CRC 1.9: M35

[Arizona. Colorado River Commission, 1939-1945]

MEMORANDUM

ON

COLORADO RIVER WATER SUPPLY

AND

COMPACT INTERPRETATION.

The attached chart entitled "Compact Interpretation" graphically represents the water supply available under Arizona's interpretation and under California's interpretation of the Compact. The area shown in red represents the water available for California; the area shown in yellow represents the water available for use in Arizona; the area shown in blue represents the water to be allocated to Nevada; and the area shown in green represents the amount of water used in Mexico prior to the construction of Boulder Dam. This is probably the minimum amount of water that would be given to Mexico in the event that a treaty is made between Mexico and the United States over the waters of the River. In all probability this figure would be exceeded. However, this figure does not represent any established right to the use of water in Mexico. The hatched areas represent the present use of water in the Lower Basin at this time;

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the Arizona Representatives that from a practical standpoint there is no difference between the so-called III (a) water and III (b) water.

The Boulder Canyon Project Act states in part -------- "an express covenant and in consideration of the passage of this Act, that the aggregate annual consumptive use (diversions less returns to the River) of water of and from the Colorado River for use in the state of California including all uses under contract made under provision of this Act and all water necessary for the supply of any rights which may now exist shall not exceed 4,400,000 acre feet of the waters apportioned to the Lower Basin States by paragraph (a) of Article III of the Colorado River Compact <u>plus not more than one-half of any excess or surplus waters unapportioned by said Compact,</u> such uses always to be subject to the terms of said Compact."

Arizona interprets that to mean that California is entitled to 4,400,000 acre feet of the III (a) water. In addition to this, California is entitled to one-half of the <u>surplus</u> over and above the III (a) and III (b) water, this one-half being an equal division of such surplus water between the two States without respect to prior appropriation by either State. Under such an interpretation, Arizona would satisfy the rights of the existing uses on the main stream of the Colorado River and such uses as are

made of the waters of the Little Colorado River (measured at the mouth), and the uses of the Gila River (measured at the mouth) from Arizona's share of the water allocated to the Lower Basin. Arizona's share to this water being established by deduction. In other words, there are 7,500,000 acre feet of III (a) water allocated to the Lower Basin, of which California would receive 4,400,000 acre feet, Nevada would receive 300,000 acre feet of this water, leaving 2,800,000 acre feet of III (a) water for use in Arizona.

It is Arizona's contention that California, by her Limitation Act, excluded herself from the use of any III (b) water, owing to the fact that III (b) water <u>is not surplus water</u>. Therefore, California has no right to the use of any of this water. Under this interpretation, Arizona would have a total of 3,800,000 acre feet of III (a) and III (b) water with which to satisfy all of the State's needs, plus one-half of an undetermined amount of surplus. This amount of water is barely sufficient to satisfy the needs of the existing projects and the Colorado River Indian Project, and the Gila Project, both of which are under construction. Any other projects would, necessarily, look to a rather uncertain water supply from the surplus waters. Under this interpretation, California's contracts with the Secretary of the Interior would be in excess of

one-half of the surplus water available to the Lower Basin, and would encroach upon the water claimed by Mexico.

California has another interpretation. California agrees that they are limited to 4,400,000 acre feet of the III (a) water, plus one-half of the surplus. But Arizona and California differ considerably over the matter of the surplus water. It is California's contention that III (b) water is a part of the surplus water and that they have a right to the first one-half of this water by prior appropriation. Under such an interpretation there would be insufficient water to meet the present perfected rights and the initiated rights to the projects which are now under construction.

Reservoir losses have not been mentioned, either in the Colorado River Compact or the Boulder Canyon Act. Whether these losses are to be considered as a normal depletion or to be deducted from the apportionment made to the Lower Basin is something that has never been definitely determined. In the event that these losses were to be deducted from the allocated water, Arizona undoubtedly would stand a share of these deductions, which would further reduce the water available for use in Arizona. Also, if the definition of "consumptive use" as defined in the Boulder Canyon Project Act (with respect to California's limitation) is applied to the uses of water on the Gila and

the Little Colorado Rivers and not to the water contributed by these Rivers at the mouth, the total uses in Arizona would be, roughly, 4,300,000 acre feet.

