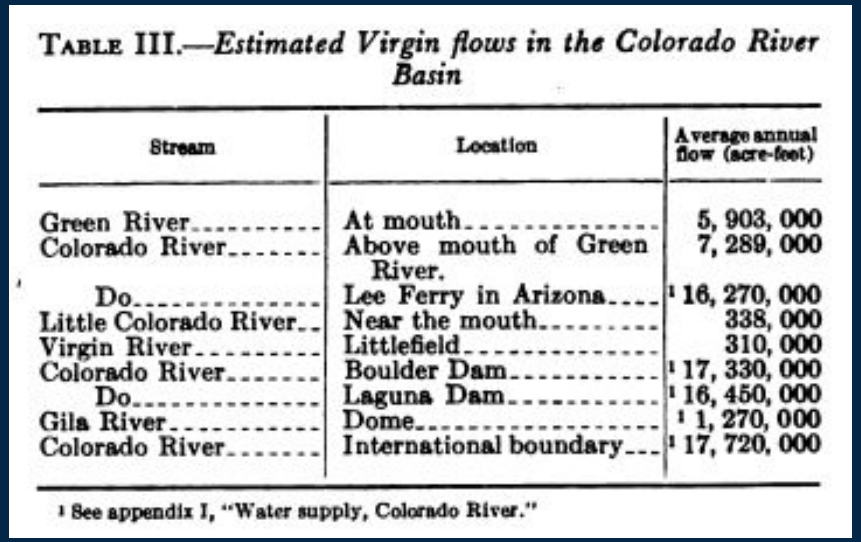


TABLE III.—*Estimated Virgin flows in the Colorado River Basin*

Stream	Location	Average annual flow (acre-feet)
Green River	At mouth	5,903,000
Colorado River	Above mouth of Green River.	7,289,000
Do	Lee Ferry in Arizona	[1] 16,270,000
Little Colorado River	Near the mouth	338,000
Virgin River	Littlefield	310,000
Colorado River	Boulder Dam	[1] 17,330,000
Do	Laguna Dam	[1] 16,450,000
Gila River	Dome	[1] 1,270,000
Colorado River	International boundary	[1] 17,720,000

[1] See appendix I, "Water supply, Colorado River."

1,270,000 + 338,000 + 310,000 + 1,000,000 (Gila wasting) = 2,918,000 acre-feet

"Bureau of Reclamation estimates that Lower Basin tributary flows, while poorly measured, average at least 2.5 MAF/year (and are perhaps as high as 4.5 MAF)." (Kenney, 2011)

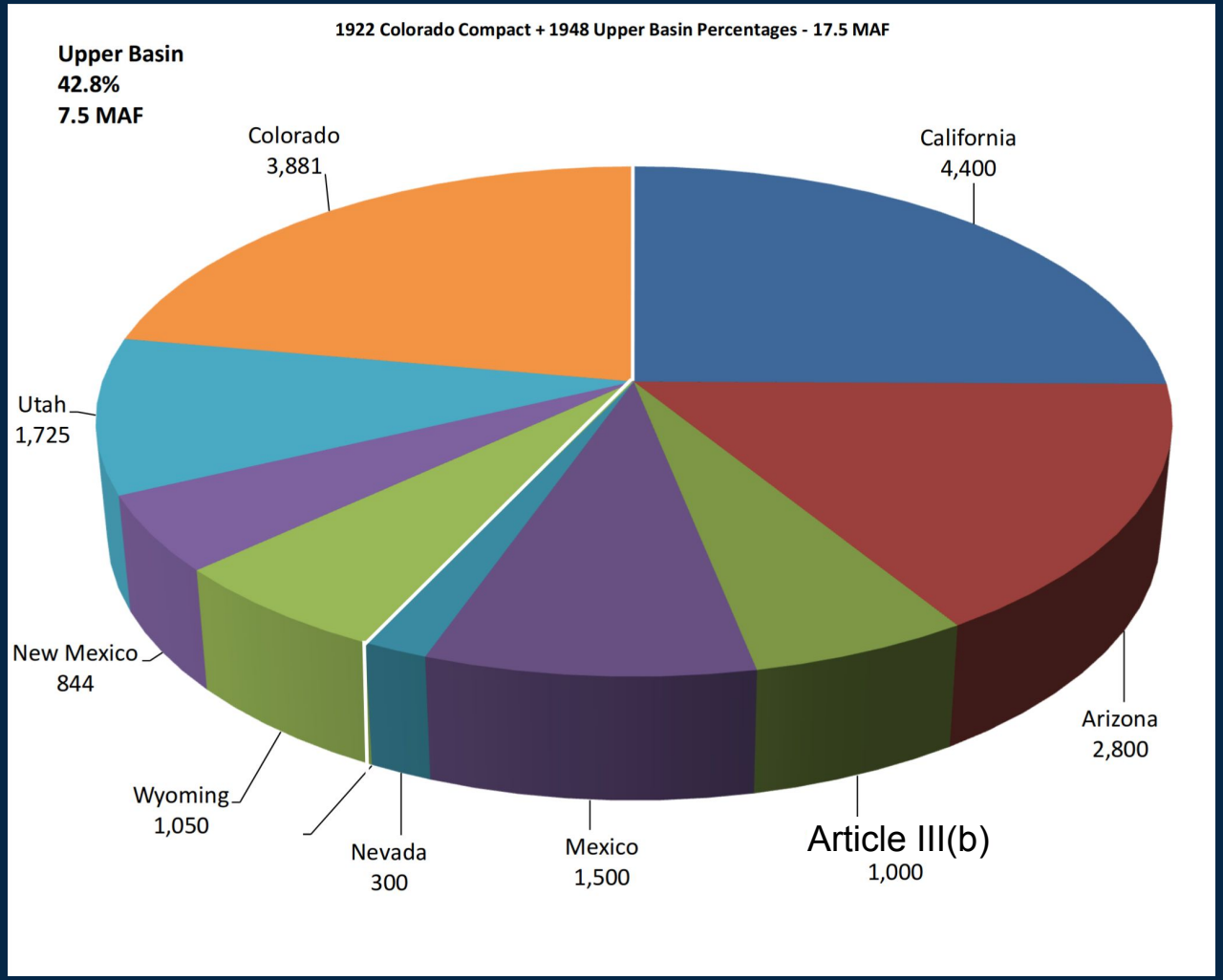
The Story of a Quest for Certainty on a Diminishing River (Kuhn, 2007)

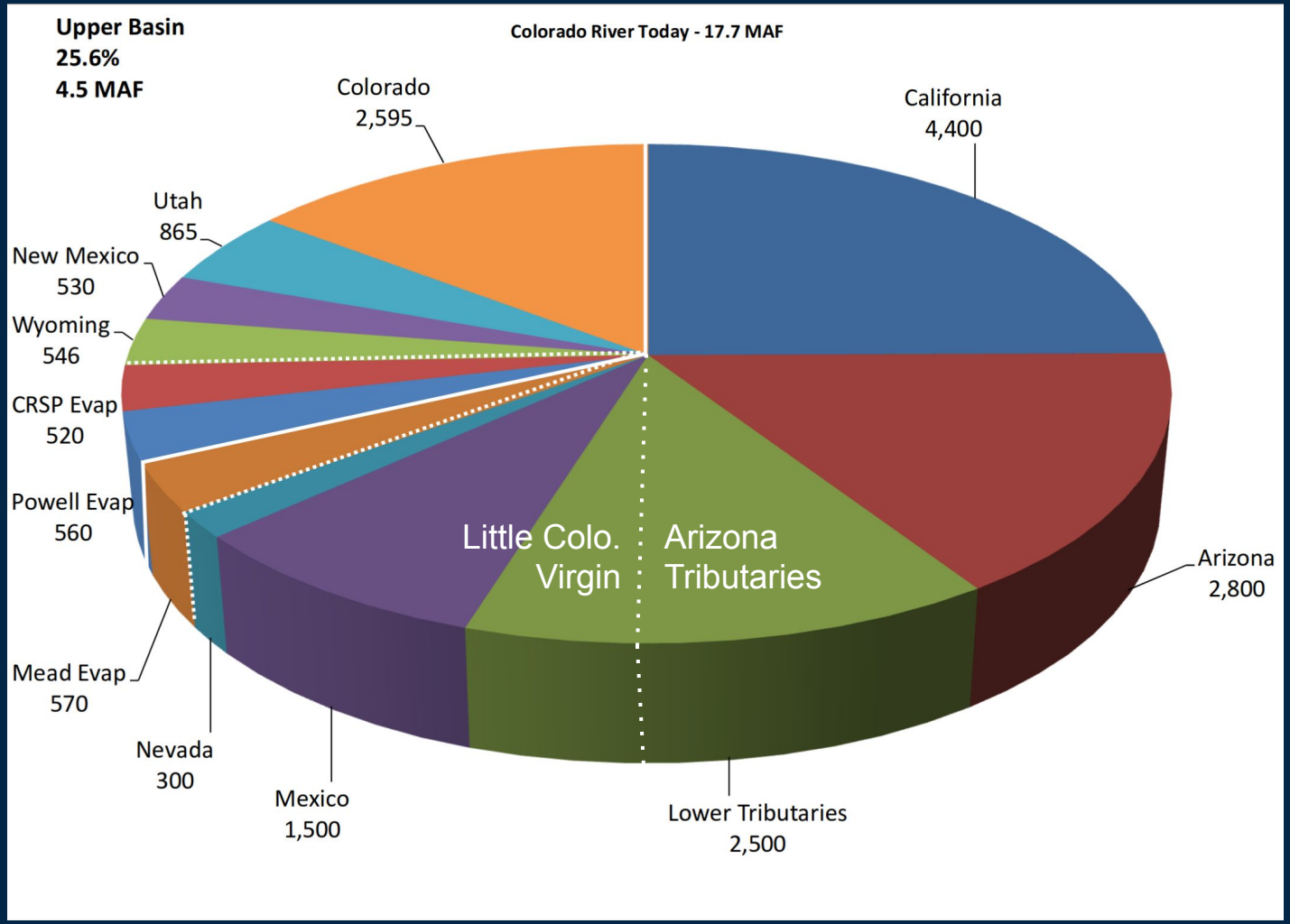
*”**The Gila River is a “wasting” river.** In 1947, Reclamation estimated that the natural flow of the Gila River at its confluence with the Colorado River near Yuma was 1,272,000 af per year. Because the study period was 1897-1943, this is probably a high estimate. Other studies have suggested a natural flow more in the range of one million af per year. However, **the estimated natural flow of the Gila River as it enters the Phoenix, Arizona area for that same 1897 to 1943 period is 2,280,000 af per year, over a million acre feet more that its flow at the mouth. Thus, as it flows from Phoenix to its mouth, it naturally loses or “wastes” over a million acre feet of water.**”*

