DECLARATION OF THE NON-NAVIGABILITY OF THE SALT RIVER AT AND PRIOR TO ARIZONA'S STATEHOOD ON FEBRUARY 14, 1912

by

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INTRODUCTION

1. I am a professional historian with over thirty years of experience providing consulting and expert witness services relating to the history of navigability of rivers and water rights in the American West. I have a Ph.D. in American history from the University of California, Los Angeles (1987). I have testified in court regarding navigable rivers and water rights and provided expert reports and declarations in those proceedings. I have been an expert witness in two original jurisdiction actions before the United States Supreme Court and provided affidavits and expert reports in three other U.S. Supreme Court original jurisdiction actions. My curriculum vita is attached to this declaration as **Appendix A**.

2. This declaration was prepared on behalf of the Salt River Project (SRP) to assist the Arizona Navigable Stream Adjudication Commission (ANSAC) in determining whether the Salt River was navigable or non-navigable on or before Arizona's statehood on February 14, 1912. This declaration is intended to conform with the decision by the Arizona Court of Appeals 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 manmade structures on the Salt River may have affected the stream's ordinary and natural condition, particularly in the years before statehood.

3. I have testified previously before ANSAC on the subject of the Salt, Gila, and Verde rivers' navigability or non-navigability. I also have testified before a committee of the Arizona Legislature about the Salt River.

4. This declaration is not intended to be a comprehensive examination of the Salt River's navigability or non-navigability as of 1912; rather, this declaration is a synopsis of two detailed reports on that topic – both of which are by the author of this declaration. These reports, which were previously submitted to ANSAC, are: 1) "Revised and Updated Report: Assessment of the Navigability of the Salt River below Granite Reef Dam Prior To and on the Date of Arizona's Statehood, February 14, 1912," dated June 8, 2014 [ANSAC Evidence Item C001] (hereafter cited as 2014 Littlefield Lower Salt River Report), and 2) "Revised and Updated Report: Assessment of the Navigability of the Upper Salt River above Granite Reef Dam Prior To and on the Date of Arizona's Statehood, February 14, 1912," dated February 7, 2014 [part of ANSAC Evidence Item C004, X002 Upper] (hereafter cited as 2014 Littlefield Upper Salt River Report). Because this declaration does not duplicate the 2014 Salt River reports but summarizes them, only a few examples from those reports are discussed here. Citations have been provided to direct readers to more detailed discussions in the earlier studies. All of the material in this declaration appears in one or both of the 2014 Littlefield Salt River reports.

Geographical and Chronological Limits of This Declaration

5. This declaration follows ANSAC's decision of May 20, 2015, to address the entire Salt River's navigability or non-navigability in one proceeding rather than to bisect the river at Granite Reef Dam and deal with each portion separately. Therefore, the upstream limit of this study is the the edge of Roosevelt Lake where it begins to inundate the bed of the Salt

River. The downstream limit is the Salt River's confluence with the Gila River near Phoenix, Arizona.

6. Chronologically, the time period covered by this declaration extends from the mid-nineteenth century, when there were only a minimal number of man-made obstructions on the Salt River, to the years shortly after Arizona's statehood on February 14, 1912.

Methodology, Research Locations, and Computer Database

7. It should be noted that all documents utilized in preparing the 2014 Littlefield Salt River reports consist principally of primary sources because historians generally consider such documents to be the best evidence for facts regarding a particular historical event. Primary sources are letters, memos, notes, reports, newspaper accounts, photographs, maps, and other documents that were created by individuals or organizations close in time and/or location to any given historical event. Thus, those documents' accounts – such as descriptions of the Salt River's characteristics – are more accurate than any current attempt to reconstruct an event by projecting backward in time modern views, experiences, and technologies. Such retrospective reconstruction of a historical event easily can be distorted by present-day prejudices and desires.

8. Professional and scholarly historians review and summarize in an objective manner large quantities of historical information to yield detailed and understandable records of the past so that others may readily understand that history without the need to read and analyze all of the underlying data. That concept was a basic goal of the 2014 Littlefield Salt River reports as well as this declaration's synopsis. It is also the responsibility of a historian to present the past in an objective manner as those events were understood by individuals at the time, no matter how unpleasant those happenings may have been or how unpopular the outcome may be with regard to modern-day concerns. For that reason, the underlying documents cited in the two previous 2014 Littlefield reports were used in such a manner as to allow those documents to tell their own story. This was done in the following manner. Summaries of documents sometimes were used to condense material into a reasonable length, yet wherever possible, direct quotations from the underlying documents – especially those of particular importance – were also employed. Generally speaking, short quotations were embedded in the text of the 2014 reports surrounded by quotation marks; longer quotations were set off in block indentations.