Under California's interpretation, we would be allocated 2,800,000 acre feet of III (a) water and a very small and unreliable amount of surplus water which must be used to satisfy Arizona's needs. Deducting the 2,800,000 acre feet from the Arizona use (using the consumptive use theory), would leave, roughly, 1,500,000 acre feet of water being used in the state of Arizona, to be accounted for by a small and undeterminate amount of surplus water. Under such an interpretation it is quite evident that in the final analysis we would end up by owing the Colorado River System water.

The following table is taken from the summary in a report dated December 1934 by Mr. E. B. Debler, of the United States Bureau of Reclamation, entitled "Stream Flow of Lower Colorado River and its Tributaries."

"Colorado River, exclusive of Gila River.

"From a study of stream flow records for the years 1897-1934 inclusive, the flow of the Colorado River at Lees Ferry under virgin conditions with no development, and under future conditions with an average annual depletion of 7,500,000 acre feet by the Upper Basin is presented in the following table. The table also shows the probable amounts available for local use and exportation after allowing for evaporation from the Boulder Canyon reservoir and from the reservoirs that will lie back of the Bridge Canyon, Bullshead and Parker

dams, if and when constructed.

All amounts in acre feet per year

	Virgin conditions, prior to all development	Future conditions with full development, assuming Upper Basin uses 7,500,000 acre feet annually
Depletion above Lees Ferry	0	7,500,000
Flow at Lees Ferry	16,660,000	9,160,000
Inflow, Lees Ferry to Boulder Dam	1,060,000	1,060,000
Depletion, Lees Ferry to Boulder Dam	0	340,000
Flow reaching Boulder Canyon Res.	17,720,000	9,880,000
Reservoir Loss - Boulder Canyon Res.	0	520,000
Flow past Boulder Dam	17,720,000	9,360,000
Net river losses Boulder Dam to Laguna Dam	880,000	500,000
Reservoir losses at Bullshead, Parker and Imperial Dams	0	90,000
Waste past Laguna Dam for silt sluicing, floods and unusable return flow		400,000
Net supply for use below Boulder Dam		8,370,000
Flow at Laguna Dam	16,840,000	

The three following tables, which contain data taken from the various reports on Colorado River matters but mostly from a joint report by Messrs. Jacobs and Stevens, consulting engineers, and a report of R. J. Tipton, consulting engineer, entitled "Report on Colorado River and Allied Matters", are presented to indicate what may become

of the 9,360,000 acre-feet given in the foregoing table as the average annual flow past Boulder Dam under ultimate conditions of depletion. These tables are not intended to indicate any conclusions or opinions of the writer. In every case they show the maximum quantities proposed.

Possible Arizona Diversions from the Main Colorado River Below Boulder Dam and from the Bill Williams River

Project	County	Area to be Irrigated (acres) Present	Early	Ultimate	Ultimate Water Requirement (acre-feet)
Mohave Valley	Mohave	400	1,400	33,000	111,000
Williams River	Mohave	1,100	1,300	-	75,000
Gibola	Yuma	6,000	6,000	16,000	56,000
Misc. pumping	Yuma			5,200	15,000
Colo. Ind. Res.	Yuma	8,000	100,000	110,000	382,000
Gila	Yuma	0	88,000)	585,000	2,047,000
Yuma Mesa*	Yuma	1,200	65,000)		
Yuma	Yuma	45,000	45,000	45,000	157,500
					2,843,000

