

Assessment of the Gila River's Navigability on February 14, 1912



**Douglas R. Littlefield, Ph.D.
Littlefield Historical Research
6207 Snake Road
Oakland, CA 94611
510-339-1017**

**drl@LittlefieldHistoricalResearch.com
www.LittlefieldHistoricalResearch.com**

June 2014

Previous Reports and Need for Revision

- Original report on the navigability of the Gila River prepared for ANSAC in 1998.
- Revised and brought up to date in 2005.
- Both reports and testimony submitted to ANSAC in 1998 and 2005.
- The report upon which this presentation is based has been expanded, especially in relation to historical newspaper accounts and historical photographs – made possible by the growth of online historical newspaper collections as well as by online archival finding aids for pertinent historical photograph collections.
- Updating is to conform with the opinion of the Arizona Court of Appeals' decision in *State of Arizona, et al., v. Arizona Navigable Stream Adjudication Commission, et al.* (1 CA-CV 07-0704, April 27, 2010) that a fuller awareness is necessary about how human activities and man-made structures on the Gila River may have affected the stream's ordinary and natural condition, particularly in the years before statehood.

BACKGROUND



Navigability and the “Equal Footing” Doctrine

- Legal concept that states own the beds of navigable waterways – stems from English common law.
- In England, King had become owner of beds of navigable bodies of water to protect access for his subjects.
- When American colonies became independent in 1776, they took over rights and responsibilities of the King of England – including owning beds of navigable waterways.
- New states join the Union on an “equal footing” to the original 13 states.
- Thus, new states own the beds of waterways if those waterways were navigable at the time of statehood.
- For Arizona, this means February 14, 1912.
- Extensive research was necessary to determine the characteristics of the Gila River as of 1912 to determine navigability or non-navigability.

Research Locations

- Arizona State University Special Collections (Phoenix).
- Arizona State Archives (Phoenix).
- Arizona Historical Foundation (Phoenix - now closed).
- University of Arizona Special Collections (Tucson).
- Arizona Historical Society (Tucson and Phoenix).
- Water Resources Center Archives (University of California, Riverside).
- Bancroft Library (University of California, Berkeley).
- U.S. Bureau of Land Management (Phoenix).
- U.S. National Archives (Washington, D.C.).
- U.S National Archives II (College Park, Maryland).
- U.S. National Archives branch (Denver).
- Arizona State Land Department (Phoenix).
- Salt River Project Archives (Phoenix).
- Sharlot Hall Museum and Research Library (Prescott).
- Many published historical sources.
- Many online newspaper and historical photograph collections.

Published Research Sources

- U.S. Geological Survey (reports and Water Supply Papers).
- U.S. Bureau of Reclamation (annual reports and other publications).
- U.S. Department of Agriculture.
- U.S. General Land Office (today, the Bureau of Land Management).
- Congressional materials (*Congressional Record*, Congressional reports, etc.).
- Arizona Territorial legislation.
- Many published secondary sources.

Research and Writing Methodology

- Thousands of pages of historical records were reviewed at archives, agencies, and libraries and were copied.
- Documents were abstracted into special database.
 - Tracked original source locations.
 - Tracked location of copies in historian's files.
 - Permitted test sorting for comparisons and analysis.
- Database sorted by date and subject matter.
- Resulting abstracts were then dropped into word processing to provide a rough draft of report.
- This presentation is derived from final version of the report that was submitted to ANSAC.

U.S. GENERAL LAND OFFICE SURVEYS

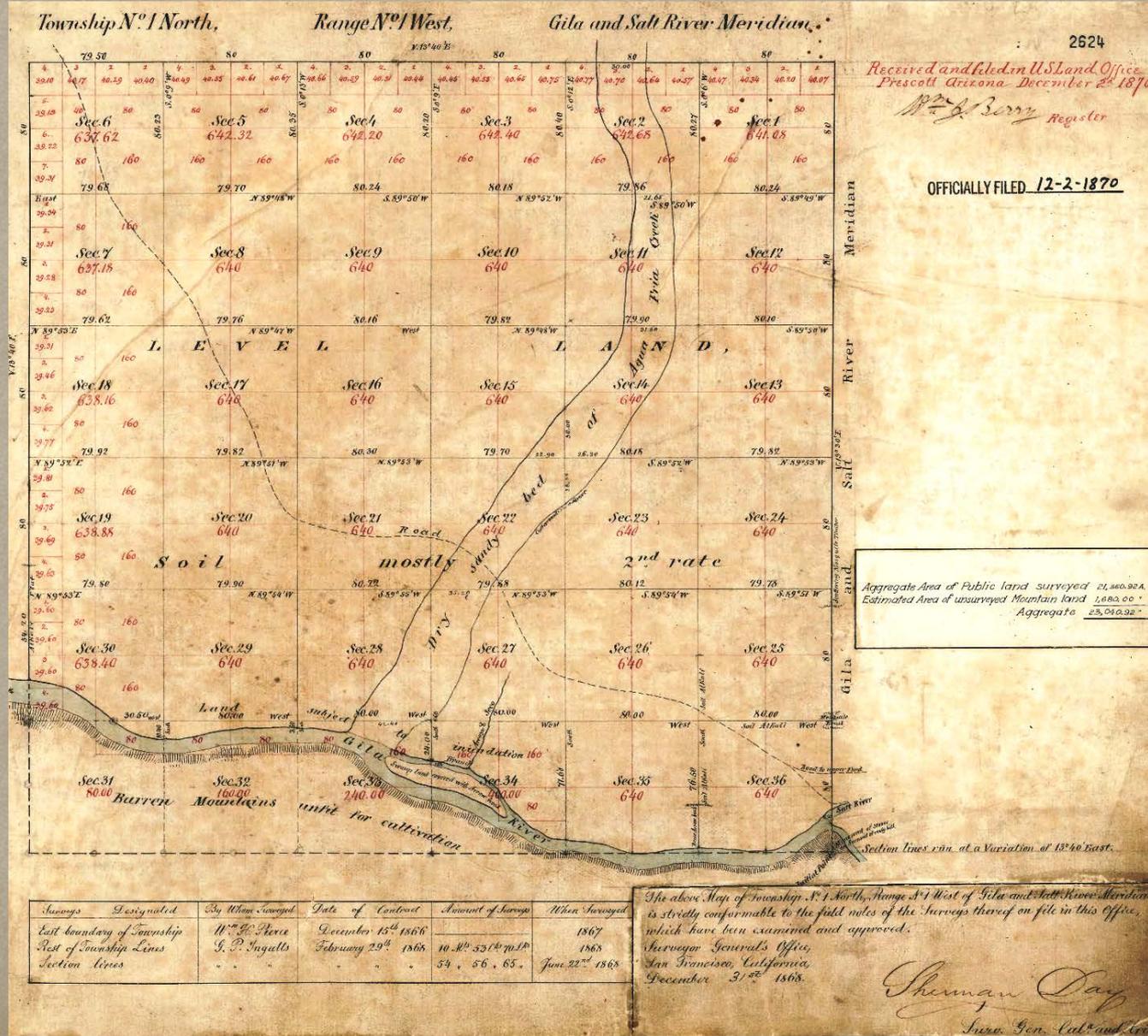


U.S. General Land Office Survey Field Notes and Plats

- Some of the most important records re: the Gila River before statehood – General Land Office survey field notes and plats.
- The surveys were done:
 - To prepare public domain for orderly settlement.
 - To record characteristics of public domain.
- Instructions were set forth under provisions of different surveying manuals.
- Earliest was 1851; others with slightly revised instructions were published in 1855, 1864, 1881, 1890, 1894, and 1902.
 - Surveyors were directed to record details of what they encountered while surveying township, range, and section lines.
 - Roads, trails, ravines, fences, farmland, irrigation ditches, railroads, forests, etc.
 - *Specifically with regard to waterways, surveyors were to “meander” (measure by degree bearings the sinuosities) of all navigable bodies of water.*

- For this research project, all U.S. General Land Office field notes and plats were examined that covered the Gila River from the Salt River downstream to the confluence with the Colorado River.
- Most of these surveys dated well before statehood.
- The notes for each location where the surveyor crossed the Gila were carefully reviewed.
- Gila River was NOT meandered anywhere between Phoenix and Yuma due to navigability (although there were some meanders under different surveying instructions for reasons other than navigability - these will be explained in later).
- Some sample survey plats follow.

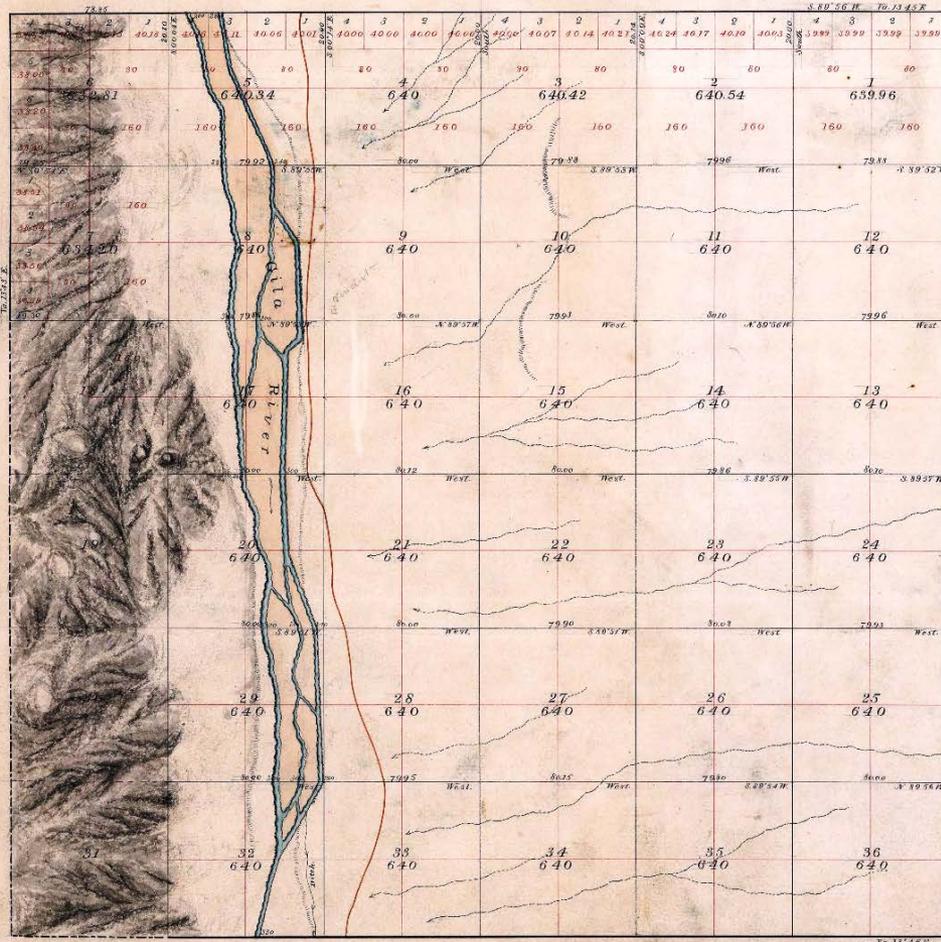
U.S. General Land Office Survey Plat, Township 1 North, Range 1 West, 1868 (near Phoenix; approved 1870)



