

OUR RIVERS: TOTAL USE FOR GREATER BENEFIT

# The Colorado River

"A Natural Menace Becomes a National Resource"

*A Comprehensive Departmental Report  
on the Development of the Water Resources  
of the Colorado River Basin for Review  
Prior to Submission to the Congress*

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UNITED STATES DEPARTMENT OF THE INTERIOR

*Franklin D. Roosevelt*

BUREAU OF RECLAMATION

*Walter H. Stewart, Commissioner*

# 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

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

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MARCH 1946

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APPENDIX I

# Water Supply, Colorado River

### Historical Flow at Lee Ferry

The Colorado River Compact made allocations of Colorado River Basin waters between the upper and the lower basin, with Lee Ferry, below the mouth of the Paria River near the Utah-Arizona boundary, the point of division.

Systematic stream-flow records have been secured at the Lees Ferry gaging station on the Colorado River above the mouth of the Paria River since June 1921 and on the Paria River at its mouth since October 1923. The sum of the records secured at these two stations determines the flow at the point "Lee Ferry" described in the Colorado River Compact. To determine the flow at this point prior to the period of record at Lees Ferry estimates were made, using the results of stream-flow measurements on the principal tributaries (Colorado at Cisco, Utah; Green at Little Valley, Utah; and San Juan at Farmington, N. Mex.) since 1897 and on the main stem of the Colorado River at stations below Lees Ferry, where records have been maintained as follows:

Hardyville, Ariz., May 1905 to September 1907.  
 Yuma, Ariz., Since January 1902.

For the years 1897-1901, inclusive, the estimated flow at Lee Ferry is based entirely on the records of the principal tributaries, with due allowance for unmeasured gains between the points of measurement on these tributaries and Lee Ferry. For the years 1902 and 1921, inclusive, the estimate considered both tributary flows and flows at downstream gaging stations, with due allowance for both measured and unmeasured gains and losses between Lee Ferry and the point of measurement. When basing the estimate on the Yuma record, allowances were made for the flow of the Gila River at its mouth and for diversions by the Yuma project.

The following table shows the recorded and estimated annual flows of the Colorado River at Lee Ferry for the years 1897-1943, inclusive. It also shows the combined flows at the principal tributaries and at the main stem base station used in making the estimates. Because of the numerous estimates necessary in extending the record, the flow for any individual year may be considerably in error, but the long-time average flow is believed to be reasonably correct.

TABLE CXXXVII.—Recorded and estimated historical discharges—Colorado River at Lee Ferry

Calendar year	Main-stem station		Sum of Colorado River at Cisco, Green at Little Valley, and San Juan at Farmington (thousand acre-feet)	Historical flow, Colorado River at Lee Ferry <sup>1</sup> (thousand acre-feet)
	Name of station	Recorded flow (thousand acre-feet)		
1897 <sup>2</sup>			18,721	19,797
1898 <sup>3</sup>			12,206	12,948
1899 <sup>3</sup>			16,925	17,899
1900 <sup>3</sup>			11,996	12,686
1901 <sup>3</sup>			12,925	13,668
1902 <sup>3</sup>	Yuma, Arizona	7,959	8,245	8,454
1903 <sup>3</sup>	do	11,328	12,550	12,346
1904 <sup>3</sup>	do	10,118	12,505	11,675
1905 <sup>3</sup>	do	19,712	13,800	15,290
1906 <sup>3</sup>	Hardyville, Ariz.	19,162	18,131	18,656
1907 <sup>3</sup>	do	21,547	20,755	21,179
1908 <sup>3</sup>	Yuma, Ariz.	13,688	10,852	12,065
1909 <sup>3</sup>	do	25,975	20,543	23,295
1910 <sup>3</sup>	do	14,335	12,392	13,583
1911 <sup>3</sup>	do	17,840	14,688	16,473
1912 <sup>3</sup>	do	18,406	17,686	18,393
1913 <sup>3</sup>	do	11,748	12,394	12,581
1914	do	20,684	18,206	19,868
1915	do	14,641	10,964	12,396
1916	do	23,140	16,865	18,380
1917 <sup>3</sup>	do	20,598	19,918	20,436
1918 <sup>3</sup>	do	13,158	13,373	13,775
1919 <sup>3</sup>	do	10,747	9,980	10,611
1920 <sup>3</sup>	do	21,444	18,764	20,387
1921 <sup>3</sup>	do	19,428	18,728	19,572
1922				16,138
1923				16,868
1924				11,707
1925				12,412
1926				13,080
1927				17,549
1928				14,714
1929				19,632
1930				12,414
1931				6,229
1932				15,180
1933				9,750
1934				3,966
1935				10,283
1936				12,145
1937				12,006
1938				15,661
1939				8,872
1940				7,617
1941				17,888
1942				14,809
1943				11,435
Average				14,400