9. The need for an objective rendering of any given history also mandates that events be placed in their proper perspective in relation to other occurrences happening at roughly the same time. For that reason, the topics discussed in the two earlier Littlefield reports could not be completely isolated from one another but rather had to be addressed as part of a larger historical story. Accordingly, the discussion presented in those two reports was woven into a narrative form.

10. It is common practice for professional and scholarly historians to use footnotes, and the 2014 Littlefield reports employed that methodology accordingly. Footnotes verify accuracy or, if so desired, provide a means of beginning further research on various points discussed in the text. Individual footnotes appear in the two previous Littlefield studies at the end of phrases, sentences, or paragraphs indicating sources used for those statements. Where an individual footnote appears following several sentences, the note generally covers all of that

material. Direct quotations were always provided with individual footnotes throughout the previous reports. Nevertheless, this declaration is a synopsis of the earlier 2014 Littlefield Salt River reports, and therefore, this declaration directs readers to appropriate sections of the earlier studies for greater detailed discussions and the citations to the underlying primary source documents.

11. The 2014 Littlefield reports contain many maps, photographs, and other illustrations to help support the historical discussion. Therefore, in the interest of brevity, and like the footnoted materials in the previous reports, this declaration cites the parts of the earlier studies where those illustrations can be found or reproduces them in **Appendices B and C** of this declaration. The illustrations appearing in **Appendices B and C** have retained the orginal **Figure** numbers that were used in the 2014 reports.

12. Many archival, government agency, and published primary sources were utilized in preparing the 2014 Littlefield Salt River reports. Those consisted of records from archives and government agencies in the following locations: 1) Phoenix, Prescott, and Tucson, Arizona; 2) Berkeley and Riverside, California; 3) Denver, Colorado; 4) College Park, Maryland; and 5) Washington, D.C. In addition, thousands of historical newspaper accounts and historical maps were reviewed. The fruit of that extensive historical research consists of tens of thousands of pages of primary source records created by individuals and organizations who were "on the scene" and left first-person accounts regarding the Salt River over many years between the mid-nineteenth century and the first few decades of the twentieth century.[1] Those descriptions, to a professional and scholarly historian, convey the most accurate understanding of what the Salt River was like historically.

13. The most significant documents collected from the various archives and government agencies were carefully analyzed and abstracted into a computer database that could be sorted by keyword, date, author, title, or any combination of those or other identifying characteristics. The database also tracked where the original documents were located as well as where the copies of the documents could be found in the author's files. The database abstracts were then test-sorted in various combinations to develop an accurate understanding of the historical status of the Salt River at different points in time. Following test-sort comparisons, the abstracts were then transferred directly into a word-processing program to create rough drafts of the 2014 Littlefield Salt River reports.[2] Additional editing resulted in the final versions of those reports as they were submitted to ANSAC.

Organization of Remainder of This Declaration

14. The remainder of this declaration is organized as follows. Like the 2014 Littlefield Salt River reports, this declaration first briefly reviews historical survey plats and the related field notes created by the U.S. General Land Office (today, the Bureau of Land

[1] For detailed discussions of the archival, governmental agency, and published primary sources consulted, see the 2014 Littlefield Lower Salt River Report, pp. 4-12, and the 2014 Littlefield Upper Salt River Report, pp. 3-9.

[2] A more detailed discussion of the computer database can be found in the 2014 Littlefield Lower Salt River Report at pp. 12-13.

Management) and what those documents show regarding the navigability or non-navigability of the Salt River. Following the survey discussion, this declaration discusses the significance of federal and state patents. Miscellaneous reports, newspapers, and other historical materials are examined next, followed by discussions of historical photographs and the historical status of watercraft on the Colorado River – a river historically recognized as navigable. A final section of this declaration reviews materials submitted by the Arizona State Land Department in these ANSAC proceedings and why those records do not support a finding of navigability of the Salt River.

15. **Appendix A** follows the discussion in the main body of this declaration and contains the curriculum vita of the author, Douglas R. Littlefield. **Appendix B** contains illustrations from the 2014 Littlefield Lower Salt River Report that are cited in this declaration (retaining their original **Figure** numbers), while **Appendix C** includes maps and photographs from the 2014 Littlefield Upper Salt River Report (again, retaining their original **Figure** numbers).

OVERALL FINDINGS AND CONCLUSIONS

16. This declaration, as supported by the more detailed discussions found in the 2014 Littlefield Salt River reports, clearly demonstrates that the Salt River was not navigable before or at the time of Arizona's statehood in 1912. Despite the presence in the historical record of some boats and ferries on the Salt River, when considered in the context of literally thousands of historical documents demonstrating the Salt's non-navigability, the few boating instances have to be seen as outliers and as exceptions rather than the rule. This is particularly true when considered in light of the fact that many of these boating events ended in failure with some individuals injured or killed and with watercraft being damaged or destroyed. Moreover, the lack of a consistent pattern of regular and reliable boating illustrates that the overwhelming majority of historical parties did not consider the Salt River to be navigable – individuals who were "on the scene" and were not reconstructing history from a presentist point of view.