Path Forward: USBR and Lower Basin should accurately account for depletions, natural flows, carriage and evaporation losses in the Lower Basin


LOWER BASIN
CALIFORNIA
ARIZONA
PACIFIC O
SOUTHERN NEVADA WATER AUTHORITY
COACHELLA VALLEY WATER DISTRICT
METROPOLITAN WATER DISTRICT
IMPERIAL IRRIGATION DISTRICT
CENTRAL ARIZONA WATER CONSERVATION DISTRICT
Central Arizona Project Canal
Colorado River Aquaduct
Coachella Canal
San Diego Aquaduct
All American Canal
GRAND CANYON NP
LAKE MEAD NRA
GLEN CANYON NRA
Lake Mead
Lake Mojave
Lake Havasu
Lake Powell
Salton Sea
Salt River
Gila River
Little Colorado River
San Juan River
Rio Grande
Rio Colorado
Cienega de Santa Clara
Laguna Salada
Las Vegas
Hoover
Davis
Parker
Alamo
Headgate Rock
Palo Verde
Imperial
Yuma
Laguna
Morelos
Senator Wash
Painted Rock
Gunlock
St. George
Quail Creek
Sand Hollow
Page
Glen Canyon
Lemon
Najavo
Farmington
Gallup
Flagstaff
Winslow
Lyman
Horseshoe Bartlett
Theodore Roosevelt
New Waddell
Phoenix
Horse Mesa
Mormon Flat
Stewart Mountain
Granite Reef
Coolidge
Tucson
Los Angeles
Palm Springs
San Diego
Tijuana
Mexicali
Lake Havasu City
Pahranagat Wash
Muddy
Virgin R.
Kanab Creek
Chinle Wash
Animas
Chaco R.
Puerco R.
Zuñi R.
Verde R.
Agua Fria R.
Hassayampa R.
Black R.
San Francisco R.
Gila R.
San Simon R.
San Pedro R.
Santa Cruz R.
New R.
Alamo R.
Rio Hardy

Audubon


1922 Colorado Compact + 1948 Upper Basin Percentages - 17.5 MAF
Upper Basin
42.8%
7.5 MAF
Colorado
3,881
California
4,400
Utah
1,725
New Mexico
844
Wyoming
1,050
Nevada
300
Mexico
1,500
Article III(b)
1,000
Arizona
2,800


Upper Basin
25.6%
4.5 MAF
Colorado River Today - 17.7 MAF
Colorado
2,595
California
4,400
Utah
865
New Mexico
530
Wyoming
546
CRSP Evap
520
Powell Evap
560
Little Colo.
Virgin
Arizona
Tributaries
Arizona
2,800
Mead Evap
570
Nevada
300
Mexico
1,500
Lower Tributaries
2,500

1960 Special Master Rifkind Findings

On Lower Basin evaporation and carriage losses:

“Reservoir evaporation, channel and other losses sustained prior to the diversion of water from the mainstream are not chargeable to the states but are to be treated as diminution of supply. Only after water is diverted from the mainstream are losses on it chargeable to a state as consumption.”

Arizona Water Use By Source (2017)

6.9 - 7.8 maf

36%
COLORADO RIVER
2.5 - 2.8 maf

3%
RECLAIMED WATER

21%
IN-STATE RIVERS
1.4 - 1.6 maf

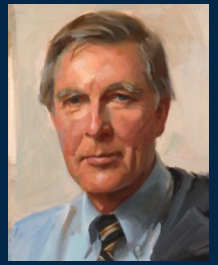
40%
GROUNDWATER
2.8 - 3.1 maf

1944 Mexico Treaty - 1922 Colorado Compact

Article III (c)

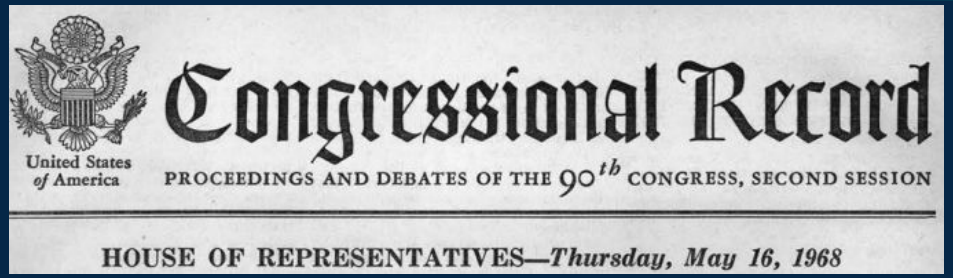
If, as a matter of international comity, the United States of America shall hereafter recognize in the United States of Mexico any right to the use of any waters of the Colorado river system, such waters shall be supplied first from the waters which are surplus over and above the aggregate of the quantities specified in Paragraphs (a) and (b); and if such surplus shall prove insufficient for this purpose, then, the burden of such deficiency shall be equally borne by the upper basin and the lower basin, and whenever necessary the states of the upper division shall deliver at Lee Ferry water to supply one half of the deficiency so recognized in addition to that provided in Paragraph (d).

1944 Mexico Treaty



Mo Udall
D-Arizona

Connally
D-Texas



United States of America

Congressional Record

PROCEEDINGS AND DEBATES OF THE 90th CONGRESS, SECOND SESSION

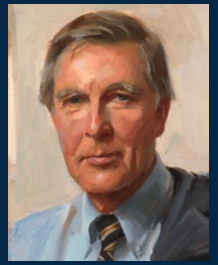
HOUSE OF REPRESENTATIVES—*Thursday, May 16, 1968*

Udall: *"it seems to be no secret that Senator Connally of Texas was the chief proponent of a new treaty with Mexico relating to these rivers.(Rio Grande & Colorado)"*

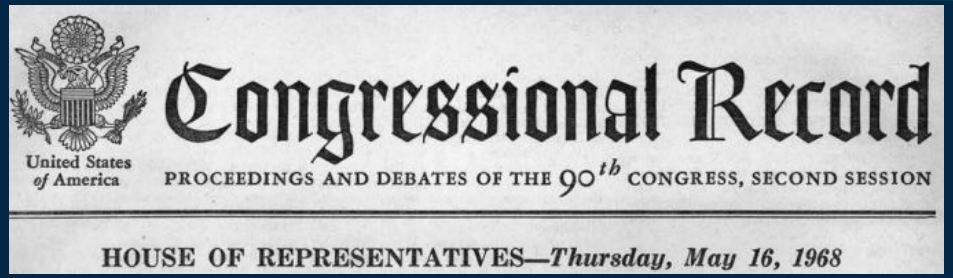
" … the Mexicans were only taking about 750,000 acre-feet out of the Colorado—but wanted more … So the "trade" was made by which the Mexican Government gave up a big part of its claim on the Rio Grande—in exchange for doubling Mexico's supply on the Colorado."