<sup>1</sup> Determined in following manner: 1897-1901, estimated from flow of principal tributaries; 1902-1921, estimated from flow of principal tributaries, and flow at main-stem station; 1922 and 1923, flow at Lee Ferry increased by estimated discharge Paria at mouth; and 1924-1943, Colorado at Lee Ferry plus Paria at mouth.  
<sup>2</sup> Flow at one or more base stations on principal tributaries estimated in whole or part by comparison with records elsewhere on stream.

From this comparison it is estimated that the inflow to the Colorado River in the 1923-43 period was about 85 percent of the long-time average. Thus the normal annual net gain, Lee Ferry to Boulder Dam, under virgin conditions would be 900,000 divided by 0.85 or 1,060,000 acre-feet annually.

### Virgin flow at Boulder Dam Site

The long-time average virgin stream flow at Boulder Dam site, for the period 1897 to 1943, inclusive, is determined by adding to the long-time average virgin stream flow at Lee Ferry the estimated net gain under virgin conditions as follows:

	<i>Acre-feet</i>
Average virgin flow at Lee Ferry.....	16,270,000
Average virgin gain to Boulder Dam site.....	1,060,000
Average virgin flow at Boulder Dam site.....	17,330,000

### Inflow between Boulder Dam and mouth of Gila River

The area drained by the Colorado River between Boulder Dam and the mouth of the Gila River is typically desert country broken near the Colorado River by several small mountain chains. Only one permanent stream, the Williams River, enters the Colorado in this region. The remaining area is drained by washes, dry except for short periods following heavy localized rains.

Discharge records are available of Williams River at a point about 12 miles above the mouth (drainage area 5,140 square miles) for the years 1913 to 1915 and 1929 to 1943, inclusive. The average annual discharge in these periods was 110,000 acre-feet.

Precipitation data in this vicinity and run-off of the Verde River at McDowell during the period of run-off record on the Williams River, in comparison to the long-time averages, are given in the following table:

TABLE CXLII.—*Precipitation and run-off near Williams River*

Location	Average for years 1913-15 and 1929-43, inclusive	Long-time average	Average of short period in percent of long period
Precipitation at Prescott, Ariz.	19.42 inches	18.85 inches	103
Precipitation at Seligman, Ariz.	11.37 inches	11.96 inches	95
Precipitation at Kingman, Ariz.	10.94 inches	11.31 inches	97
Precipitation at Parker, Ariz.	5.76 inches <sup>2</sup>	5.45 inches	106
Run-off Verde River at mouth	485,000 acre-feet	553,000 acre-feet	88

<sup>1</sup> Full year and occasional months estimated to complete record.  
<sup>2</sup> 1500 (1937) estimated from incomplete records.

Data presented in the preceding table indicate that average recorded flow of the Williams River is about equal to the long-time average.

From available topographic maps of the States of Arizona, California, and Nevada the drainage area between Boulder Dam and the mouth of the Gila, other than the Williams River, which likely contributes to the Colorado River following periods of intense precipitation, is measured as 4,500 square miles. The unit rate of run-off from this area is considerably less than that of the Williams River watershed. The long-time average annual run-off from such area is estimated to be 40,000 acre-feet annually, making a total average annual inflow between Boulder Dam and the mouth of the Gila (exclusive of the Gila River) of 150,000 acre-feet.

### Losses Under Virgin Conditions in Colorado River Between Boulder Dam and Mouth of Gila River

Under natural conditions there was loss resulting from: (1) Seepage to adjacent valley lands, from which it is subsequently largely evaporated; (2) water entrapped in sloughs and former river channels during floods and later evaporated; (3) evaporation from the stream surface; and (4) possible seepage losses to underlying strata.

In addition to natural losses, water is lost by man's activities from: (1) Depletions due to irrigation consumptive use in the Colorado River valley; (2) water diverted out of the natural watershed to the metropolitan district near Los Angeles and the Imperial Valley, Calif.; and (3) evaporation losses from reservoirs back of Parker, Imperial, and Laguna Dams.