U.S. General Land Office Survey Plat, Township 4 South, Range 4 West, 1871 (just above Gila Bend; approved 1871)

TOWNSHIP N^o 4 SOUTH RANGE N^o 4 WEST
GILA AND SALT RIVER MERIDIAN

3771



OFFICIALLY FILED 6-23-1871

Aggregate area of Public Lands surveyed 20628.27 Acres
Estimated unsurveyed 2330.00
Total 23,008.27

Subdivision lines run at a Variation of 13'43" East

Survey Designated	By Whom Surveyed	Date of Contract	Amount of Survey	Date of Survey
Township lines	J. H. Freeman	March 16, 1871	10 in. 78 cts. 25/100	April 1-3, 1871
Subdivisions	do.	do.	58 " 78 " 17 "	" 7-15, "

The above Map of Township N^o 4 South of Range N^o 4 West of the Gila and Salt River Meridian is strictly conformable to the field notes of the Survey thereof on file in this Office, which have been examined and approved
Surveyor General's Office
Phoenix, Arizona, May 18, 1871

Stout
Sur. Genl.

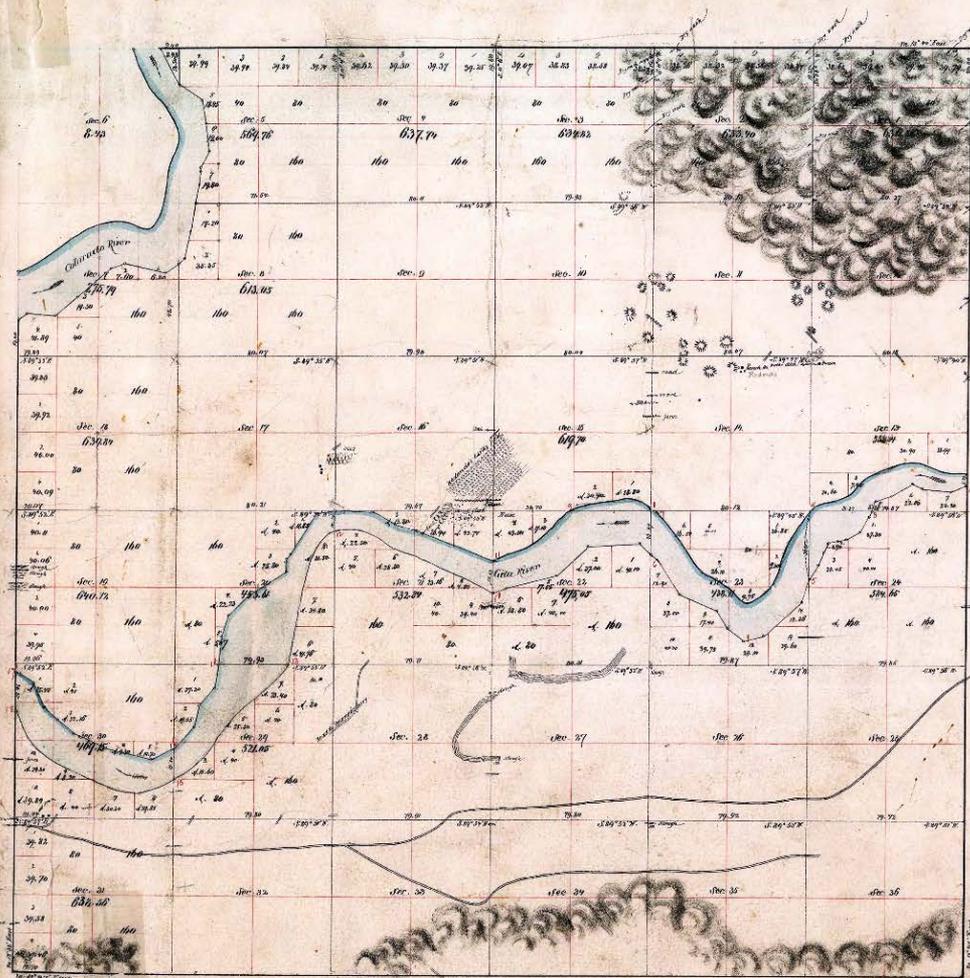
Solomon's One-Bank Meanders of the Gila River, T5S, R4W

- The reason for Foreman's use of meanders along one bank of the Gila can be seen in conjunction with both his surveying instructions and the survey manual in use at the time, the 1864 version.
- With regard to his surveying instructions, Foreman had been directed on February 13, 1871, by John Hasson, U.S. Surveyor General for Arizona Territory, to carry out this survey *“in accordance with law and the manual of printed Instructions by the General Land Office[.]”* Hasson also told Foreman to bear *“in mind the object of this work you are about to execute, is to accommodate actual settlers”* who lived in the vicinity of Gila Bend. For this reason, Hasson added, *“If in your judgment the Gila River should be meandered, you are hereby authorized and directed to do it, at the same time advising this office, in writing, the reasons therefor.”*
- Foreman did, in fact, explain his one-bank meanders in his field notes as Hasson had instructed him to do. Even though setting meander corners on the *right banks* of “rivers not embraced in the class denominated ‘*navigable*’ under the statute, but which are well-defined natural arteries of internal communication, and have a uniform width” was required under the provisions of the 1864 surveying manual, Foreman explained in the meander section of the field notes for this township that *“the reason for selecting the left bank for meanders is that all the lands of value are on the left bank[.]”* He added that the lands on the right bank soon *“pinched out”* due to the proximity of mountains.
- In other words, the only lands useful for farming were along the left bank, and for that reason, Foreman had meandered that bank as Hasson had instructed him.

U.S. General Land Office Survey Plat, Township 8 South, Range 22 West, 1874 (near Yuma; approved 1874)

TOWNSHIP N^o 8 SOUTH RANGE N^o 22 WEST GILA AND SALT RIVER MERIDIAN

3916



Measurements of the left bank of the Colorado River

Point	Course	Dist.
Intersect. A	S. 26° E	26.50 to cor. to post. sec. 5 & 6
Intersect. B	S. 32° E	19.20
A	S. 87° E	8.90
B	S. 72° E	19.70
C	S. 25° E	9.60
D	S. 67° E	1.50
E	S. 33° E	6.80
F	S. 92° E	10.00 to cor. to post. sec. 5 & 6
Intersect. G	S. 25° E	13.00
H	S. 27° E	14.00
I	S. 53° E	9.20 to cor. to post. sec. 7 & 8
Intersect. J	S. 60° E	8.00
K	S. 26° E	21.00
L	S. 70° E	7.00
M	S. 89° E	8.00
N	S. 52° E	11.50
O	S. 57° E	13.50
P	S. 68° E	14.70 to cor. to post. sec. 7 & 8
Q	S. 53° E	8.90

OFFICIALLY FILED 1-11-1875

Measurements of the right bank of the Colorado River

Point	Course	Dist.
Intersect. R	S. 97° E	2.00
S	S. 58° E	16.10
T	S. 26° E	15.00
U	S. 93° E	9.70
V	S. 23° E	16.70
W	S. 64° E	16.00
X	S. 77° E	22.00
Y	S. 36° E	23.20 to cor. to post. sec. 29 & 30
Intersect. Z	S. 62° E	14.00
AA	S. 71° E	10.80
BB	S. 55° E	17.70
CC	S. 4° E	12.00 to cor. to post. sec. 28 & 29
Intersect. DD	S. 40° E	16.00
EE	S. 62° E	12.00
FF	S. 53° E	17.00
GG	S. 35° E	21.60
HH	S. 25° E	5.00
II	S. 75° E	1.90
JJ	S. 28° E	2.20
KK	S. 31° E	21.00
LL	S. 62° E	11.00 to cor. to post. sec. 28 & 29
Intersect. MM	S. 82° E	19.00
NN	S. 62° E	12.00
OO	S. 71° E	10.80
PP	S. 62° E	12.00
Intersect. QQ	S. 55° E	12.00 to cor. to post. sec. 28 & 29
RR	S. 53° E	9.00
SS	S. 49° E	7.30
TT	S. 28° E	9.80
UU	S. 20° E	9.60
Intersect. VV	S. 82° E	2.00
WW	S. 62° E	2.00
XX	S. 53° E	7.90
YY	S. 55° E	5.00 to cor. to post. sec. 13 & 24
Intersect. ZZ	S. 28° E	6.00
AAA	S. 16° E	17.00
BBB	S. 45° E	22.00
CCC	S. 40° E	17.00
DDD	S. 62° E	5.80
EEE	S. 44° E	17.00
FFF	S. 40° E	2.60

Measurements of the left bank of the Gila River

Point	Course	Dist.
Intersect. GG	S. 53° E	1.00
HH	S. 53° E	21.20
II	S. 48° E	20.80
JJ	S. 33° E	9.70
KK	S. 29° E	10.00
LL	S. 28° E	16.30
MM	S. 47° E	36.00
NN	S. 48° E	20.80
OO	S. 33° E	9.00
PP	S. 25° E	20.80
Intersect. QQ	S. 25° E	9.00
RR	S. 49° E	7.30
SS	S. 28° E	9.80
TT	S. 20° E	9.60
Intersect. UU	S. 82° E	2.00
VV	S. 62° E	2.00
WW	S. 53° E	7.90
Intersect. XX	S. 55° E	5.00 to cor. to post. sec. 13 & 24
YY	S. 28° E	6.00
ZZ	S. 16° E	17.00
AAA	S. 45° E	22.00
BBB	S. 40° E	17.00
CCC	S. 62° E	5.80
DDD	S. 44° E	17.00
EEE	S. 40° E	2.60

Aggregate area of Public lands 20820.89 acres
Estimated area of river 1107.10
Aggregate 21927.99 acres

Meridian line run at an Azimuth of 13° 36' East.

Original Surveyors	By whom surveyed	Date of Contract	Amount of Charge	When Surveyed
Township lines	T. P. White	July 7 th 1870	20 - 21 = 20	July 15 th - July 17 th 1874
Co. Sections	do.	August 25 th 1873	67 - 14 = 53	July 16 th - Aug 5 th 1874
Section corners	do.	do.	10 - 66 = 95	March 4 th 1874

The above copy of Township 8 South of Range 22 West of the Gila and Salt River Meridian and Base line is strictly conformable to the field notes of the survey done by me, filed in this office, and has been examined and approved by the Surveyor General's Office.
Judson S. May 1874

Judson S. May
Sur. Genl.