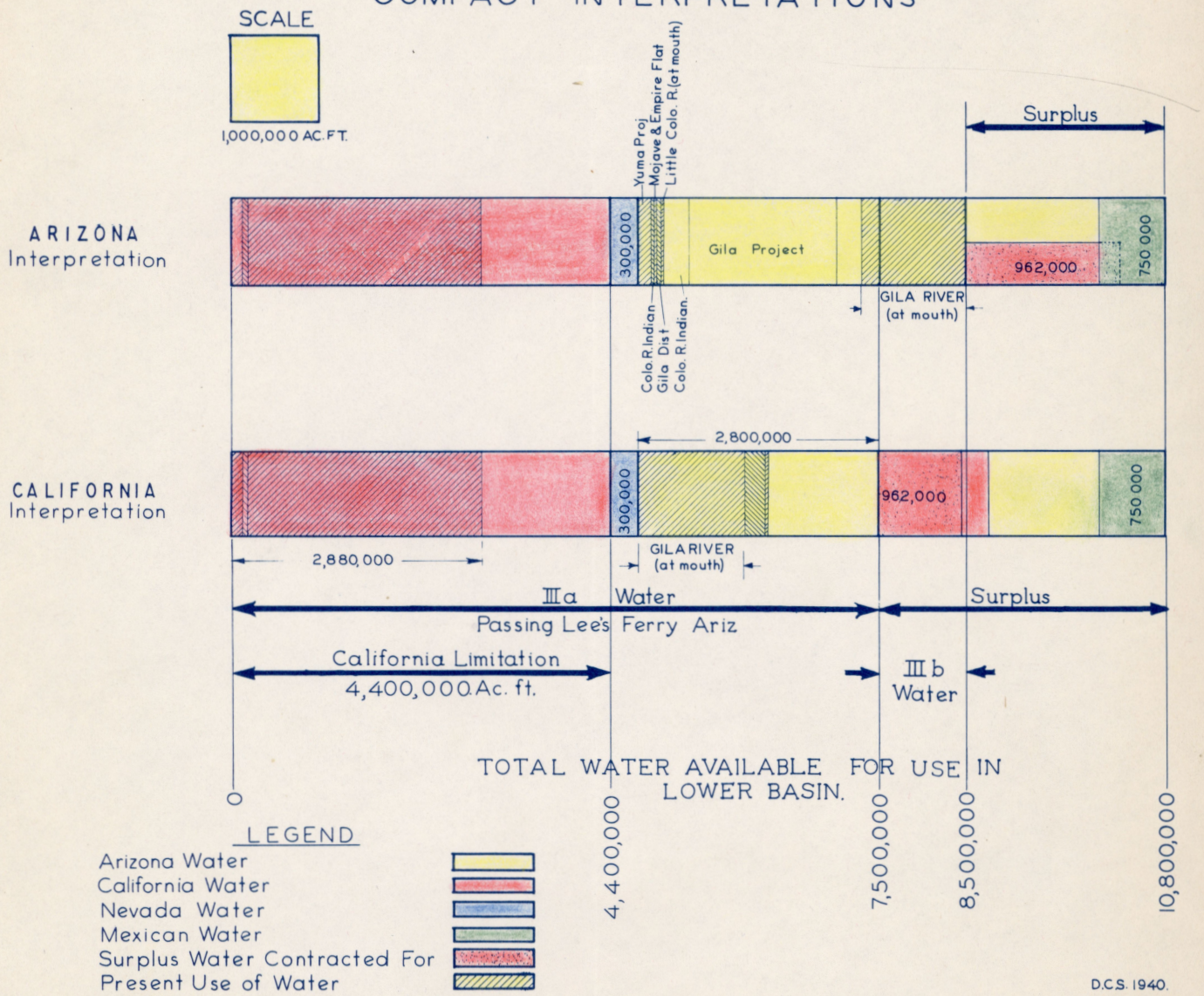
* This portion of Yuma will be included in first unit of Gila project.

Possible California Diversions from the Main Colorado River Below Boulder Dam

Project	County	Area to be Irrigated (acres)		Ultimate Water Requirement (acre-feet)
		Present	Ultimate	
Palo Verde	Riverside	35,000	136,500	402,000
Yuma Ind. Res.	Imperial	15,000	23,000	75,000
Imperial Coachella	Imperial Riverside	525,000	850,000) 150,000)	3,875,000
Metropolitan Water District				1,100,000
San Diego				112,000
Total for California (including water rights up to sixth priority)				5,362,000*

* Total of first six California priorities

Possible Disposal of Water Passing Boulder Dam

		Ultimate (acre-feet)
Ultimate annual flow past Boulder Dam		9,360,000
Net channel losses Boulder to Laguna dam	500,000	
Reservoir losses Bullshead, Parker, Imperial reservoirs	90,000	590,000
Available for irrigation use and for desilting diversion dams		8,770,000
Probable ultimate Arizona diversions from main stream and Bill Williams River, Boulder to Laguna inclusive	2,843,000	
State of Nevada use under terms of Boulder Act	300,000	
Ultimate California diversions up to and including sixth priority	5,362,000	8,505,000
Balance		265,000
Waste past Laguna Dam for silt sluicing, floods, and unusable return flow ..... (Probably plus some return waters not taken into account here)		400,000

COMPACT INTERPRETATIONS