Since it is desired to determine losses under virgin conditions and since the discharge records at Boulder Dam largely reflect the results of a regulated river, the losses between Boulder Dam site and the mouth of the Gila River are based on measured losses between Topock and Laguna Dam (Yuma record corrected for flow of Gila at mouth and diversions for Yuma project), for the 12-year period 1923 to 1934, inclusive, with an estimated loss, based on comparison of physical conditions, between Boulder Dam and Topock.

Average annual discharges at Topock and Laguna, during the 12-year period 1923 to 1934, inclusive, compare as follows:

	<i>Acre-feet</i>
Colorado River at Topock.....	13,300,000
Colorado River at Laguna Dam.....	12,610,000
Net annual loss and use between Topock and Laguna.....	690,000

The average run-off during the 12-year period of study is somewhat less than normal. It is to be expected that over a long period the losses would be somewhat greater. A figure of 700,000 acre-feet annually has been adopted

To make allowance for the tendency to overdivert in years of high run-off and for shortages in years of low run-off the actual diversion for any particular year is assumed to deviate from the normal by an amount which is proportional to one-half the deviation of the undepleted stream flow at Lee Ferry from the normal.

TABLE CXL.—Estimated virgin flow Colorado River at Lee Ferry

(Thousand acre-feet)

Calendar year	Historical flow Colorado River at Lee Ferry	Estimated normal depletions		Estimated actual upstream depletion	Estimated virgin flow at Lee Ferry
		Irrigation within basin	Export from basin		
1897	19,797	650	5	741	20,538
1898	12,948	711	5	658	13,606
1899	17,899	772	5	836	18,735
1900	12,686	834	5	764	13,450
1901	13,668	896	5	853	14,521
1902	8,454	957	6	751	9,205
1903	12,346	1,036	6	948	13,294
1904	11,675	1,118	11	1,005	12,680
1905	15,290	1,197	21	1,230	16,520
1906	18,656	1,276	21	1,450	20,106
1907	21,179	1,358	21	1,655	22,834
1908	12,065	1,437	21	1,327	13,392
1909	23,295	1,516	21	1,960	25,255
1910	13,583	1,568	21	1,535	15,118
1911	16,473	1,620	22	1,740	18,213
1912	18,393	1,671	22	1,902	20,295
1913	12,581	1,724	30	1,646	14,227
1914	19,868	1,774	35	2,127	21,995
1915	12,396	1,826	55	1,760	14,156
1916	18,380	1,878	85	2,225	20,605
1917	20,436	1,929	105	2,449	22,885
1918	13,775	1,982	105	2,058	15,843
1919	10,611	2,032	115	1,890	12,501
1920	20,387	2,080	115	2,651	23,038
1921	19,572	2,127	115	2,652	22,224
1922	16,198	2,175	115	2,457	18,655
1923	16,868	2,175	115	2,508	19,376
1924	11,708	2,175	115	2,120	13,828
1925	12,411	2,175	115	2,171	14,582
1926	13,080	2,175	115	2,221	15,301
1927	17,551	2,175	117	2,560	20,111
1928	14,714	2,175	120	2,350	17,064
1929	19,632	2,175	120	2,723	22,355
1930	12,414	2,175	120	2,175	14,589
1931	6,229	2,175	120	1,707	7,936
1932	15,180	2,175	120	2,386	17,566
1933	9,750	2,175	120	1,973	11,723
1934	3,966	2,175	120	1,535	5,501
1935	10,283	2,190	135	2,043	12,326
1936	12,145	2,190	160	2,212	14,357
1937	12,006	2,190	170	2,212	14,218
1938	15,661	2,190	180	2,508	18,169
1939	8,872	2,190	180	1,973	10,845
1940	7,617	2,190	180	1,878	9,445
1941	17,888	2,190	185	2,688	20,576
1942	14,809	2,190	185	2,447	17,256
1943	11,435	2,190	185	2,180	13,615
Mean	14,400	1,786	87	1,870	16,270

Virgin flow at Lee Ferry

Table CXL shows the estimated normal depletions due to irrigation development and transmountain diversions, the estimated past depletion above Lee Ferry (differing from the sum of estimated normal depletions by annual adjustments explained in preceding paragraphs) and the virgin (or reconstructed undepleted) stream flow at Lee Ferry for the 47-year period 1897 to 1943, inclusive.