Conclusions about Federal Surveys

- Most federal surveyors along the Gila River did not meander the stream, thus indicating a lack of navigability in their opinions.
- Those few instances of meandering all are attributable to instructions in different surveying manuals for meanders of non-navigable bodies of water under certain special circumstances – not due to navigability.
- Thus, many federal surveyors – who were specifically charged with recording navigable bodies of water under federal statutes and who undertook surveys along the Gila in different years and at different times of year – indicated the Gila River was not navigable.

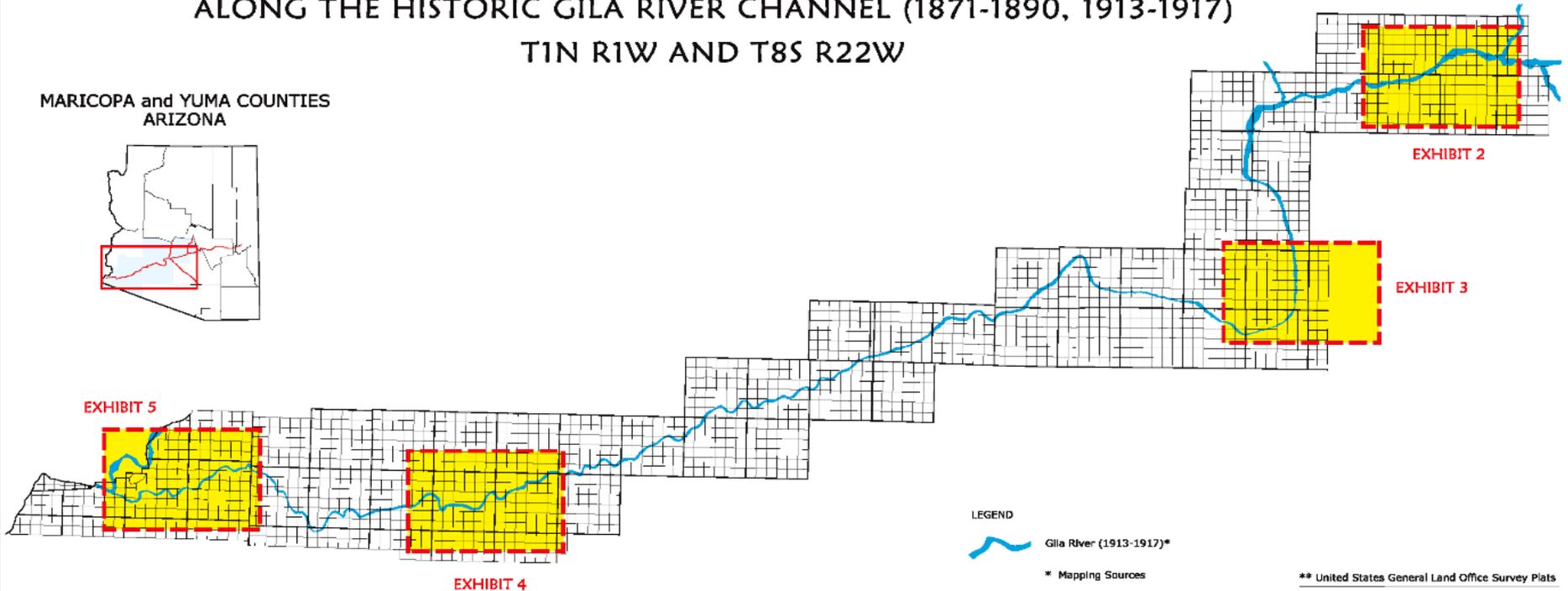
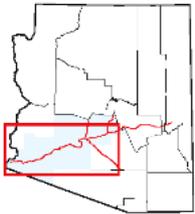
FEDERAL PATENTS



Homestead Patent Sampling Areas along the Gila River

EXHIBIT 1 INDEX MAP OF FEDERAL LAND PATENTS ALONG THE HISTORIC GILA RIVER CHANNEL (1871-1890, 1913-1917) T1N R1W AND T8S R22W

MARICOPA and YUMA COUNTIES
ARIZONA



LEGEND

Gila River (1913-1917)*

* Mapping Sources

Map of Maricopa County, Arizona,
County Engineer's Office, Phoenix, Arizona
Scale: 1" = 4 Miles, 1917

Map of Yuma County, Arizona,
County Surveyor Frank H. Brooks
Scale: 1" = 2.5 Miles, 1913

Map of Salt River Valley, Arizona,
Copyright by Dwight B. Heard
Scale: 1" = 18 Miles, 1915

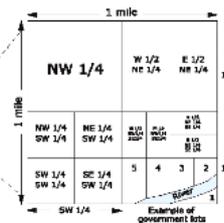
** United States General Land Office Survey Plats

- Township 1 North, Range 1 West,
Gila and Salt River Meridian, Arizona 1"=2640', 1870
- Township 1 North, Range 2 West,
Gila and Salt River Meridian, Arizona 1"=2640', 1907
- Township 1 South, Range 1 West,
Gila and Salt River Meridian, Arizona 1"=2640', 1914
- Township 4 South, Range 4 West,
Gila and Salt River Meridian, Arizona 1"=2640', 1871
- Township 5 South, Range 4 West,
Gila and Salt River Meridian, Arizona 1"=2640', 1871
- Township 8 South, Range 16 West,
Gila and Salt River Meridian, Arizona 1"=2640', 1877
- Township 8 South, Range 17 West,
Gila and Salt River Meridian, Arizona 1"=2640', 1877
- Township 8 South, Range 21 West,
Gila and Salt River Meridian, Arizona 1"=2640', 1890
- Township 8 South, Range 22 West,
Gila and Salt River Meridian, Arizona 1"=2640', 1873



6 miles					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
6 miles					

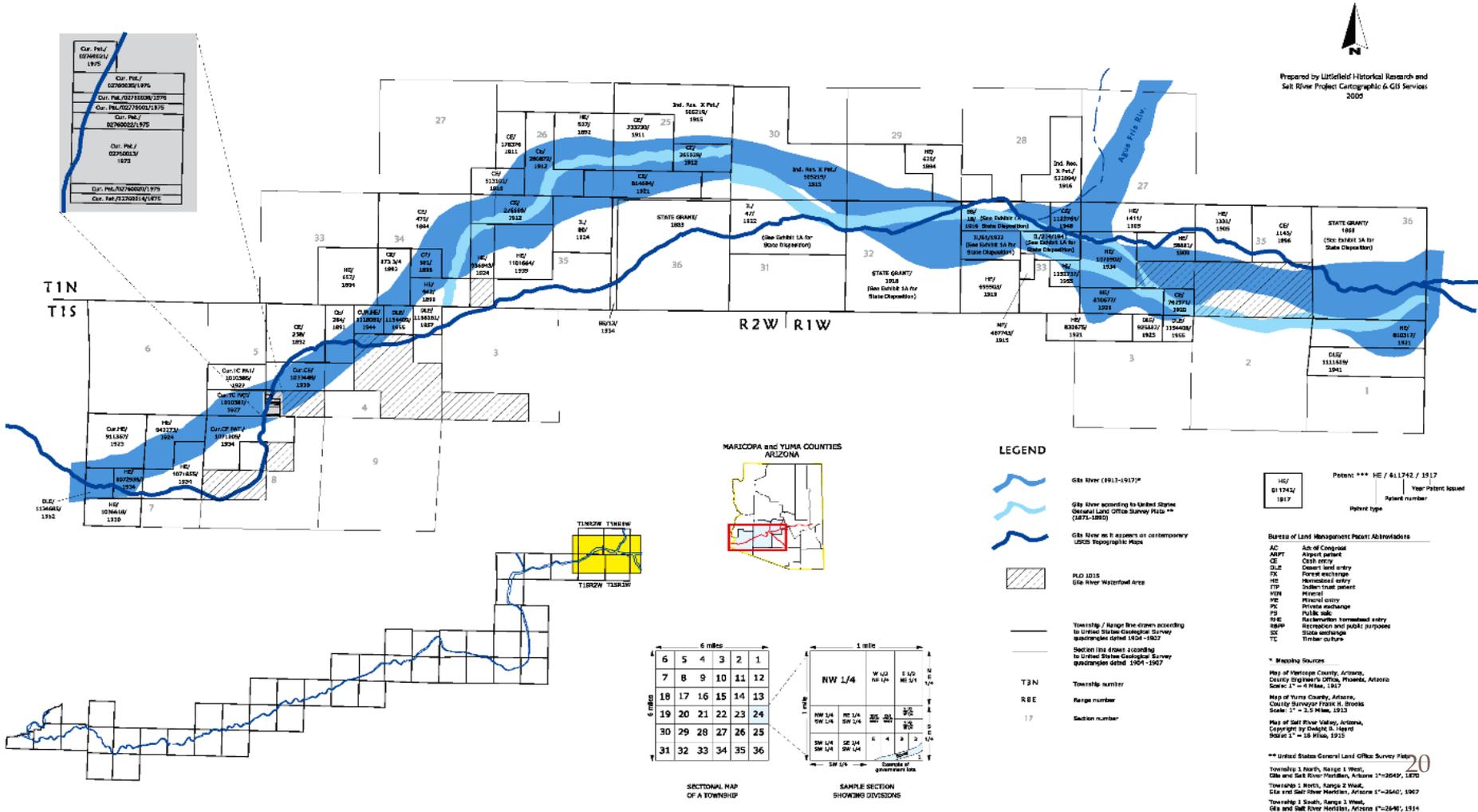
SECTIONAL MAP
OF A TOWNSHIP



SAMPLE SECTION
SHOWING DIVISIONS

Exhibit 2: Federal Patents along the Gila River (near Phoenix)