"…giving Mexico first call on the river for a net of 1,500,000 acre-feet"

1944 Mexico Treaty



Mo Udall
D-Arizona



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"At the treaty hearings numerous opposition witnesses warned that a shortage situation would ultimately come to pass—as it now seems clear will be the case."

"We think that the United States having undertaken this as a national obligation for a valid International reason, should not require the farmers, the water users, the cities of the Colorado River Basin to make good on this"

Path Forward: Interior should fulfill this national obligation

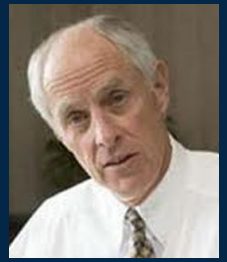
1963 Arizona Turns To Litigation and the Supreme Court

- *Arizona tried to kill the compact, cases '31, '34, '36*
- *Lower Basin disputes had to be settled before Congress would authorize CAP*
- *Case ran from '51 to '63*
- *Special Master Rifkind finding in 1960 and two dissents are interesting*

Supreme Court Justice William O. Douglas
Arizona v California Dissenting Opinion

"With due respect, the majority achieves that result by misreading the Colorado River Compact, the Project Act, and by misreading the legislative history leading up to the California Limitation Act."

1963 Arizona v California



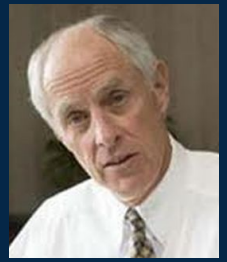
Larry MacDonnell, Getches Wilkinson, formerly University of Wyoming
Arizona v California Revisited (2012)

"… Arizona v. California fostered unsustainable increases in consumption of basin water and created uncertainties in the meaning of the 1922 Compact that are now at issue."

"Arizona's attorneys and advisors … recognized their position was weak under traditional principles of equitable apportionment law... developed a new strategy emphasizing decisions made by Congress and the Secretary that had already determined Arizona's rights as a matter of law."

"Arizona's uncompromising resistance ultimately yielded significant benefits for the state."

1963 Arizona v California



Larry MacDonnell, Getches Wilkinson, formerly University of Wyoming
Arizona v California Revisited (2012)

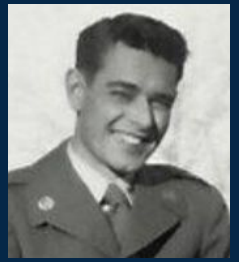
"The Upper Division states remain equally committed to the position that:

- *the Gila is part of the Colorado River basin,*
- *its water supply is subject to the provisions of the 1922 Compact*
- *its uses must be considered both in determining how much water the Lower Basin is consuming and in deciding who bears responsibility for meeting the Mexican Treaty delivery obligation."*

"It is very possible we will need to have U.S. Supreme Court resolution of this matter"

Path Forward: Hope for the best, prepare for the worst!

1965 Water Supplies of the Colorado River



Royce Tipton, P.E, Denver Water and UCRC
Water Supplies of the Colorado River (1965)

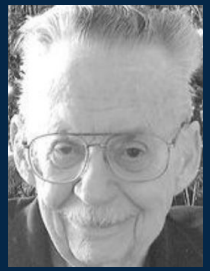
"any increase in the use on the lower river must now be made from water apportioned to the Upper Basin, but now unused by it."

"...at present the aggregate demand on Lake Mead is close to 9 MAF per year."

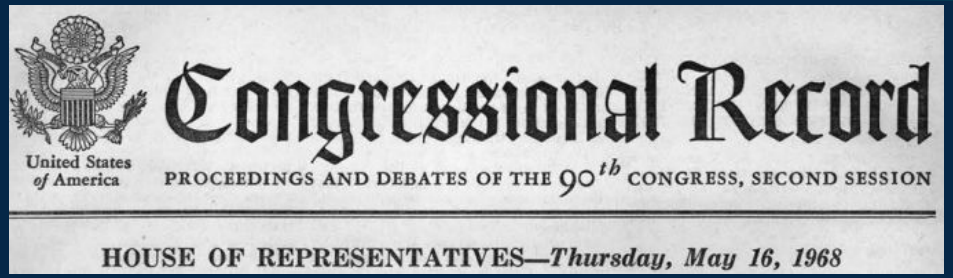
This is Without CAP, 1.5 MAF evaporation/carriage loss, add CAP its 10.5 MAF

"...even present uses on the lower river are dependent upon significant amounts of water released from Lake Powell in excess of those required by the Colorado River Compact."

1965 The First Version of Section 603, The Forgotten Law of the River



Thomas Cahill,
Wyoming P.E.
Speech 1966



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… the UCRC proposed amendments to H.R. 4671 which they felt would protect future development in the Upper Basin. On August 16, 1965, the Upper Basin states agreed before they could support the Central Arizona Project…

1. That all federal projects within the Lower Colorado River Basin be limited so as not to prejudice, impair, or preclude the future federal authorization of projects which will be required for the annual consumptive use by Upper Basin states of water that may be physically available after delivery of 75 million acre-feet at Lee's Ferry in any period of ten consecutive years;…

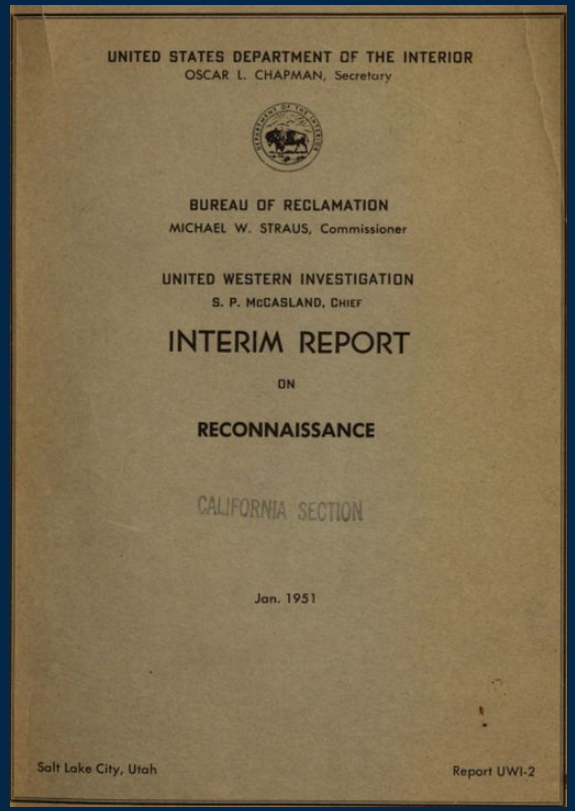
1965 Regional Compromise

CQ Almanac Congressional Quarterly Almanac (1968)

In 1965 and 1966, Aspinall had helped develop a regional compromise which, on July 5, 1966, gained the support of all the Governors in the Basin..

1. *Interior Department... feasibility study of importing 2.5 maf of water into the Colorado*
2. *declaring the Mexican Water Treaty a national obligation;*
3. *specifying how the dams on the river were to be operated, thus protecting the Upper Basin against excessive draw-downs of its reservoirs…*
4. *authorizing construction of five water projects in Colorado.*
5. *...authorize Hualapai and Marble Canyon Dams in Arizona so that their revenues would produce enough money to help pay for importation works.*

Older Augmentation Studies



UNITED STATES DEPARTMENT OF THE INTERIOR
OSCAR L. CHAPMAN, Secretary

BUREAU OF RECLAMATION
MICHAEL W. STRAUS, Commissioner

UNITED WESTERN INVESTIGATION
S. P. McCASLAND, CHIEF

INTERIM REPORT

ON

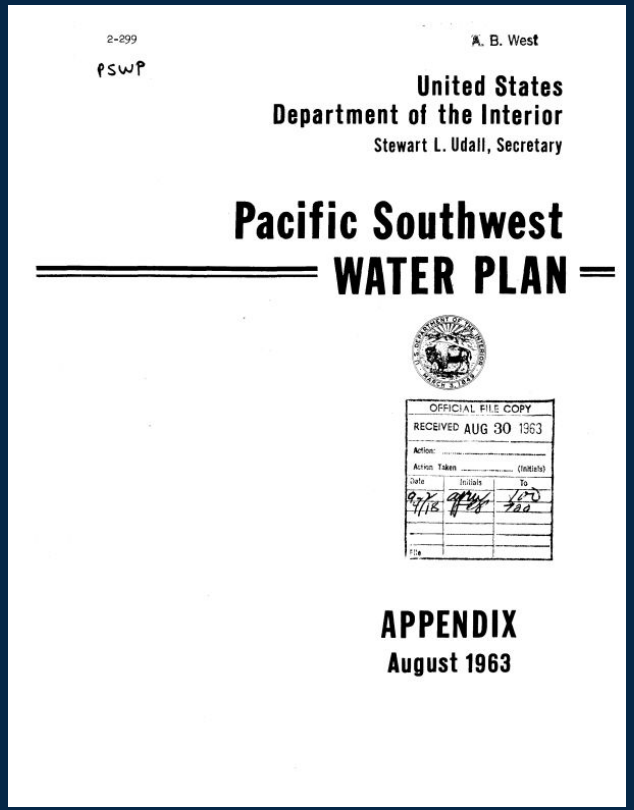
RECONNAISSANCE

CALIFORNIA SECTION

Jan. 1951

Salt Lake City, Utah

Report UWI-2



2-299

PSWP

A. B. West

United States
Department of the Interior
Stewart L. Udall, Secretary

Pacific Southwest
WATER PLAN

OFFICIAL FILE COPY
RECEIVED AUG 30 1963
Action:
Action Taken ..... (Initials)