Net Inflow between Lee Ferry and Boulder Dam

Between Lee Ferry and Boulder Dam there are about 55,000 square miles of drainage area, most of which is desert plateau. The two main tributaries in this area, the Little Colorado and Virgin Rivers, arise in the mountains and high plateaus bordering the basin; however, their principal source of run-off is from the torrential rains, which are characteristic of this locality. The Colorado River also receives water from numerous creeks and washes and from springs along the bed and sides of the deeply entrenched river channel.

From a study of the characteristics of the drainage area and by comparing discharges at Lee Ferry, Bright Angel (Grand Canyon), and Boulder Dam for the relatively short period when these stations were operated concurrently, prior to the storage of water in Lake Mead, it is concluded that about one-half of the net inflow between Lee Ferry and Boulder Dam occurs between Lee Ferry and Bright Angel.

The average annual discharges at these stations during the 21-year period 1923 to 1943, inclusive, are as follows:

	Acre-feet
Colorado River at Bright Angel	12,988,000
Colorado River at Lee Ferry (below Paria)	12,582,000
Net gain Lee Ferry to Bright Angel	406,000

The estimated net gain from Lee Ferry to Boulder Dam in this period would be twice the gain to Bright Angel, or 810,000 acre-feet. With due allowance for the average annual depletion in this period by reason of irrigation development to the extent of about 60,000 acres on the tributaries between Lee Ferry and Boulder Dam, the average gain under virgin conditions in the 21-year period, 1923 to 1943, inclusive, would be about 900,000 acre-feet annually.

During the period 1923 to 1943, inclusive, the run-off from this region was somewhat below the long-time mean as indicated by the following comparisons:

TABLE CXLI.—Comparison of average annual flows—long-time period with 1923-43 period

Stream	Period used to determine long-time average annual flow	Average annual flow (thousand acre-feet)		Flow 1923-43 in percent of long-time mean
		Long-time period	Period 1923-43, inclusive	
Estimated undepleted flow, Colorado River at Lee Ferry	1897-1943	16,270	14,800	91
Salt River at Granite Reef Dam <sup>1</sup>	1895-1943	1,484	1,264	85
Virgin River at Virgin City, Utah	1909-1943 <sup>2</sup>	161	143	89

<sup>1</sup> Discharges corrected for storage changes in upstream reservoirs and past upstream irrigation depletions to reflect natural conditions.  
<sup>2</sup> Fragmentary records prior to 1926.

TABLE CXLV.—Gila River Channel characteristics and climatological data

	Area between Gillespie Dam and mouth	Phoenix area
<b>Length of river channel:</b>		
Gila River.....	145.....	Above Salt River..... 90 miles Below Salt River..... 35 miles
Salt River.....		40 miles
Total.....	145 miles.....	165 miles
<b>Average river gradient:</b>		
Gila River.....	4 feet per mile.....	6 feet per mile.
Salt River.....		9½ feet per mile.
Average.....	4 feet per mile.....	7 feet per mile.
<b>Climatological data:</b>		
Average annual precipitation.....	5 inches.....	69 inches.
Average annual temperature.....	72 degrees.....	9 degrees.

<sup>1</sup> In addition to Gila and Salt River channels, water will be lost from tributary channels such as Agua Fria, Hassayampa, and Queen Creeks.

(d) Using concurrent records of Gila River discharge at Gillespie Dam and at the mouth (Dome, Ariz.) for the period August 1921 to December 1934, and making due allowances for the small irrigation use in this area and for the fact that flows at Gillespie Dam were largely controlled by storage during the period of concurrent record, a curve was defined which shows the relationship between annual (unregulated) discharges at Gillespie Dam and annual channel losses between Gillespie Dam and the mouth of the Gila River. The curve was applied to the entire period to determine channel losses.

The channel losses, thus determined, subtracted from the computed natural (or virgin) flows at Gillespie Dam, give the virgin flows of the Gila River at its mouth. The basic computations are summarized in table CXLVI.

While these estimated virgin flows may not be entirely dependable, they are the best that could be made from

available information on stream flows. For the purpose of this study the average virgin flow at the mouth of the Gila River has been rounded to 1,270,000 acre-feet annually.