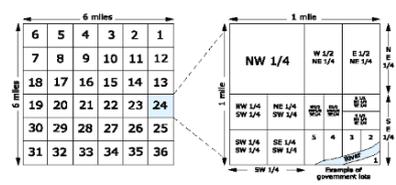
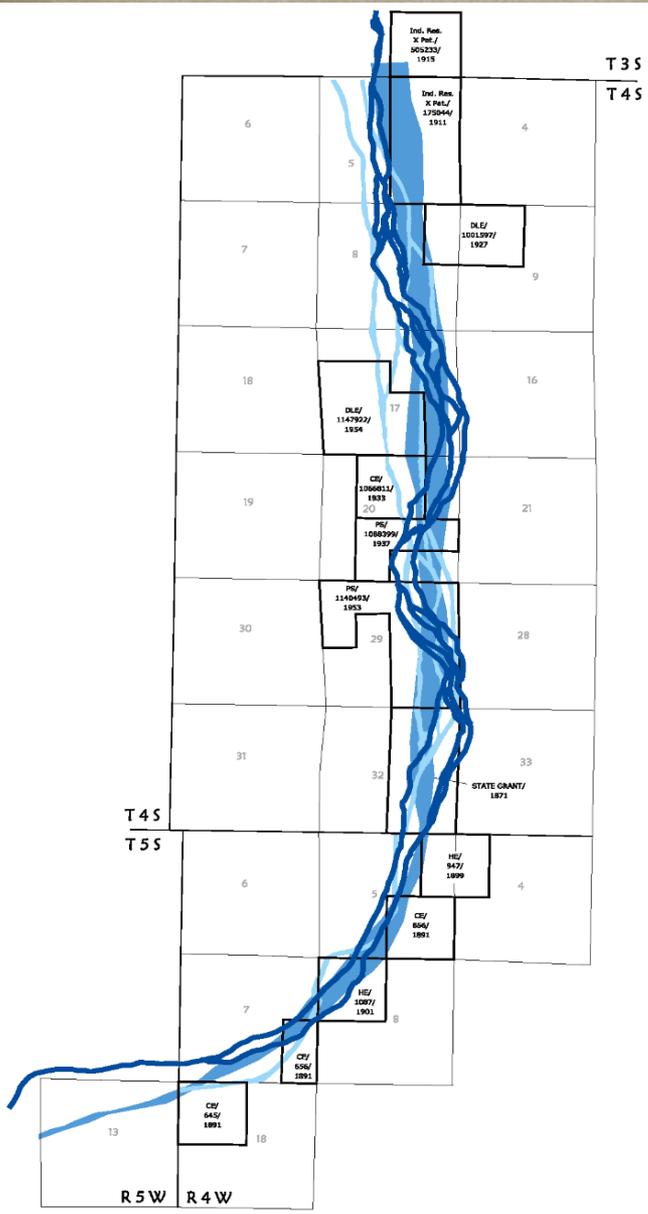
EXHIBIT 2 FEDERAL LAND PATENTS ALONG THE HISTORIC GILA RIVER CHANNEL (1871-1890, 1913-1917) T1N R1W-2W AND T1S R1W-2W



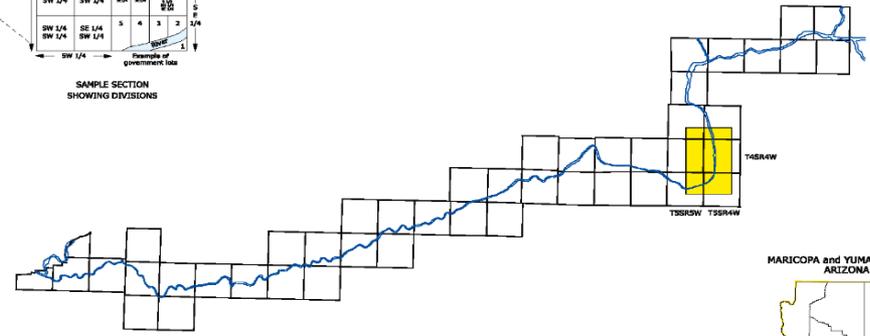
Prepared by Littlefield Historical Research and Salt River Project Cartographic & GIS Services
2005

Exhibit 3: Federal Patents along the Gila River (near Gila Bend)

EXHIBIT 3 FEDERAL LAND PATENTS ALONG THE HISTORIC GILA RIVER CHANNEL (1871-1890, 1913-1917) T4S R4W AND T5S R5W



SECTIONAL MAP OF A TOWNSHIP
SAMPLE SECTION SHOWING DIVISIONS



LEGEND

- Gila River (1913-1917)*
- Gila River according to United States General Land Office Survey Maps** (1871-1890)
- Gila River as it appears on contemporary USGS Topographic Maps
- Township / Range line drawn according to United States Geological Survey quadrangles dated 1904-1907
- Section line drawn according to United States Geological Survey quadrangles dated 1904-1907
- T3N Township number
- R8E Range number
- 17 Section number

HE/ 611742/ 1917	Patent *** HE / 611742 / 1917
	Patent number
	Patent type

- Bureau of Land Management Patent Abbreviations
- AC Act of Congress
 - ARPT Airport patent
 - CE Cash entry
 - DLE Desert land entry
 - FE Forest exchange
 - HE Homestead entry
 - ITP Indian Trust patent
 - MIN Mineral
 - ME Mineral entry
 - PC Private purchase
 - PS Public sale
 - RNE Reclamation homestead entry
 - RPPP Recreation and public purposes
 - SE State exchange
 - TC Timber culture

- * Mapping Sources
- Map of Maricopa County, Arizona, County Engineer's Office, Phoenix, Arizona Scale: 1" = 4 Miles, 1917
 - Map of Yuma County, Arizona, County Surveyor Frank H. Brooks Scale: 1" = 2.5 Miles, 1913
 - Map of Salt River Valley, Arizona, Copyright by Dwight B. Heard Scale: 1" = 18 Miles, 1915

- ** United States General Land Office Survey Maps
- Township 4 South, Range 4 West, Gila and Salt River Meridian, Arizona 1"=2840', 1871
 - Township 5 South, Range 4 West, Gila and Salt River Meridian, Arizona 1"=2840', 1871

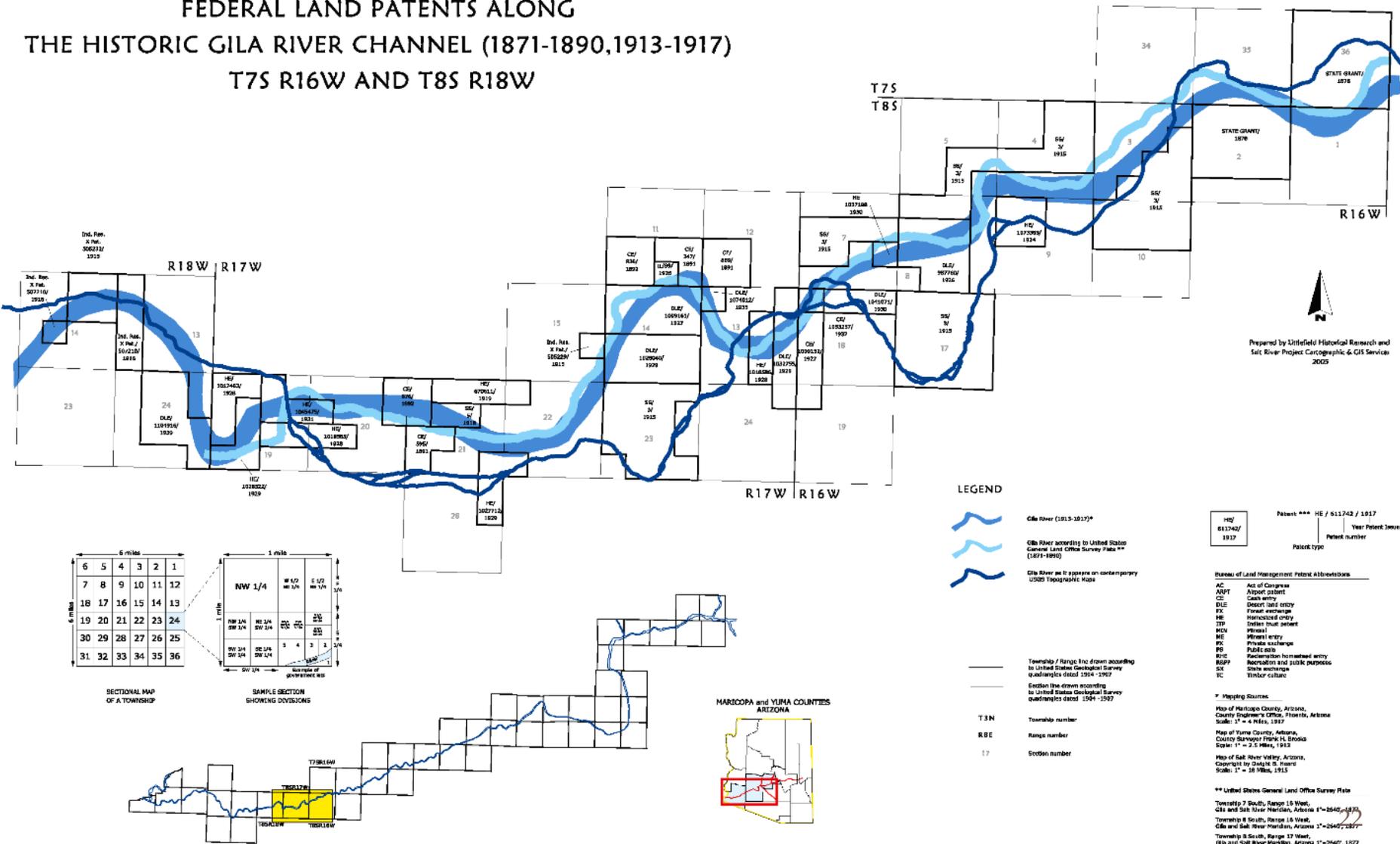


Prepared by Littlefield Historical Research and Salt River Project Cartographic & GIS Services 2005

Exhibit 4: Federal Patents along the Gila River (Upstream from Yuma)

EXHIBIT 4

FEDERAL LAND PATENTS ALONG THE HISTORIC GILA RIVER CHANNEL (1871-1890, 1913-1917) T7S R16W AND T8S R18W



Prepared by Littlefield Historical Research and Salt River Project Cartographic & GIS Services 2005

Desert Land Act of 1877

- In 1877, Congress passed the Desert Land Act.
- Designed to make homesteading in desert areas easier by permitting settlers to acquire larger blocks of land (640 acres instead of 160 under Homestead Act).
- The law required that claimants provide irrigation water to their lands.
- Such water had to come from a non-navigable stream:

“Provided however that the right to the use of water by the person so conducting the same, on or to any tract of desert land of six hundred and forty acres shall depend upon bona fide prior appropriation: and such right shall not exceed the amount of water actually appropriated, and necessarily used for the purpose of irrigation and reclamation: and all surplus water over and above such actual appropriation and use, together with the water of all, lakes, rivers and other sources of water supply upon the public lands *and not navigable*, shall remain and be held free for the appropriation and use of the for irrigation, mining and manufacturing purposes subject to existing rights.”