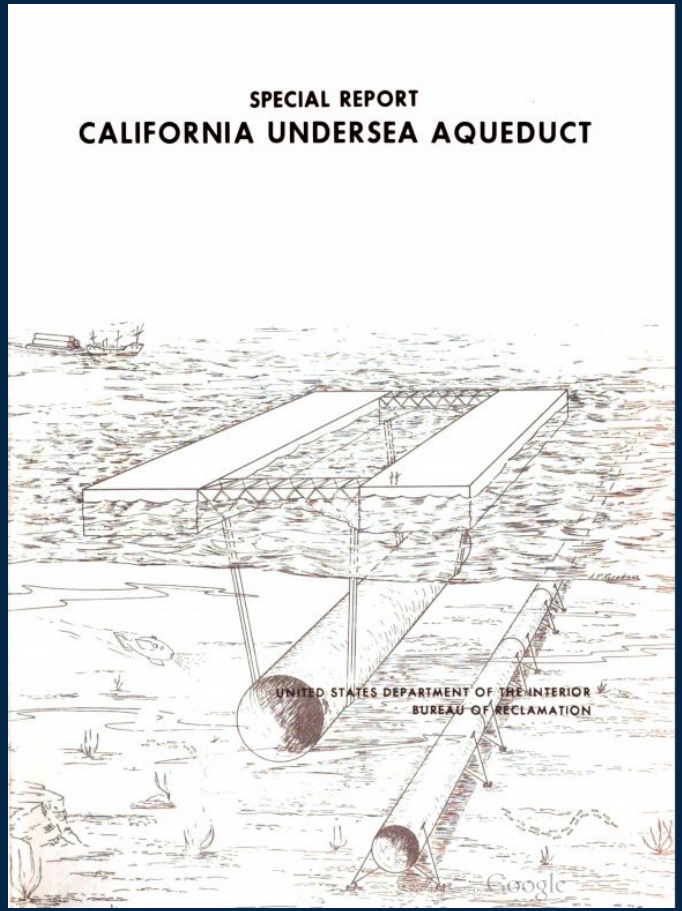
Date	Initials	To
9/5/63		

File

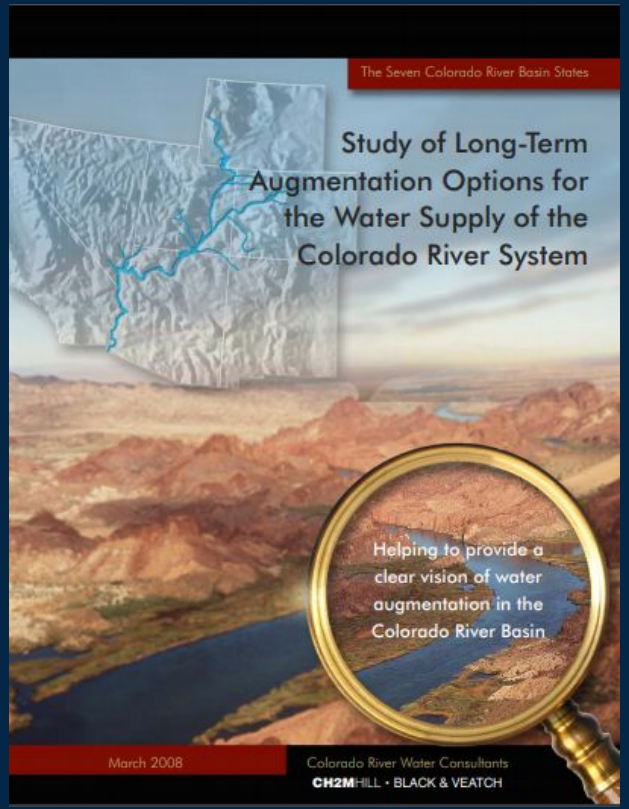
APPENDIX
August 1963

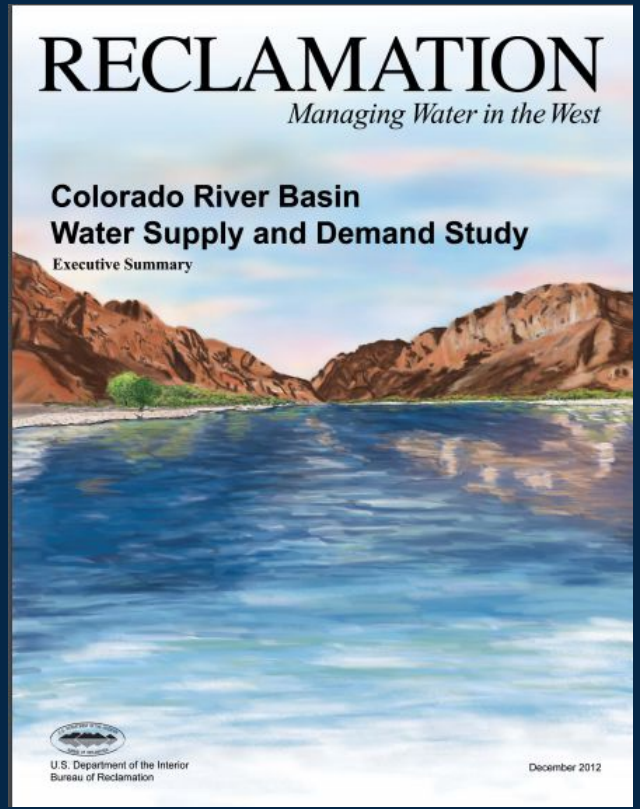
Older Augmentation Studies/Schemes

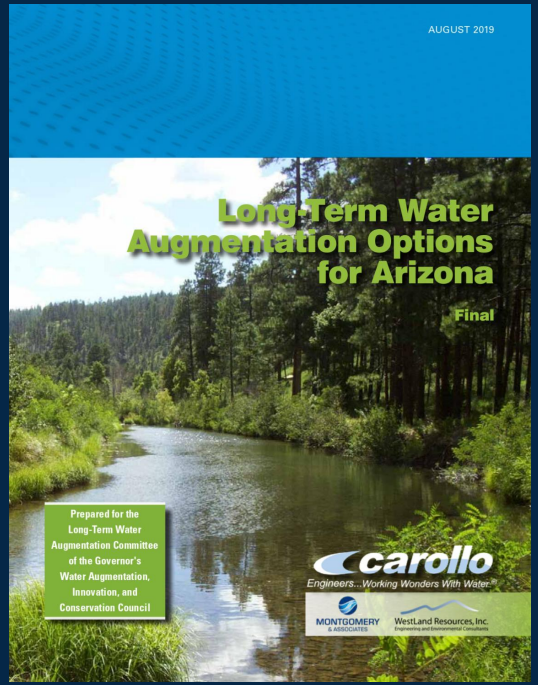
254. Clark, Chapin D. "Northwest-Southwest Water Diversion — Plans and Issues." *Willamette Law Review* 3 (Fall, 1965), 215-62. Clark first summarizes the political evolution of the Northwest-Southwest water diversion proposals, concluding with a statement of the problem as of 1965: (1) resistance of Northwest political leaders is high, (2) the conservationists are struggling vigorously to prevent additional dams on the Colorado and (3) the upper Colorado River Basin states are increasingly demanding water from the Northwest. He then details the particular problems in Arizona and California which are causing their demands for additional water. He goes on to summarize plans for diversion and concludes by examining the major economic and political issues underlying the overall diversion controversy.