#### Virgin flow, Colorado River at International Boundary

The long-time average annual virgin flow of the Colorado River at the International boundary is estimated by adding to the virgin flow at Laguna Dam the virgin flow of the Gila River at the mouth as follows:

	<i>Acre-feet</i>
Average annual virgin flow, Colorado River at Laguna Dam.....	16,450,000
Average annual virgin flow, Gila River at mouth.....	1,270,000
Average annual virgin flow, Colorado River at International boundary.....	17,720,000

TABLE CXLVI.—Estimated virgin flow of Gila River at mouth (thousand acre-feet)

Year	Flow of Salt River at Granite Reef	Flow of Gila River at Kelvin	Unmeasured natural inflow to Phoenix area	Total natural inflow to Phoenix area	Natural loss in Phoenix area	Natural flow of Gila River at Gillespie Dam	Natural loss of Gila River at mouth	Natural flow of Gila River at mouth
1897.....	1,289	605	231	2,125	550	1,575	501	1,074
1898.....	537	401	97	1,035	372	663	302	361
1899.....	514	302	98	914	345	569	272	297
1900.....	269	271	52	595	202	333	193	140
1901.....	765	352	136	1,253	415	838	348	490
1902.....	442	223	99	764	302	462	240	222
1903.....	436	266	98	800	314	486	248	238
1904.....	527	336	121	984	355	629	290	339
1905.....	5,542	1,582	821	7,945	904	7,041	900	6,141
1906.....	2,396	688	360	3,444	690	2,754	659	2,095
1907.....	2,021	1,013	337	3,371	685	2,686	650	2,036
1908.....	1,828	483	270	2,581	610	1,971	564	1,407
1909.....	1,736	395	262	2,393	588	1,805	540	1,265
1910.....	930	206	216	1,352	416	936	376	560
1911.....	2,143	521	326	2,990	650	2,340	612	1,728
1912.....	1,041	535	187	1,763	502	1,261	443	818
1913.....	888	310	160	1,358	430	928	374	554
1914.....	1,350	1,342	167	2,859	651	2,208	598	1,610
1915.....	2,490	1,487	306	4,283	760	3,523	728	2,795
1916.....	5,301	1,716	435	7,452	901	6,551	885	5,666
1917.....	2,819	420	384	3,623	702	2,921	673	2,248
1918.....	1,018	250	258	1,526	444	1,082	408	674

<sup>1</sup> Basic run-off record estimated in whole or part.

as representing the long-time net loss and use between Topock and Laguna Dam.

Depletions due to the irrigation of lands in the Parker and Palo Verde Valleys are estimated to be 120,000 acre-feet, which subtracted from the total loss leaves a natural net loss of 580,000 acre-feet. This loss occurs despite inflow to the river previously estimated at 150,000 acre-feet, so that the actual natural loss between Topock and Laguna Dam is 730,000 acre-feet.

The Colorado River Valley sections between Boulder Dam and Topock and between Topock and Laguna Dam compare as follows (prior to construction of Parker and Imperial Dams):

TABLE CXLIII.—Comparison of sections of Colorado River Valley above and below Topock

Feature	Between Boulder Dam and Topock	Between Topock and Laguna Dam	Areas above Topock in percent of areas below Topock
Stream channel area <sup>1</sup>	11,000 acres	25,000 acres	44
Valley floor area	80,000 acres	250,000 acres	32
Irrigated area	None	35,000 acres	0
Tributaries entering Colorado River.	Minor washes	Williams River and small washes.	

<sup>1</sup> Measured from river survey sheets of Colorado River below Black Canyon, published by the U. S. Geological Survey in 1927.

Considering that all of the valley floor areas are not inundated every year, it is believed that channel losses from the region above Topock will be about 40 percent of the channel losses below Topock or about 300,000 acre-feet annually. This added to losses below Topock makes the total natural channel losses between Boulder and Laguna Dams 1,030,000 acre-feet annually.

*Virgin flow, Colorado River at Laguna*

The average annual virgin flow of the Colorado River at Laguna Dam (above mouth of Gila) is estimated as follows:

	<i>Acre-feet</i>
Virgin flow, Colorado River at Boulder Dam	17,330,000
Plus tributary inflow, Boulder Dam to mouth of Gila	150,000
Less natural channel losses	1,030,000
Virgin flow, Colorado River at Laguna Dam (above Gila River)	16,450,000

*Virgin flow, Gila River at Yuma*

Throughout the Gila River Basin, the securing of stream-flow records is made difficult by violent floods, shifting channels, and sand and silt. Except in the Phoenix area, where extensive irrigation development has been made, there are no reliable long-time records of the Gila River and its tributaries. Using the available rec-

ords, which are often fragmentary, and never fully reliable, estimates have been prepared of the virgin stream flow of the Gila River at its mouth (Dome or Yuma, Ariz.) for the years 1897 to 1943, inclusive. The results of the calculations are shown in table CXLIV. The method used is briefly outlined as follows:

(a) The annual inflow above the irrigated area surrounding Phoenix was determined by extending the records on the Salt River at Granite Reef Dam (fairly reliable estimates) and on the Gila River at Kelvin (estimates subject to considerable error). From a study made in 1934 of fragmentary records of tributaries entering the Phoenix area below the Granite Reef Dam and the Kelvin gaging station, the unmeasured inflow below the two base stations is estimated to equal 45 percent of the annual unregulated run-off of the Verde River at its mouth.