- U.S. General Land Office issued over 20 Desert Land Patents in the vicinity of the Gila River, thus indicating that U.S. officials believed the Gila River to be non-navigable.²⁴

STATE PATENTS



Locations of State Patents were Determined from Arizona State Land Department Master Title Plats (Example Shown Below)

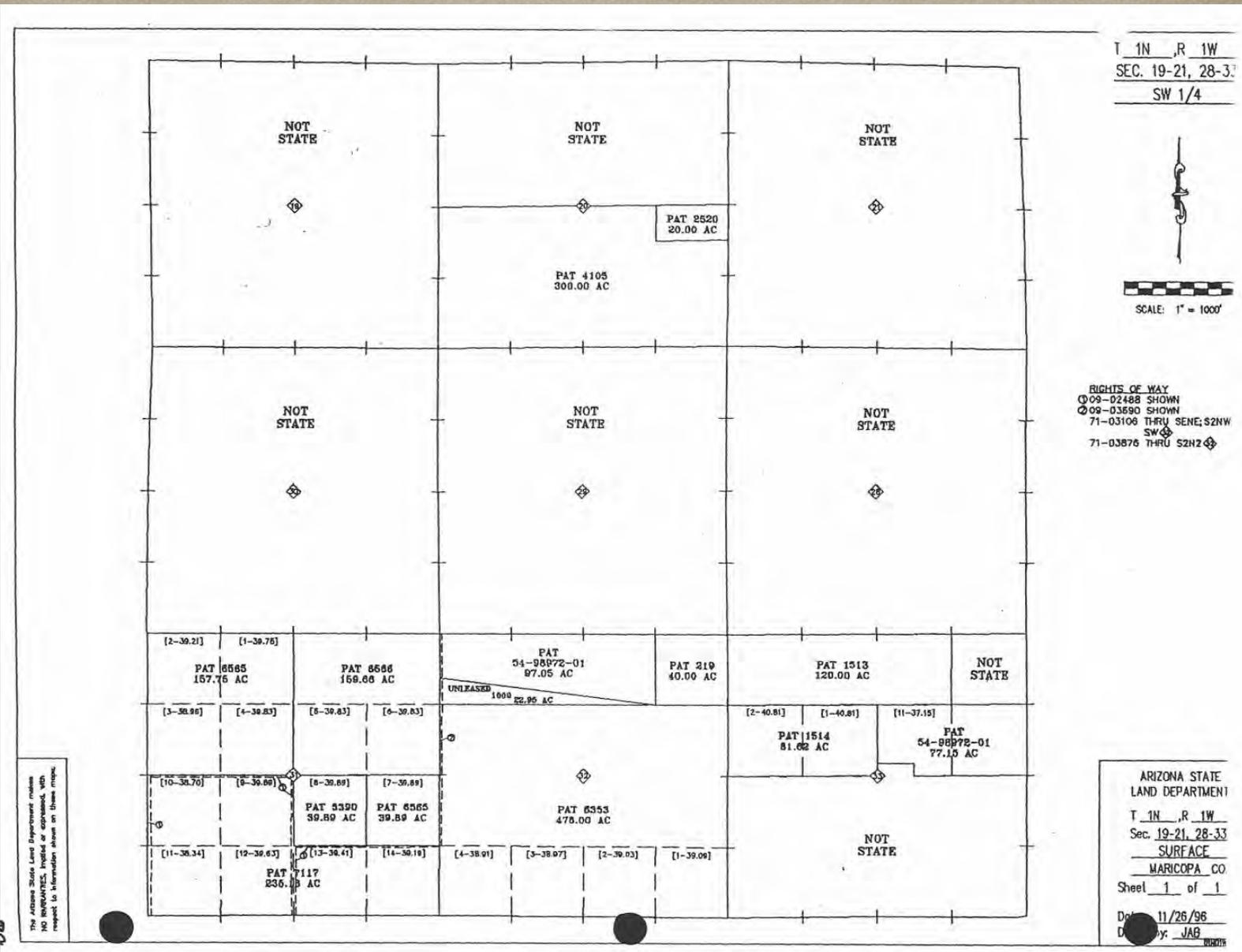


Exhibit 1A: State Patents along the Gila River (near Phoenix)

EXHIBIT 1A STATE LAND PATENTS ALONG THE HISTORIC GILA RIVER CHANNEL (1913-1917) T1N R1W

LEGEND

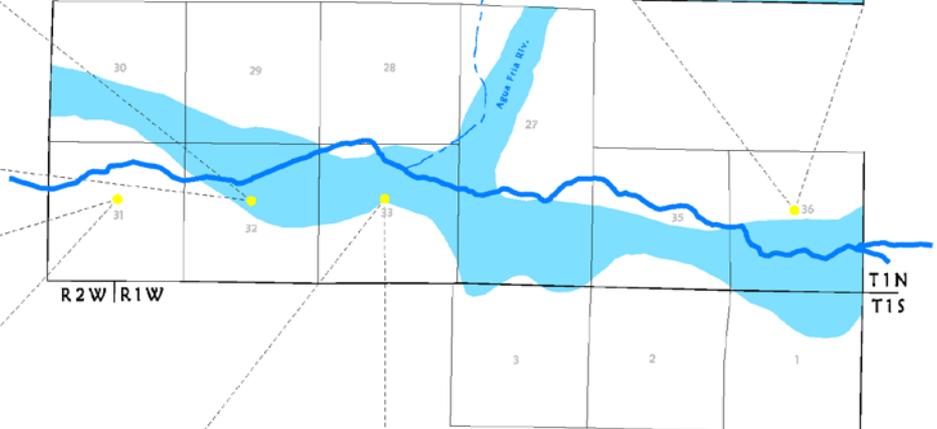
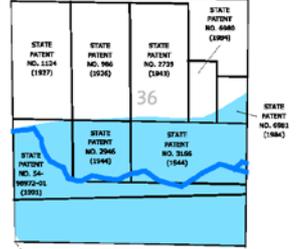
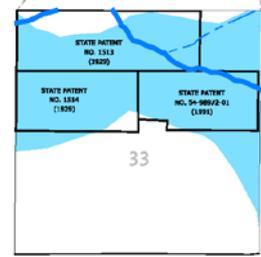
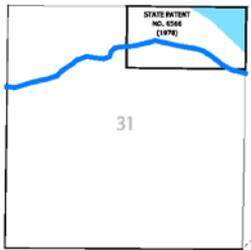
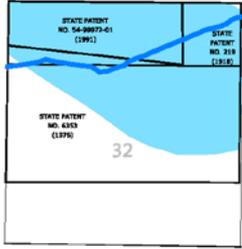
-  Gila River (1913-1917)*
-  Gila River as it appears on contemporary USGS Topographic Maps
-  Township / Range line drawn according to United States Geological Survey quadrangle dated 1904 - 1907
-  Section line drawn according to United States Geological Survey quadrangle dated 1904 - 1907
- T 1 N** Township number
- R 1 E** Range number
- 17** Section number

State Patent No. 1234 (1914)

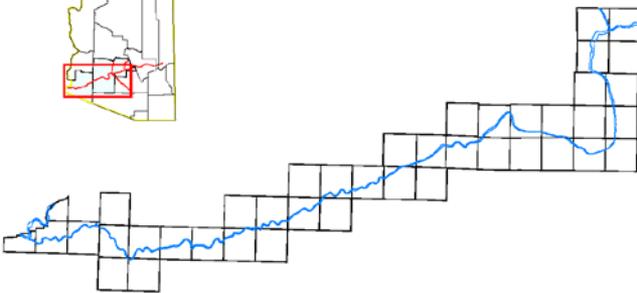
State Patents are shown on the enlarged sections of the map. They are identified by a unique number. The number within the parentheses identifies the year that the patent was granted.

Note: The water of the sections that depict state patents has been enlarged for clarity.

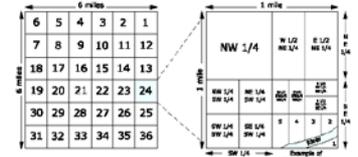
- * Mapping Sources
- Map of Maricopa County, Arizona, County Engineer's Office, Phoenix, Arizona Scale: 1" = 4 Miles, 1912
 - Map of Yuma County, Arizona, County Surveyor Frank H. Brodie Scale: 1" = 2.5 Miles, 1913
 - Map of Salt River Valley, Arizona, Copyright by Dwight B. Hoard Scale: 1" = 18 Miles, 1915



MARICOPA AND YUMA COUNTIES ARIZONA



Prepared by Littlefield Historical Research and Salt River Project Cartographic & GIS Services 2005



SECTIONAL MAP OF A TOWNSHIP
SAMPLE SECTION SHOWING DIVIDERS

Conclusions about Patents

- Nearly 100 patents were issued by the United States that touched or overlay the Gila River.
- Twenty of these were Desert Land Act patents that expressly had to take water from a non-navigable stream.
- In not one instance did the U.S. Government in granting any type of patent along the Gila River indicate a belief that the stream was navigable by withholding acreage for the bed of the river.
- Indeed, many of the patent applicants and their witnesses specifically noted in sworn affidavits that their patent claims included the bed of the Gila River.
- In addition, Arizona authorities sold over sixty parcels as state patents for lands lying over the Gila River.
- Cumulatively, therefore, hundreds of individuals involved in the patenting process for either the United States or the State of Arizona (officials and patentees alike) held the view that the Gila River was not navigable.

**MISCELLANEOUS HISTORICAL
DESCRIPTIONS OF THE GILA RIVER**



Francisco Garces, November 29, 1775

“As the Rio Colorado has such a current, and runs so scattered through the bottomlands, we found no Isla de Trinidad, neither was there now the ford by which passed the expedition on the former occasion, the Indians saying that the river was now very deep at that ford: for these two rivers Colorado and Gila rise every year to such excess, and run through these flat and friable grounds with such lack of restraint, that they appear to shift their channels, forming wash-outs, and dividing into branches, according as the force of the current bears more or less to this side or to that. The result is that at its greatest flood the Gila itself extends more than a league [2.63 miles], and presumably the Colorado much more.”

Colonel Phillip St. George Cooke, October 1846

“Sixty or seventy miles above the mouth of the Gila, having more wagons than necessary, and scarcely able to get them on, I tried the experiment, with very flattering assurances of success, of boating with two pontoon wagon beds, and a raft for the running gear. I embarked a portion of the rations, some road tools, and corn. The experiment signally failed, owing to the shallowness of the water on the bars; the river was very low. In consequence of the difficulty of approaching the river, orders mistaken &c., the flour only was saved from the loading, and the pontoons were floated empty to the crossing of the Rio Colorado, where they were used as a ferry boat.”