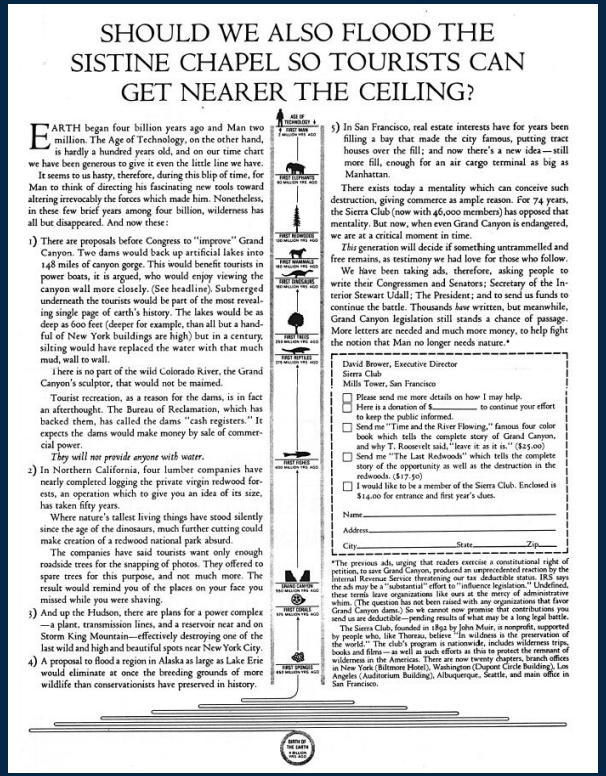
Recent Augmentation Studies







1966 Sierra Club Kills Grand Canyon Dams



SHOULD WE ALSO FLOOD THE SISTINE CHAPEL SO TOURISTS CAN GET NEARER THE CEILING?

EARTH began four billion years ago and Man two million. The Age of Technology, on the other hand, is hardly a hundred years old, and on our time chart we have been generous to give it even the little line we have.

It seems to us hasty, therefore, during this blip of time, for Man to think of directing his fascinating new tools toward altering irrevocably the forces which made him. Nonetheless, in these few brief years among four billion, wilderness has all but disappeared. And now these:

1) There are proposals before Congress to "improve" Grand Canyon. Two dams would back up artificial lakes into 148 miles of canyon gorge. This would benefit tourists in power boats, it is argued, who would enjoy viewing the canyon wall more closely. (See headline). Submerged underneath the tourists would be part of the most revealing single page of earth's history. The lakes would be as deep as 600 feet (deeper for example, than all but a handful of New York buildings are high) but in a century, silting would have replaced the water with that much mud, wall to wall.

There is no part of the wild Colorado River, the Grand Canyon's sculptor, that would not be maimed.

Tourist recreation, as a reason for the dams, is in fact an afterthought. The Bureau of Reclamation, which has backed them, has called the dams "cash registers." It expects the dams would make money by sale of commercial power.

They will not provide anyone with water.

2) In Northern California, four lumber companies have nearly completed logging the private virgin redwood forests, an operation which to give you an idea of its size, has taken fifty years.

Where nature's tallest living things have stood silently since the age of the dinosaurs, much further cutting could make creation of a redwood national park absurd.

The companies have said tourists want only enough roadside trees for the snapping of photos. They offered to spare trees for this purpose, and not much more. The result would remind you of the places on your face you missed while you were shaving.

3) And up the Hudson, there are plans for a power complex —a plant, transmission lines, and a reservoir near and on Storm King Mountain—effectively destroying one of the last wild and high and beautiful spots near New York City.

4) A proposal to flood a region in Alaska as large as Lake Erie would eliminate at once the breeding grounds of more wildlife than conservationists have preserved in history.

5) In San Francisco, real estate interests have for years been filling a bay that made the city famous, putting tract houses over the fill; and now there's a new idea—still more fill, enough for an air cargo terminal as big as Manhattan.

There exists today a mentality which can conceive such destruction, giving commerce as ample reason. For 74 years, the Sierra Club (now with 46,000 members) has opposed that mentality. But now, when even Grand Canyon is endangered, we are at a critical moment in time.

This generation will decide if something untrammelled and free remains, as testimony we had love for those who follow.

We have been taking ads, therefore, asking people to write their Congressmen and Senators; Secretary of the Interior Stewart Udall; The President; and to send us funds to continue the battle. Thousands *have* written, but meanwhile, Grand Canyon legislation still stands a chance of passage. More letters are needed and much more money, to help fight the notion that Man no longer needs nature.*

David Brower, Executive Director
Sierra Club
Mills Tower, San Francisco

- ☐ Please send me more details on how I may help.
- ☐ Here is a donation of $_____ to continue your effort to keep the public informed.
- ☐ Send me "Time and the River Flowing," famous four color book which tells the complete story of Grand Canyon, and why T. Roosevelt said, "leave it as it is." ($25.00)
- ☐ Send me "The Last Redwoods" which tells the complete story of the opportunity as well as the destruction in the redwoods. ($17.50)
- ☐ I would like to be a member of the Sierra Club. Enclosed is $14.00 for entrance and first year's dues.

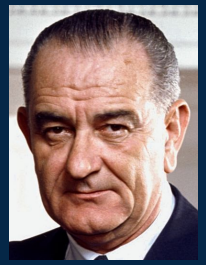
Name_____
Address_____
City_____ State_____ Zip_____

*The previous ads, urging that readers exercise a constitutional right of petition, to save Grand Canyon, produced an unprecedented reaction by the Internal Revenue Service threatening our tax deductible status. IRS says the ads may be a "substantial" effort to "influence legislation." Undefined, these terms leave organizations like ours at the mercy of administrative whim. (The question has not been raised with any organizations that favor Grand Canyon dams.) So we cannot now promise that contributions you send us are deductible—pending results of what may be a long legal battle.

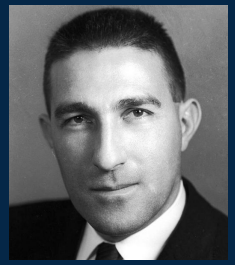
The Sierra Club, founded in 1892 by John Muir, is nonprofit, supported by people who, like Thoreau, believe "In wildness is the preservation of the world." The club's program is nationwide, includes wilderness trips, books and films—as well as such efforts as this to protect the remnant of wilderness in the Americas. There are now twenty chapters, branch offices in New York (Biltmore Hotel), Washington (Dupont Circle Building), Los Angeles (Auditorium Building), Albuquerque, Seattle, and main office in San Francisco.

Marble Canyon and Hualapai Dams, peaking power to fund augmentation

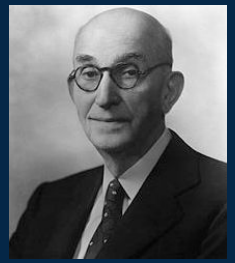
1968 “I Shall Not Seek”



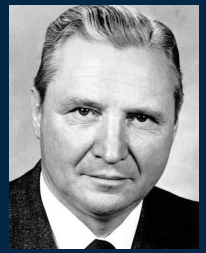
Lyndon
Johnson
POTUS
D-Texas



Stewart
Udall
Interior
D-Arizona



Carl
Hayden
D-Arizona



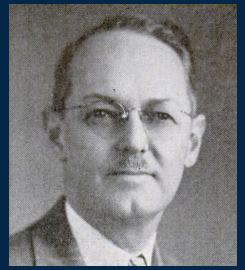
Floyd
Dominy
USBR

“With America's sons in the fields far away, with America's future under challenge right here at home…"

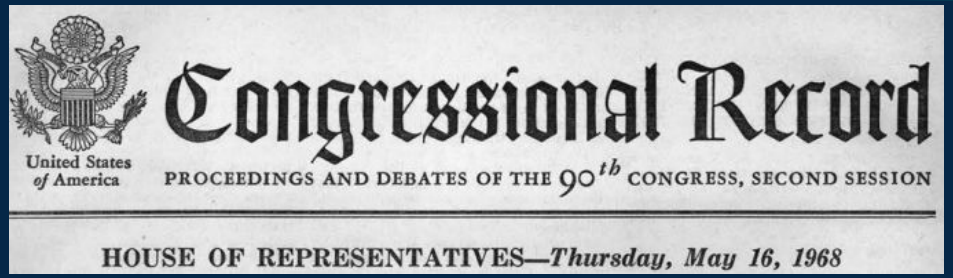
"Accordingly, I shall not seek, and I will not accept, the nomination of my party for another term as your president”

CAP’s Last Chance.. the deck was really stacked in Arizona’s favor!