(b) The base records of the Salt and Gila Rivers were corrected for past irrigation depletions and past storage changes and evaporation losses from reservoirs to reflect conditions as they would have been prior to irrigation development. Past upstream irrigation depletions were assumed to vary uniformly between amounts at various periods as follows:

TABLE CXLIV.—Past upstream irrigation depletion, Gila and Salt Rivers

Year	Gila River above Kelvin (acre-feet)	Salt River above Granite Reef Dam (acre-feet)
1899	42,000	12,000
1909	85,000	12,000
1922	77,000	12,000
1933	79,000	12,000
1943	79,000	12,000

(c) An estimate was made of the channel losses, prior to irrigation development in the Phoenix area. Direct determination of such channel losses is impossible because of the lack of discharge records prior to the initiation of irrigation development. By comparing the physical conditions of the stream channels in the Phoenix area above Gillespie Dam (located at the lower end of the Phoenix area) with stream channel conditions along the Gila River between the Gillespie Dam and the mouth of the Gila River, it was estimated that natural channel losses in the Phoenix area would bear the same relationship to measured inflow at Granite Reef and Kelvin as natural channel losses below Gillespie Dam bear to the flow at Gillespie Dam. By subtracting the natural channel losses, thus determined, from the estimated virgin inflow to the Phoenix area, there was determined the virgin (or natural) flow of the Gila River at Gillespie Dam.

The channels of the Gila and Salt Rivers in the Phoenix area compare with the Gila River channel below the Gillespie Dam as shown in the following table:

TABLE CXLVI.—*Estimated virgin flow of Gila River at mouth (thousand acre-feet)*—Continued

Year	Flow of Salt River at Granite Reef	Flow of Gila River at Kalvin	Unmeasured natural inflow to Phoenix area	Total natural inflow to Phoenix area	Natural loss in Phoenix area	Natural flow of Gila River at Gillespie Dam	Natural loss of Gillespie Dam to Gila River at mouth	Natural flow of Gila River at mouth
1919.....	2,201	949	375	3,525	697	2,828	666	2,162
1920.....	2,478	627	440	3,545	691	2,854	670	2,184
1921.....	1,826	536	170	2,532	616	1,916	558	1,358
1922.....	1,569	189	339	2,097	534	1,563	501	1,062
1923.....	1,754	575	325	2,654	610	2,044	573	1,471
1924.....	967	299	140	1,406	443	963	380	583
1925.....	693	303	143	1,139	388	751	330	421
1926.....	1,334	493	241	2,068	546	1,522	492	1,030
1927.....	1,927	366	417	2,710	607	2,103	582	1,521
1928.....	643	214	153	1,010	353	657	300	357
1929.....	1,025	338	188	1,551	462	1,089	409	680
1930.....	857	420	158	1,435	446	989	384	605
1931.....	1,360	577	224	2,161	560	1,601	507	1,094
1932.....	2,045	534	390	2,969	635	2,334	610	1,724
1933.....	701	304	107	1,112	390	722	315	407
1934.....	372	256	84	712	285	427	220	207
1935.....	1,516	481	255	2,252	560	1,692	520	1,172
1936.....	1,109	328	146	1,583	472	1,111	410	701
1937.....	2,101	511	408	3,020	640	2,380	615	1,765
1938.....	971	232	222	1,425	414	1,011	385	626
1939.....	1,749	263	136	1,148	410	738	320	413
1940.....	1,070	462	126	1,658	490	1,168	515	653
1941.....	3,491	1,250	557	5,298	808	4,490	790	3,700
1942.....	884	288	147	1,319	427	892	355	537
1943.....	974	288	143	1,405	440	965	380	585
Average.....	1,508	527	244	2,279	527	1,752	480	1,272

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# Eleven Colorado River Basin Maps

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