William H. Emory, 1846 and 1853

- In 1846, William H. Emory described the Gila: *“[We] encamped on an island where the valley is contracted by sand buttes in what had been very recently the bed of the river. It was overgrown with willow, cane, Gila grass, flag grass, &c. The pools in the old bed of the river were full of ducks, and all night the swan, brant and geese, were passing. . . .”*
- Emory later served on the commission to survey the U.S.-Mexico border, which then included the Gila River. Describing the border in an 1853 report to Congress, Emory stated that the *“north side [of the new boundary line] is bounded by the Gila River, which is not navigable, but is a never failing stream, discharging a large volume of water. . . .”*

Lieutenant Nathaniel Michler, 1853

“The Colorado is said to have but few tributaries; the Gila has several, emptying in above and below the Pima’s villages. The annual rise in both rivers usually takes place in the months of May and June, sometimes as late as July, and is caused by the melting of the snows in the mountains near their head-waters; the freshets are not of long duration. Frequently the one stream will be up and the other down. The Gila becomes so low that a sand-bar forms at its mouth during the summer, and at no time does it supply much water. The Colorado on the contrary, is navigable for small steamers, drawing two and two and a half feet water, as high up as Fort Yuma. . . . This [navigation] is a great saving, as the cost of transportation of stores by trains across the desert is enormous. The navigation is pretty good, but, like all streams of the same nature, the channel frequently changes, owing to the shifting sands and the instability of its banks.”

Samuel “Steamboat” Adams, 1860s

- Samuel Adams was a candidate for Arizona Territory’s one non-voting seat in the House of Representatives in the 1860s. An article that appeared in the *Weekly Journal-Miner* newspaper (published in Prescott) in 1900 recalled his proposal to navigate the Salt and Gila Rivers. Adams had called for:
- *“the navigation of the Gila and Salt rivers with steamboats with big broad wheels something on the order of our present traction engine wheels, and when there was water, they were to act as water wheels and in places where the river sank, they were to carry the boat over [the] dry [land], and for protection, it was to be provided with a double turret gun, one in front and one behind, [and] in case of Indians it could be turned on the enemy, and in tight pulls either on land or water the firing of the gun at the rear acted as a pusher by the recoil of the charge or a shot from the front or bow would make the vessel back out in case they got stranded[.]”*

Richard C. McCormick, 1870

- Although “Steamboat Adams” did not win the election to Congress, Richard McCormick was elected to the non-voting House seat in 1869 and served in that position until 1875. He offered this statement to Congress in 1870 when describing a possible railroad route across Arizona:
- *“For two hundred miles you follow the valley of the Gila River [for the possible railroad route]. For half or two-thirds of the year it is a large river, and the other part a comparatively small one. It is not navigated. The valley of the Gila is narrow in many places.”*

Arizona Sentinel, July 28, 1877

- Commenting about how newspapers from far-away locales were inaccurately publishing stories about steamboats plying the Gila River, the *Arizona Sentinel* (published in Yuma) ran a story on July 28, 1877, under the headline “Humorous if Not Intelligent” commenting with tongue-in-cheek about several overland freight operators (calling them “Captains”):
- *“Capts. Quinlan, Jenks, Cavaness, Bowley, Fields, Noriega and other noted navigators between Yuma and Tucson will very likely read this with surprise, and admire the intelligence of the geographical sharp of the Post; and Capts. Moore, Kerens & Mitchell, Capron, and even our old friend Platt of Kansas City, all of whom now run mail packets on the line, will smile and wonder what on earth they bought so much barley for and why they went off on the plains and fooled away thousands of dollars to dig wells to supply their steam works with water, while their crafts were sailing right along ‘by water.’”*

Arizona Territorial Legislature, 1865

*“[T]he Colorado River is the only
navigable water in this
Territory[.]”*

Twelfth Annual Report of the U.S. Geological Survey, 1891

“The floods of the Gila are usually short and violent, the highest water occurring during the months of January and February. During a freshet the river rises in some places from 8 to 12 feet, and increases in width from 300 feet to a mile and a half. It is sometimes impassable for weeks, and has the appearance in places of a sea of muddy water. The season of low water occurs during the months of June and July, the river bed being then dry in places.”

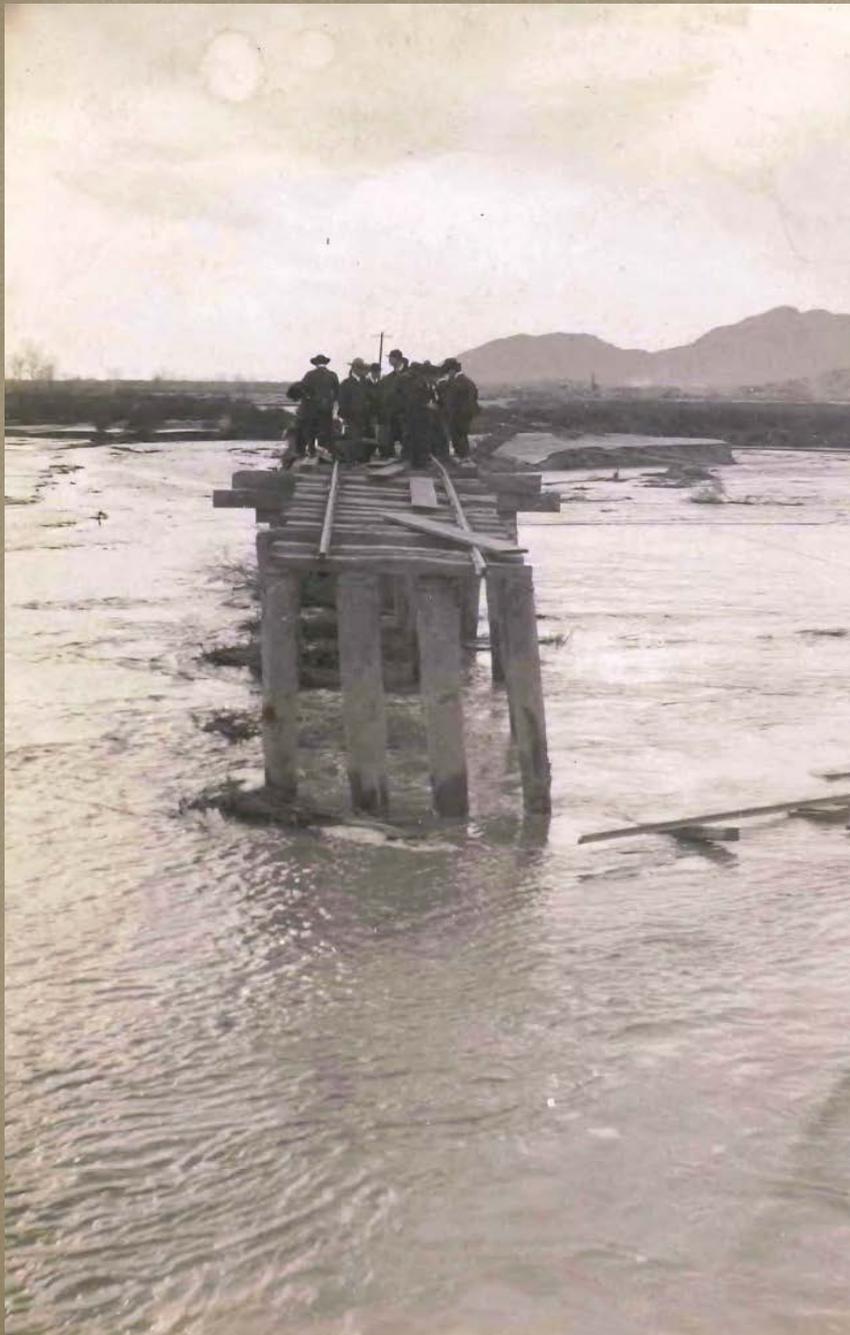
Report of Progress of Stream Measurements for the Calendar Year 1905, Part XI. Colorado River Drainage Above Yuma (U.S. Geological Survey Water Supply Paper No. 175)

“The river now [1905] flows in a channel fully 1 mile north of the original channel. . . . At every flood the channel shifts. The valley at its narrowest is half a mile wide and the waters may occupy any part or all of it. . . . [The river contains] an enormous amount of mud and sand. At times the waves of sand traveling along the bed of the stream are so large, the current is so swift, and the stream so shallow, that the water is broken into a uniform succession of waves 2 feet high and over.”

A table accompanied this description recording discharge at Gila City (Dome), Arizona, and it further indicated the erratic nature of this river. For instance, on February 8, 1905, the discharge was 82,000 cubic feet per second, but just eight days later, on February 16, no discharge was recorded at all.

HISTORICAL PHOTOGRAPHS





**Railroad bridge
damaged by 1905
flood on the Gila
River. Note the
river's broad,
sandy streambed.**

**Source: Arizona
Historical Society,
Tucson, Arizona.**

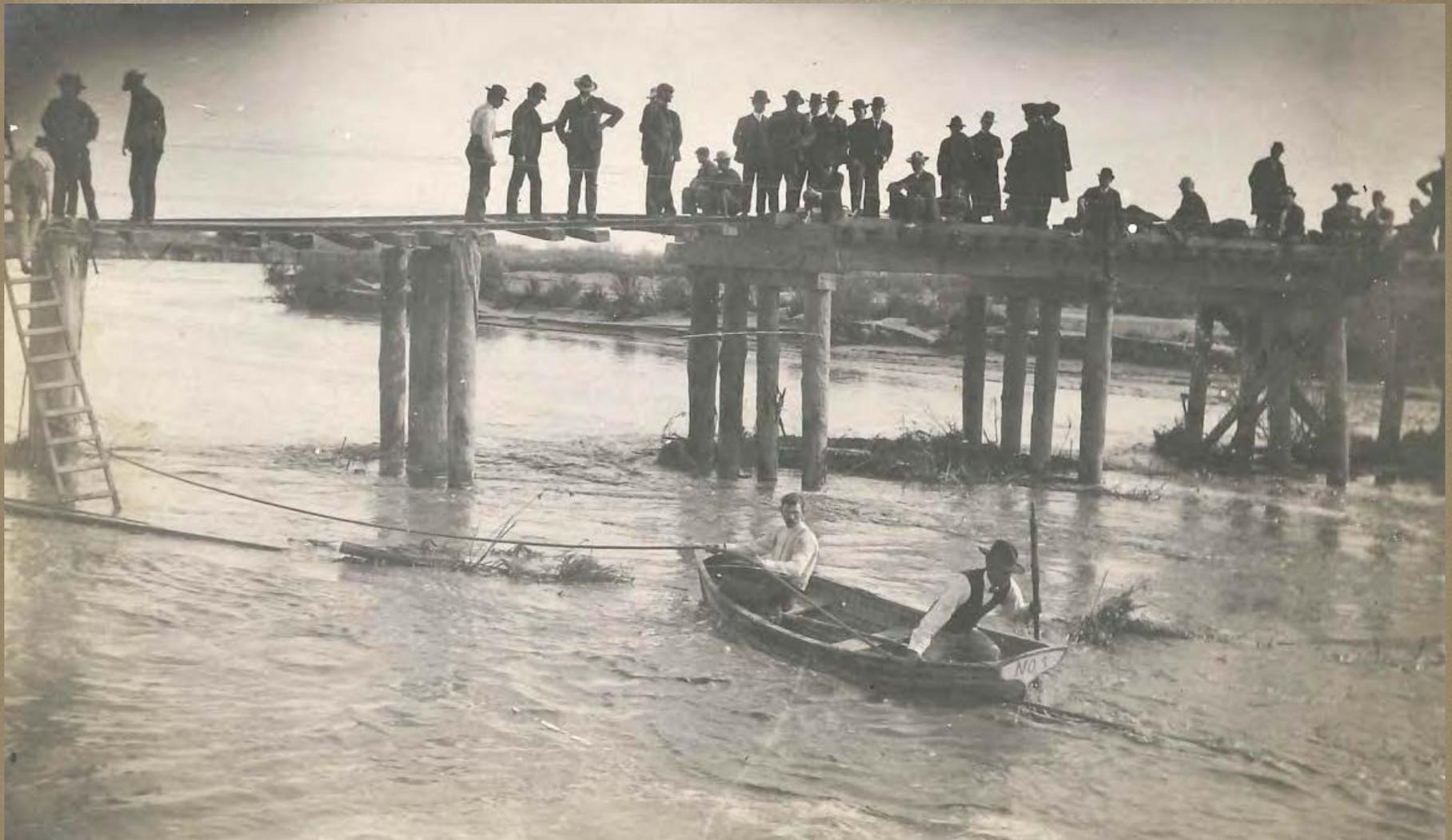
**Railroad bridge
damaged by 1905
flood on the Gila
River.**