1968 Dominy Threatens Wyoming if they Oppose CRBPA



William Harrison
R- Wyoming



United States of America

Congressional Record

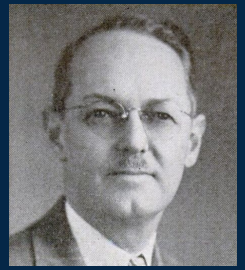
PROCEEDINGS AND DEBATES OF THE 90th CONGRESS, SECOND SESSION

HOUSE OF REPRESENTATIVES—*Thursday, May 16, 1968*

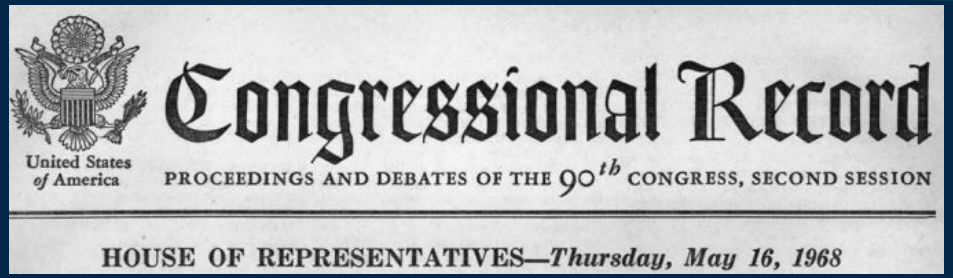
Mr. SAYLOR. *I would like to commend my colleague for his stand...I have had reports from people in Wyoming that they have received calls from the Commissioner of Reclamation threatening the State of Wyoming with allowing no projects now or in the future unless Wyoming supports this legislation. Does the gentleman from Wyoming know whether or not people have received calls of this nature?"*

Mr. HARRISON. ... *I had just recently concluded a phone call to my Governor in Hawaii and he said that such statements were made to him…*

1968 Wyoming Demands Augmentation Not Studies



William Harrison
R- Wyoming



United States of America

Congressional Record

PROCEEDINGS AND DEBATES OF THE 90th CONGRESS, SECOND SESSION

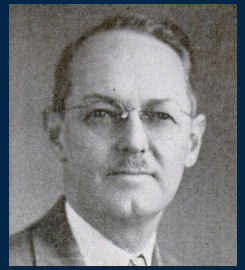
HOUSE OF REPRESENTATIVES—*Thursday, May 16, 1968*

"Wyoming is vitally concerned that passage of this bill should not interfere with our right to the use of water allocated to use under the terms of the Colorado River Compacts."

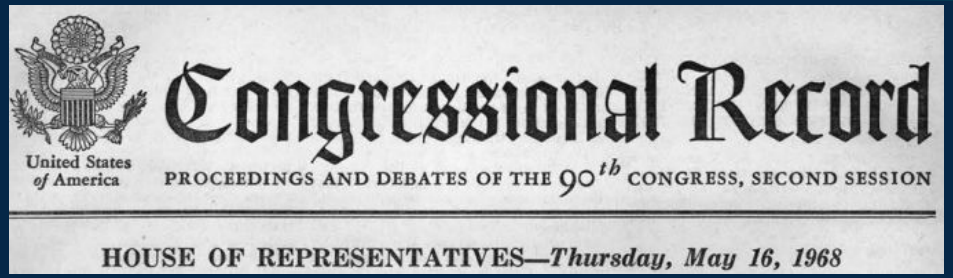
"Water supply studies on the Colorado River indicate that there will not be sufficient water in the natural drainage area of the Colorado River to permit fulfillment of all of the commitments under the various compacts now in effect."

"…there must be an importation of water into the basin if all states are to be permitted the use of waters to which they are rightfully entitled."

1968 Wyoming Voted No



William Harrison
R- Wyoming



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PROCEEDINGS AND DEBATES OF THE 90th CONGRESS, SECOND SESSION

HOUSE OF REPRESENTATIVES—*Thursday, May 16, 1968*

"All of the assurances in the world concerning the validity of compact allocations to Wyoming will be rendered ineffective if there is not sufficient water to meet these commitments."

1968 The Forgotten Law of the River

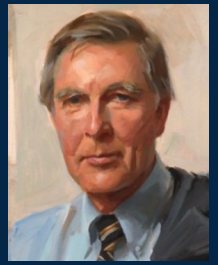
SEC. 603 (a) Rights of the upper basin to the consumptive use of water available to that basin from the Colorado River system under the Colorado River Compact shall not be reduced or prejudiced by any use of such water in the lower basin.

Similar to California's Section 301 but no enforcement or implementation

When is this triggered...my conjecture….IANAL:

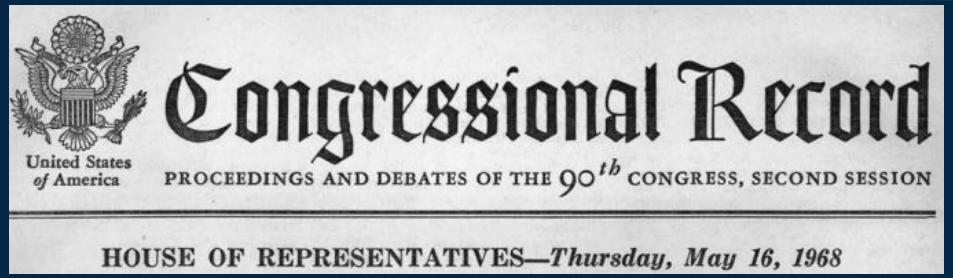
- *2007 Interim Guidelines call. Yes?*
- *Article III(c) call. Interior didn't deliver the "national obligation". Yes?*
- *Preemptive curtailment, Lake Powell power head or target elevation. Yes?*
- *Overuse in Lower Basin, "Sweet Spot" (9 maf every year), aquifer hoarding, crashing Lake Powell, push us into a III(d) call. Maybe?*
- *We can't develop our entitlement because risk is so high. Maybe?*
- *Article III(d) call. No! We have to deliver this.*

1968 CAP Gets Shut Off if No Augmentation, Upper Basin Has Priority



Mo Udall
D-Arizona

Aspinall
D-CO



United States of America

Congressional Record

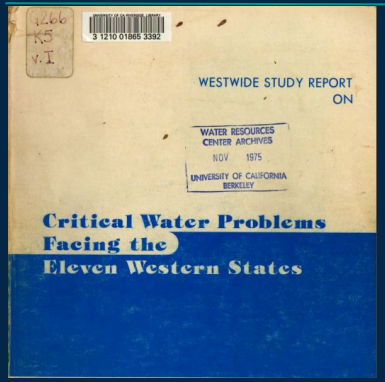
PROCEEDINGS AND DEBATES OF THE 90th CONGRESS, SECOND SESSION

HOUSE OF REPRESENTATIVES—*Thursday, May 16, 1968*

Mr. ASPINALL. "...*when the upper basin begins to use its entitlement in the Colorado River compact area, you do not then wish to be placed in the position that the facilities for the Central Arizona Valley project could no longer be operated satisfactorily?*"

Mr. UDALL. "*Precisely*."

1975 – DOI Augmentation Study, Kicking The Can Down The Road

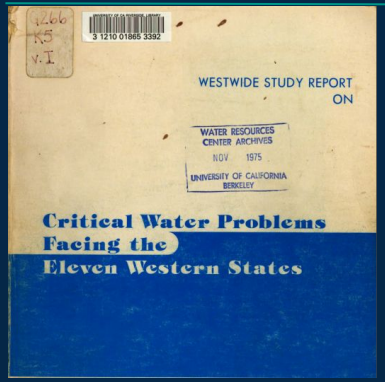


Westside Study Report on
Critical Water Problems Facing the Eleven Western States
1975

"Since the passage of the act, new national priorities have emerged"

- *Carl Hayden retired Jan 3, 1969*
- *Floyd Dominy forced retirement Dec 1, 1969*
- *NEPA enacted Jan 1, 1970*
- *Wayne Aspinall voted out in 1972*
- *OPEC Oil Embargo, October 1973 – March 1974*
- *Vietnam, U.S. leaves gold standard, Debt, Inflation*

1975 – DOI Augmentation Study, Kicking The Can Down The Road



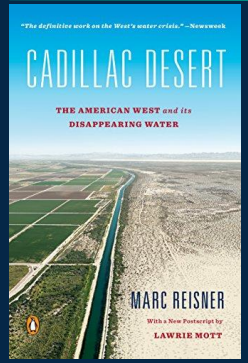
Westside Study Report on
Critical Water Problems Facing the Eleven Western States
1975

Conclusions:

- *Colorado River water supply will not meet all water demands about 1990*
- *Programs to augment river flows should be in operation by 1995-2000*
- *Reach 1.3 million acre-feet annually through weather modification*
- *Desalting of geothermal brines and seawater*
- *Other means of augmentation such as the importation of surface water*

Path Forward: Study less, deliver more augmentation

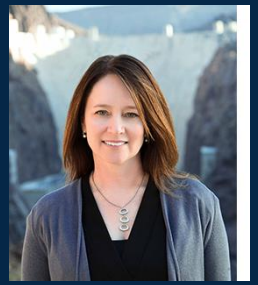
1993 Cadillac Desert



Cadillac Desert
The American West and its Disappearing Water
1993

"The Bureau's own projection showed "firm" CAP water dwindling from 1.6 million acre-feet at the beginning to 300,000 acre-feet or less in fifty years; only during wet years, or if the upper-basin projects are never built, will there be more."

2018 Arizona Joint Briefing



Brenda Burman, USBR Commissioner
https://www.youtube.com/watch?v=jdM01DtMX4Y&t=3630s

"Waiting for this or a future secretary to somehow ignore the law of the river and the junior status of Arizona is not how Arizona wants to deal with this risk on the system. Some say that even if Lake Mead declines to critically low elevations the hard landing of the 1968 act is unenforceable in a modern world."

"In the absence of drought plan I predict enormous pressure from the rest of the Basin on the Secretary to limit Arizona's diversions from the River and to use only Arizona's internal resources to fix Arizona's problems. I see near the certain likelihood of litigation and I see the absence of those multistate partnerships that we've come to rely on, that have kept us out of shortage to date."

Litigation and Equity (added 11/18/19)

- *We don't want to litigate these complex issues*
- *Litigation would be expensive, time consuming, difficult, divisive and the outcome would be unpredictable*
- *My "Path Forward" seeks to reduce the need to litigate!!*
- ***But...** significant inequities have developed in the Law of the River over time*
- *The Lower Basin is overusing the river at the expense of the Upper Basin*
- *The Lower Basin has used Federal intervention and litigation to achieve this contrary to the spirit of the Colorado River Compact and the Compact Clause*
- *This overuse isn't a problem until "rights of the upper basin to the consumptive use of water available to that basin from the Colorado River system under the Colorado River Compact" are "reduced or prejudiced"*
- *We seem to be rapidly approaching this point. As a water rights holder I care!*
- *We ask the UCRC and Colorado to be prepared and willing to litigate these matters if that is the only way to resolve these disputes and restore equity*

The Path Forward

ze·ro-sum

1. a situation in which whatever is gained by one side is lost by the other

win-win

1. of or denoting a situation in which each party benefits in some way.

Upper Basin Demand Management = Augmentation in Reverse

- Zero sum game continues
- Interior not fulfilling “national obligation” to augment. If not now when!
- Instead Upper Basin is being pushed to reduce compact usage even more
- Upper Basin taxpayers, farmers, ranchers are paying instead of the “nation”
- Water bank is a one shot fix to a continuing problem
  - structural deficit and Lower Basin overuse
  - too much water released from Lake Powell
  - drought and/or climate change
  - 500,000 acre-feet in the bank isn’t enough for a real crisis
  - bank in Lake Powell is either going to evaporate unused or be sent to the Lower Basin
- Front Range water is too expensive and precious to squander sending to Powell - $1,800 - $50,0000+, desalination is cheaper than this

Why are we really doing Demand Management?

- Protect power head in Lake Powell & ESA money, risk is high?
- Insure 2007 Interim Guidelines compliance, risk is high?
- Insure Article III(c) compliance, some risk?
- Insure Article III(d) compliance, risk is low!

- Increase instream flows for environmental NGO's!
- "The burden for this will fall on Ag"!
- Interior can keep kicking the "national obligation" down the road!
- Upper Basin sends even more water to the Lower Basin. Gravity works!
- First step on the slippery slope to West Slope ATM's to the Front Range?

Breaking Out of Zero Sum

- Industrial Demand Management - Retiring Coal Fired Power Plants
- Desalination

Southwest Round Table Motion - Equal priority with Demand Management:

- Forest Demand Management
- Weather Modification/Cloud Seeding
- Phreatophyte Removal

Others:

- Importation
- Conservation/Efficiency
- Ag and Municipal Demand Management

Industrial Demand Management

Navajo Generating Station
Page, AZ

- 100,000+ af Upper Basin consumptive use reduction in retiring power plants
  - Nucla on San Miguel/Dolores, Colorado
  - Craig and Hayden on Yampa, Colorado
  - San Juan and Four Corners on San Juan, New Mexico
  - Navajo, Arizona (water is from Arizona's Upper Basin entitlement)
- "Power water" to defend power head in Lake Powell is appropriate
- Tristate has a vested interest in protecting power head in Lake Powell
- Removes burden from Ag and Municipal
- Turns economic damage in to a positive by shielding Ag from damage
- Relatively simple to administer

Industrial Demand Management

Problems:

- DCP mandates “temporary” consumptive use reduction, these are permanent
- Power companies have to agree
- Compensate power companies

Path Forward: Conversation with power companies, UCRC, USBR and Lower Basin states

Desalination – 584,000 acre-feet of augmentation….

…Sorek In Israel

Reverse osmosis, lava rock filtering, 185,000 acre-feet, $680/acre-foot, $500 million to build

"The Sea of Galilee is fuller. Israel's farms are thriving. And the country faces a previously unfathomable question: What to do with its extra water? … Israeli households pay about US$30 a month … similar to households in most U.S. cities, and far less than Las Vegas (US$47) or Los Angeles (US$58)."

Path Forward: Way better than compact calls, litigating III(c) or wiping out Ag!!

Desalination in the U.S.

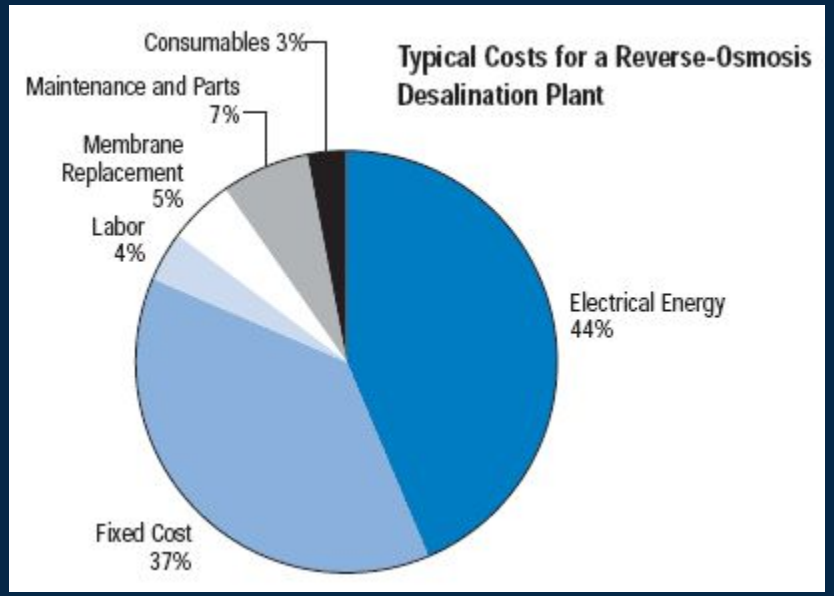
- Carlsbad, CA – 56,000 af, $1 billion to build
- Huntington Beach, CA – stalled in permitting, environmental challenges for 16 years
- Salton Sea/Mexico/Geothermal perennially proposed
- Yuma, AZ to Cienega de Santa Clara - 90,000 acre-feet at full capacity, perennially broken:

"…officials built the Yuma Desalting Plant in 1992 to treat agricultural runoff and conserve water in Lake Mead. Over the past 26 years, however, the plant has operated just three times while costing millions of dollars to maintain."

"The plant could save about 90,000 acre-feet of water every year at full capacity, but Norris said it likely will operate at one-third capacity if funding comes through."

Desalination Problems to solve

- *Capital investment*
- *Cost per acre-foot*
- *Environmental - intakes, contaminants and brine disposal*
- *Energy consumption*