**Source: Arizona
Historical Society,
Tucson, Arizona.**



**Railroad bridge damaged by 1905 flood on the Gila River.
Source: Arizona Historical Society, Tucson, Arizona.**





Workers use a small boat to examine the railroad bridge damaged by the 1905 Gila River flood. Source: Arizona Historical Society, Tucson, Arizona.



Workers driving pilings to repair the railroad bridge damaged in 1905 by the Gila River flood. Source: Arizona Historical Society, Tucson, Arizona.



**Woman walking next to the flooding Gila River near Gila Bend, Arizona, June 1905. Note standing waves on the river.
Source: Arizona Historical Society, Tucson, Arizona.**

**View of the Gila River near Wilton Crossing, 1910.
Source: Phoenix Public Library, Phoenix, Arizona.**





**“A.R. at Buckeye
Dam, Dec. 8, 1907.”**

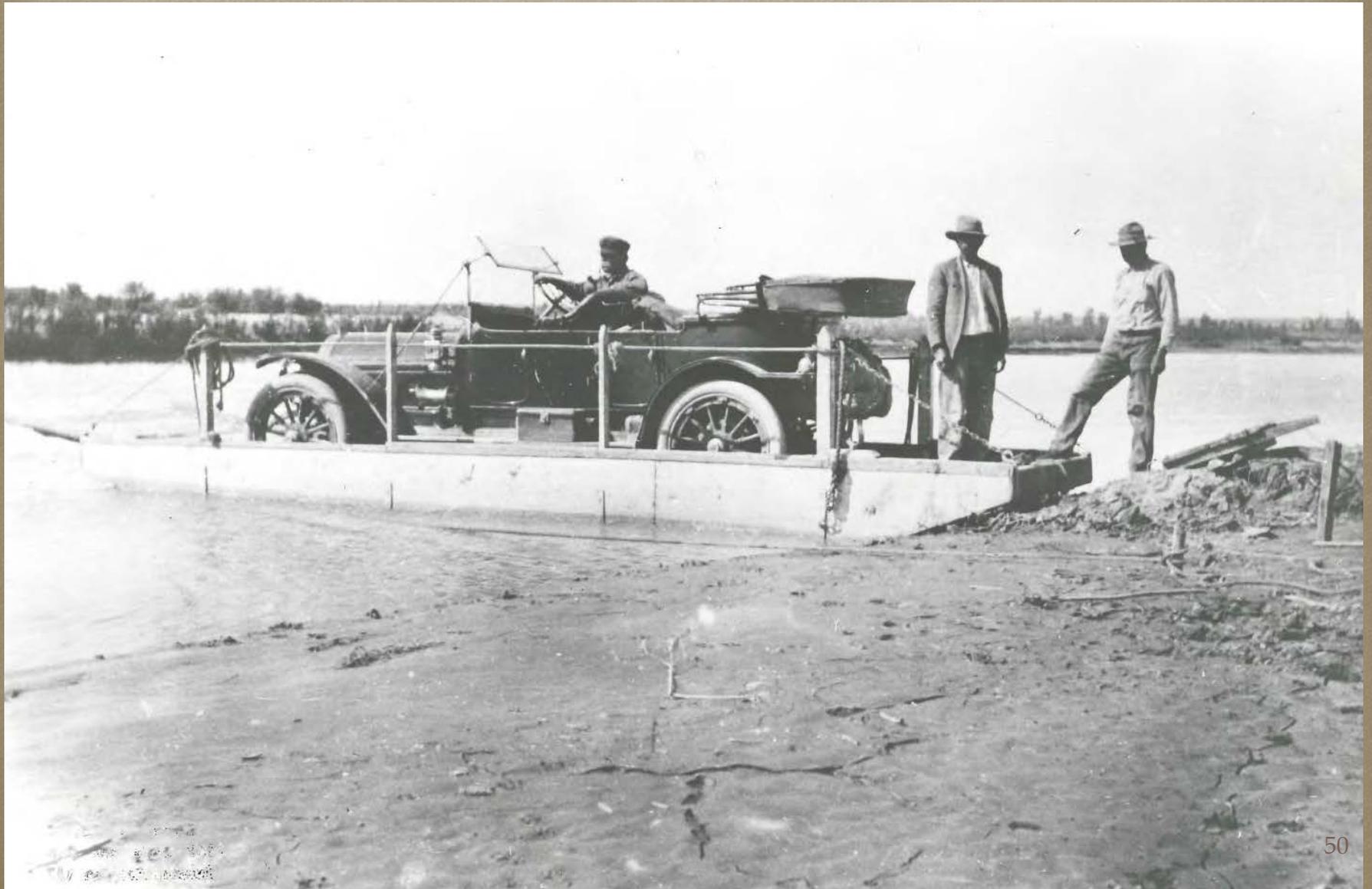
**Source: Salt River
Project Archives,
Phoenix, Arizona.**

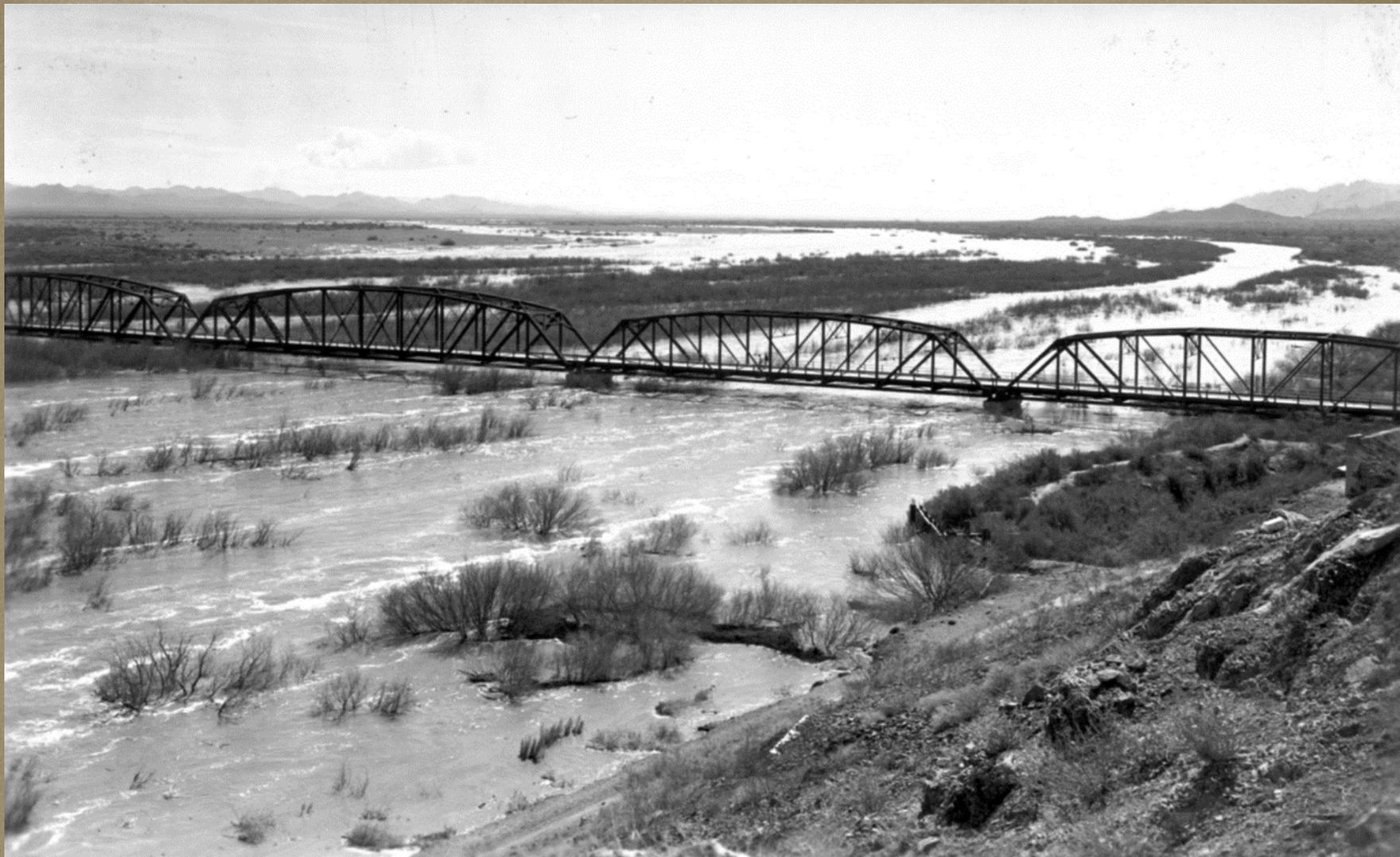
“Gila River & Buckeye Dam, 12-8-'07.” Source: Salt River Project Archives, Phoenix, Arizona.