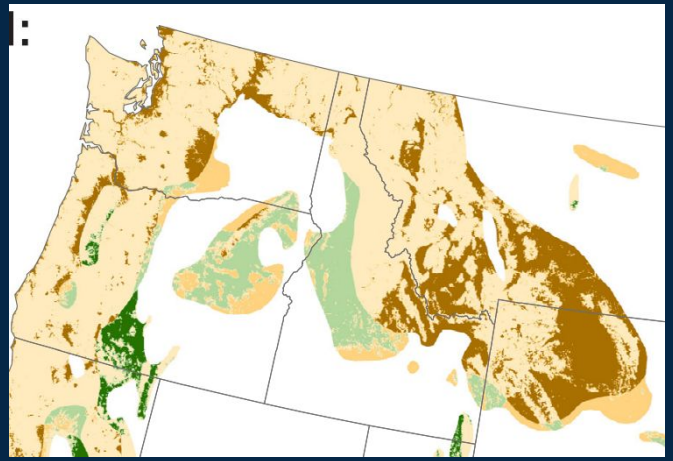


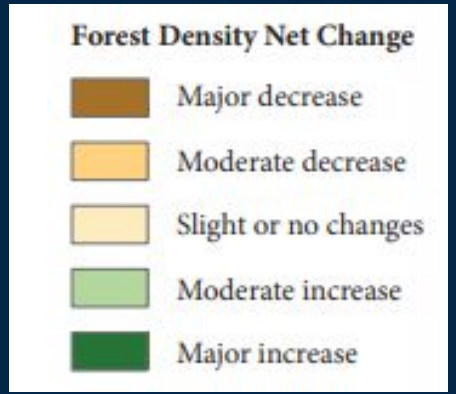
Desalination Goals

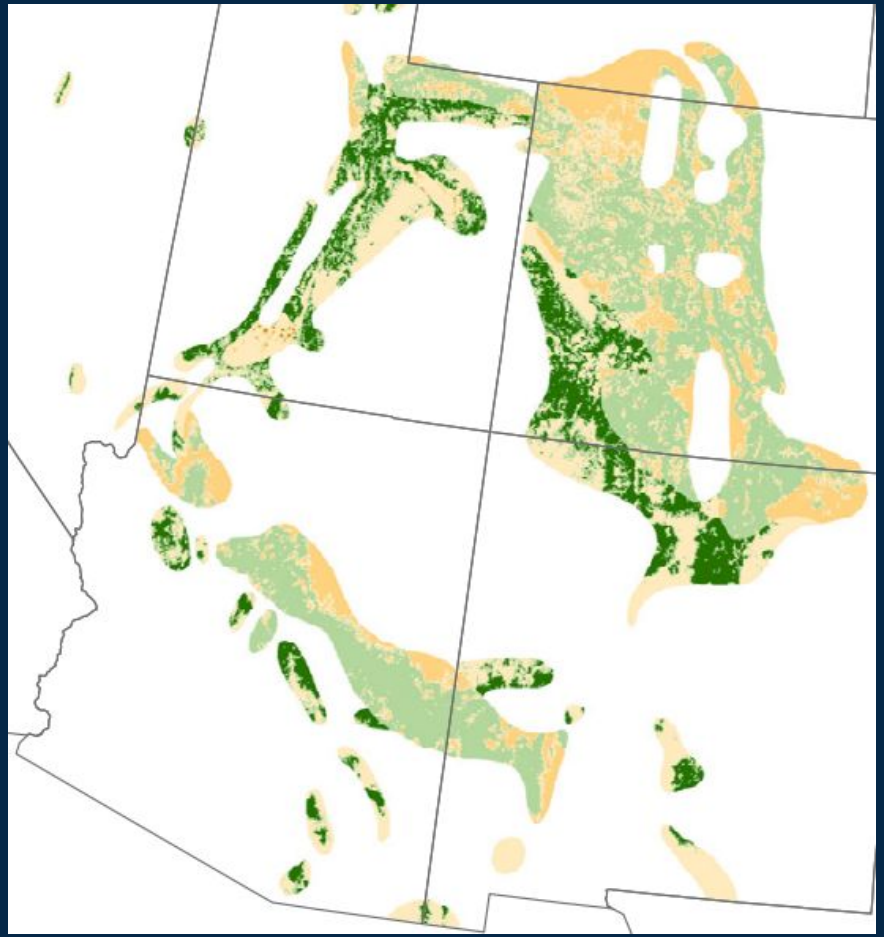
Path Forward: Build Israeli style desalination plant in Southern California

- *Subsidies to Metropolitan so cost = Colorado River water*
- *Metropolitan relinquishes yield to satisfy Mexico obligation*
- *Mexico obligation removed from Upper Basin*
- *Releases from Powell decrease*
- *Structural deficit reduced*
- *Metropolitan gets water supply that is drought proof, not coming all the way from Colorado*
- *Interior subsidizes under "National obligation"*
- *Arizona subsidizes:*
  - *they created this problem 1928-1964*
  - *fixing structural deficit better than hard landing of CAP*
- *Hoover Dam power and money subsidizes:*
  - *1928 Boulder Canyon Project Act created this problem*

Forest Demand Management -- Net Change in Forest Density, 1873-2001







Forest Demand Management

- USFS created in 1905, forests managed as economic resource
- “Big Blowup” in 1910 lead to policy of total fire suppression
- Forests were logged instead of burned
- Created jobs, economic benefit to rural areas
- Harvesting trees increases instream flows, this was a line item on management plans and timber sales, “chain saw water” or today a more accurate term might be “Timbco Harvester Water”

Forest Demand Management

- NEPA passed in 1970, timber sales became more difficult
- Environmental and Canadian competition = Lumber mills and jobs disappear
- Timber sales stop tracking “chain saw water” = hides benefit to instream flows
- Suppression of both wildfires and logging create unhealthy forests
- Less drought resilience, more trees competing for less water
  - Bug infestations
  - Escalating risk of catastrophic wildfires
  - As forest density increased instream flows decreased into the current drought
- Udall/Overpeck - as temperatures increase forests consume more water
- Environmentalists working at cross purposes, denser forests vs instream flows

Path Forward: Responsible harvesting of trees in an arid Basin

Forest Demand Management

New York Times Op-Ed, Oct 3, 2019

Let’s Fill Our Cities With Taller, Wooden Buildings

“Trees stand ready to help us solve the climate crisis. Trees remove carbon dioxide from the atmosphere and store it in their wood.“

“...improve forest management and use sustainably harvested wood to build tall buildings. This will allow us to pump carbon from the atmosphere and store it both in forests and in cities. It will also support rural economies, improve wildlife habitat and create more affordable housing.“

“The energy embodied in the materials for new buildings around the world — mostly steel and concrete — accounts for 11 percent of global carbon emissions.“

The End

Appendix

2007 Interim Guidelines

USBR Record of Decision

"These Guidelines are not intended to, and do not: ….in any way impair or impede the right of the Upper Basin to consumptively use water available to that Basin under the Colorado River Compact;"

CWCB Staff Recommendation

"the Upper Basin is getting significantly less benefit"

Colorado AG Memo to CWCB

"The Lower Division States appear to have invested much more time in preparing for such litigation than the Upper Division states. For example, Arizona has retained outside counsel to assist with litigation preparation… adequately preparing for Colorado River Compact litigation will take several years."

Revert to 1968 Section 602 and 603

Implementation:

- *Easy, Upper Basin signs no new agreement, revert to ’68 terms in 2026*
- *Section 603 says the Lower Basin can’t interfere with consumptive use of water we are entitled to under the compact*

Motivation:

- *Sweet spot in 2007 Interim Guidelines is bad*
- *9.2 maf/year stressing Upper Basin*
- *Aquifer hoarding and ICS in Lower Basin are problematic*
- *Leverage against Lower Basin if they demand current Guidelines or worse*
- *9.5 maf penalty clause goes away if Lake Powell drops in to Lower Tier*

Revert to 1968 Section 602 and 603

Problems:

- *Don’t do it if guidelines reduce Powell releases below 8.23 maf/year*
- *USBR probably won’t like it*
- *Lower Basin won’t like it*
- *8.23 maf/year could accelerate shortages in Lake Mead*
- *Would we lose Mexico shortages under Minutes*

Incrementalism

Implementation:

- *Start from 2007 Interim Guidelines and DCP*
- *Fight over terms until 2026*
- *Make minor changes to try to make Upper Basin less unhappy*
- *Lower Basin needs enough water to paper over structural deficit so they are unlikely to give up anything*

Grand Bargain

Implementation:

- Upper Basin consumptively using 4.5 maf out of 7.5 maf compact entitlement
- Upper Basin consumptive use would be capped at some value (i.e. 5 maf)
- Lower Basin and USBR can’t call the Upper Basin
- Upper Basin won’t litigate over use in Lower Basin, Mexico, tributaries

Motivation:

- Front Range concerns over impact of a call would be eliminated
- If climate change depletes flows at Lee’s Ferry, Upper Basin currently bears the burden, under Grand Bargain burden shifts to Lower Basin

Grand Bargain Problems

- Lower Basin has little incentive to do this, they are guaranteed 7.5 maf
- Upper Basin litigation might motivate LB but UB is reluctant to litigate
- Where would the cap be set, Upper Basin wants higher, Lower wants lower
- If Upper Basin hits the cap there will be a call enforced by the UCRC, administration will be complicated
- How to enforce Upper Basin Compact percentages, Colorado is over its 51%, using 66%
- Would Colorado be cut back to 51% if we hit the cap and called
- If Colorado keeps taking 66% unfair to states like Wyoming using only 50%
- Who gets to store surplus water where
- Threat of litigation if there is Upper Basin call, outcome would be uncertain
- Wyoming(Tyrell), won’t give away unused entitlement

Grand Bargain Problems

- Tribal water rights have to be fully settled otherwise they may push the Upper Basin over the cap and preempt junior water rights
- When unused water rights are fully developed(Animas/La Plata) they may preempt junior water rights