Gila river + Buckeye Dam 12-8 '07 49

**Gila River ferry, 1913. Source: Arizona Historical Society,
Tucson, Arizona.**





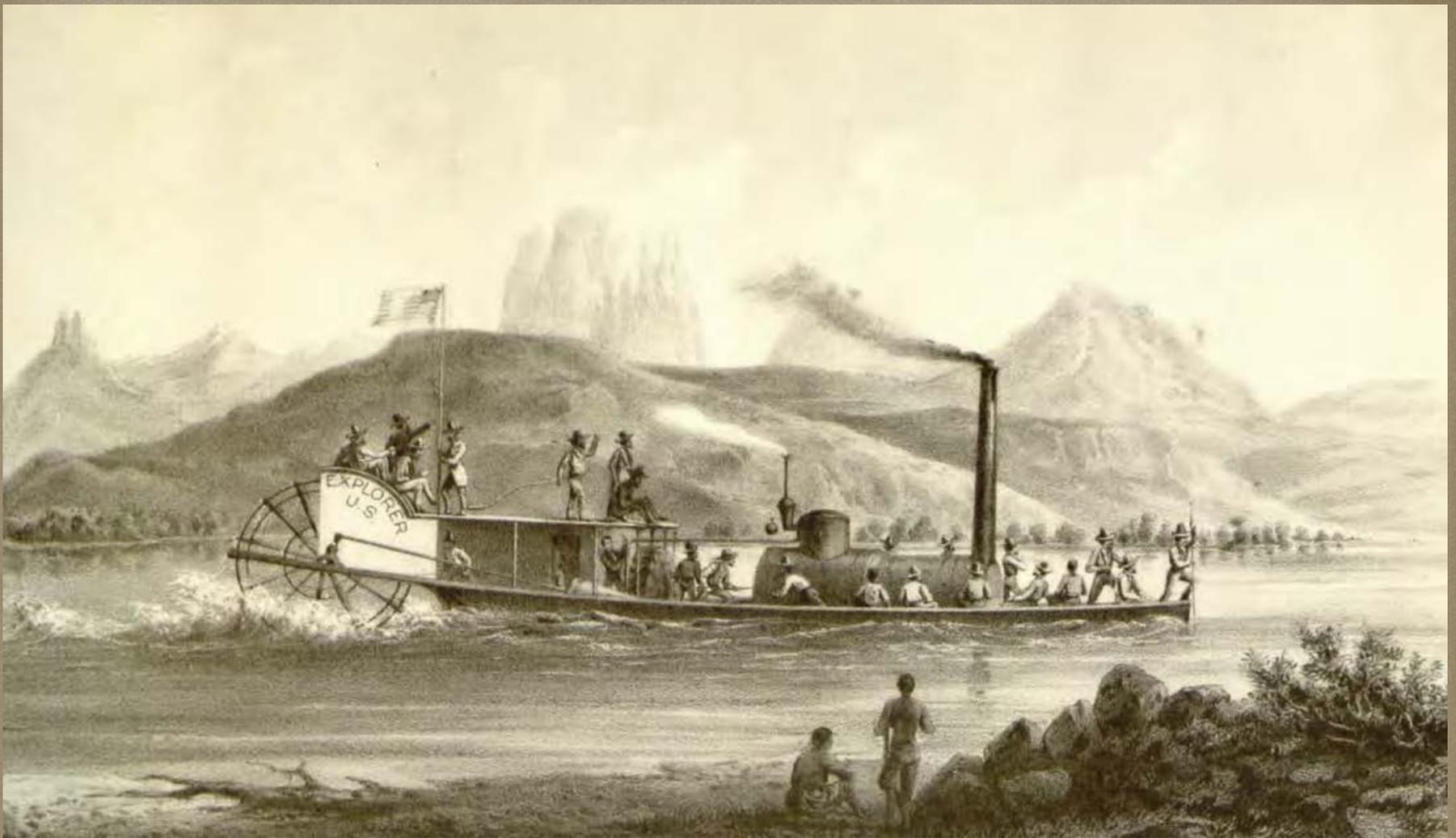
Flooding Gila River looking downstream from Gillespie Dam, March 5, 1938. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.⁵¹



**Dry Gila River near Antelope Hill, January 16, 1940. Source:
Records of the U.S. Bureau of Reclamation, U.S. National
Archives branch, Denver, Colorado.**

NAVIGATION ON THE COLORADO RIVER





J.C. Ives's sketch of the *Explorer* navigating the Colorado River, ca. mid-1850s. Source: Joseph C. Ives, *Report upon the Colorado River of the West* (1861).

Drawing of Ives's exploration of the Colorado River – lining the boat through rapids, mid-1850s. Source: Joseph C. Ives, *Report upon the Colorado River of the West* (1861).





**John Wesley
Powell in 1874.**

**Source: U.S.
National Park
Service online
photograph
collections.**

Photograph of Powell's dories on the Colorado River, 1871-1872.

**Note the lashed-on armchair on the boat in the foreground;
Powell commanded the expedition from the chair. Source: U.S.
National Park Service online photo collection.**



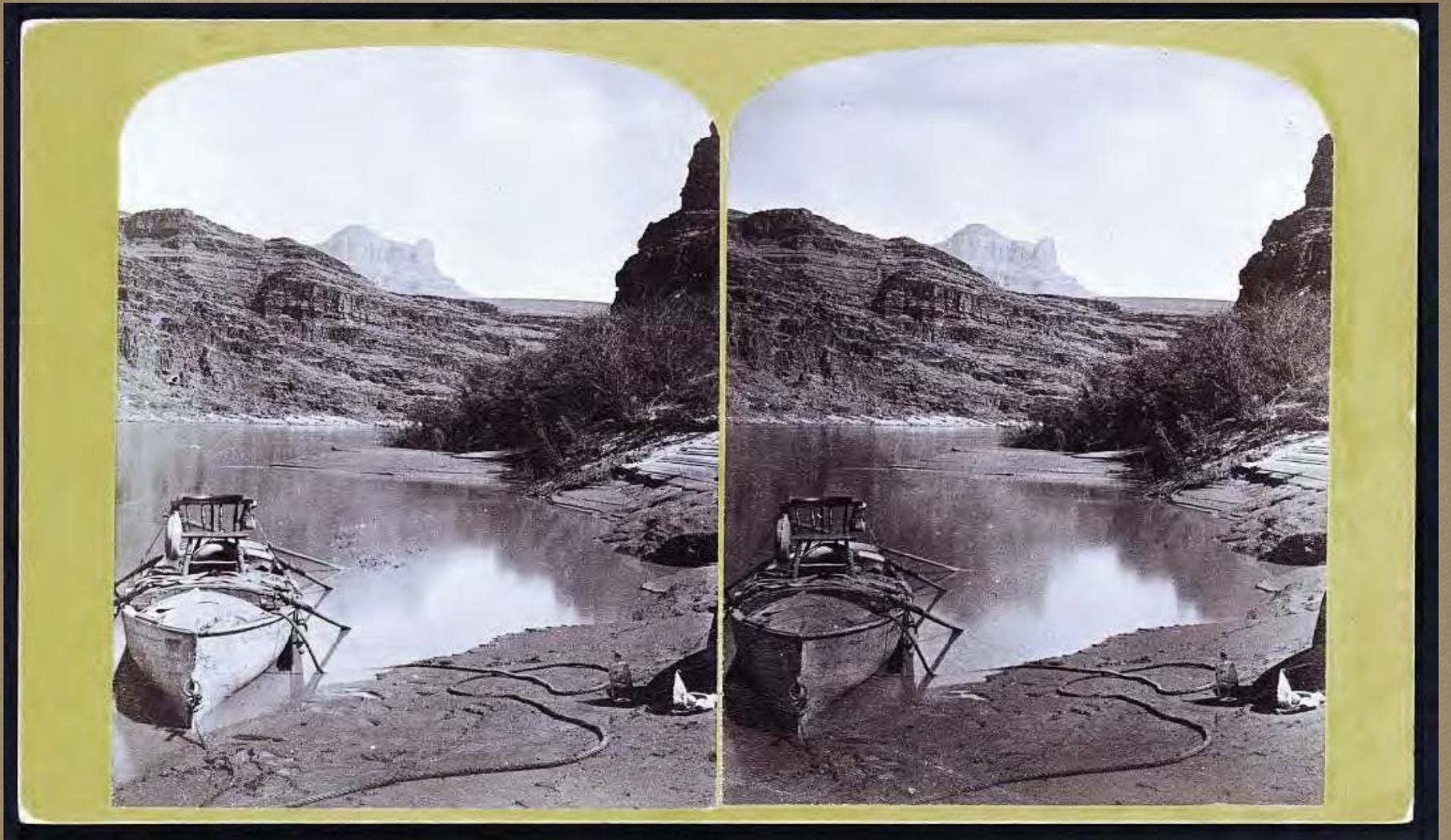
**Powell's crew with dories in the Grand Canyon, 1871-1872.
Source: U.S. National Park Service online photo collection.**





John Wesley Powell's second expedition through the Grand Canyon, 1871-1872.

Source: U.S. Library of Congress, Washington, D.C.



Stereographic photograph of the dory used by John Wesley Powell on the second expedition through the Grand Canyon in 1871-1872. Source: U.S. Library of Congress, Washington, D.C.⁶⁰



**One of Powell's boats at
rapids in the Grand
Canyon, 1871-1872.**

**Source: U.S. National
Park Service online
photograph collection.**



**“Our First Camp,” Powell expedition through the Grand Canyon,
1871-1872.**

Source: U.S. National Park Service online photograph collection.



**Photograph of George
M. Wheeler's
upstream Colorado
River expedition
leaving Camp Mohave,
Arizona Territory,
1871.**

**Source: U.S. Library
of Congress,
Washington, D.C.**

Stereographic photograph of Wheeler expedition up the Colorado River at Black Canyon, 1871.

Source: U.S. Library of Congress, Washington, D.C.



**Photograph of
Wheeler expedition up
the Colorado River,
1871, at Camp Big
Horn. Note boats on
the beach. Source:
U.S. Library of
Congress, Washington,
D.C.**



CONCLUSIONS

- **Multitudes of historical documents describe the Gila River at many points in time before Arizona statehood in 1912.**
- **A wide spectrum of published and unpublished sources, including U.S. Government and state (and territorial) materials, diaries, journals, reminiscences, other archival records, and photographs.**
- **From this wealth of information, covering a huge array of documentary sources, only one conclusion can be reached – a conclusion also reached by literally hundreds of contemporaneous observers:**
- ***The Gila River was not navigable or susceptible of navigation on or before February 14, 1912.***
- **It is especially important to note that this conclusion comes from literally hundreds of documents, maps, and illustrations created by people who knew the Gila River as it existed in their own time – not a reconstruction of the past looking backward in time.**

END