U.S. GENERAL LAND OFFICE PLATS AND SURVEY NOTES

17. Both of the 2014 Littlefield Salt River reports contain extensive discussions of U.S. General Land Office survey plats and field notes and the importance of those document in relation to the question of the Salt River's navigability or non-navigability.[3] A condensed version of those discussions is provided in this declaration.

Background

18. When the United States took control of the vast territory acquired from Mexico in 1848 at the end of the Mexican-American War, federal officials were anxious to determine the value of what the U.S. had gained, and they wanted to prepare the region for orderly occupation

[3] See Chapter 1 of the 2014 Littlefield Lower Salt River Report and Chapter 1 of the 2014 Littlefield Upper Salt River Report.

by American settlers. Therefore, to record the lands' characteristics and to prepare the region for homesteading, the U.S. Government undertook formal cadastral surveys to establish township, range, and section lines. Because those surveys were highly detailed, the original plats of the area near the Salt River and the related field notes contain a wealth of information about the nature of that stream and its navigability or non-navigability.

U.S. General Land Office Surveyors' Manuals

19. Due to the need for accuracy and consistency in carrying out the federal surveys, the U.S. Government issued a series of manuals designed to direct surveyors' work. These manuals first were begun to be published in 1851 (before then, instructions were issued separately to individual surveyors), and revisions were issued periodically. To grasp the significance of these manuals in relation to establishing whether bodies of water were deemed navigable or non-navigable, it is important to understand the books' provisions and how they changed over time.

20. There were seven surveyors' manuals issued by the U.S. General Land Office between the middle of the nineteenth century and 1912, when Arizona became a state. These manuals appeared in 1851, 1855, 1864, 1881, 1890, 1894, and 1902. Although all the manuals specifically directed federal surveyors to "meander" all navigable bodies of water – meaning to measure the sinuosities of waterways by degree bearings and distances – over the years after 1851, newer versions of the manuals gradually added instructions to meander some non-navigable bodies of water under specific circumstances. For example, these additions included when non-navigable streams were used to define routes for internal communication such as roads or trails paralleling waterways (the 1881 manual) or when non-navigable rivers were more than three chains (198 feet) wide (the 1890 manual).[4] Nevertheless, the instruction to meander all navigable waterways remained intact throughout all surveying manuals.

Federal Surveys along the Salt River

21. Prior to Arizona's statehood in 1912, the U.S. General Land Office conducted surveys (and some limited resurveys) in the entire lower Salt River area below Granite Reef (a large outcropping of bedrock in the Salt River's course where Granite Reef Dam is located today) in 1868, 1888, 1899, and 1910-1911. In the upper Salt River region, many areas were never surveyed or were surveyed after statehood, although pre-statehood surveys were conducted in 1868 (the area around Granite Reef Dam), 1881 (some lands later inundated by Theodore Roosevelt Lake), and 1911 (the area near the confluence of the Verde and Salt Rivers).[5] **Figure**

[4] For considerable detail on the provisions of federal surveyors' manuals and how those instructions changed over time, see the 2014 Littlefield Lower Salt River Report, pp. 16-28, and the 2014 Littlefield Upper Salt River Report, pp. 10-23.

[5] The lands along the Salt River between the Verde River and the present location of Stewart Mountain Dam were surveyed after statehood in 1930, 1949, 1968, and 1978, and therefore will not be discussed in this declaration. A major reach of the Salt River above these last locations and below Roosevelt Dam was never surveyed by the General Land Office (or its successor, the Bureau of Land Management) because those lands were located in national forests, Indian reservations, or they contained areas withdrawn from the public domain for various purposes such as for the Salt River Project.

2 from the 2014 Littlefield Upper Salt River Report appears in **Appendix C** illustrating when federal surveys were conducted above Granite Reef.

Ingalls Brothers' 1868 Federal Surveys of the Lower Salt River

22. As the 2014 Littlefield Lower Salt River Report describes, the interiors of the townships through which the Salt River flows between the confluence with the Gila River and Granite Reef initially were surveyed in 1868 by the brothers Wilfred F. Ingalls and George P. Ingalls (Wilfred Ingalls undertook the surveys for township 1 north, ranges 1 to 5 east, and George Ingalls surveyed township 2 north, ranges 5 and 6 east). These surveys were carried out under the terms of the 1855 federal surveyors' manual as modified by the 1864 handbook. There were relatively few man-made obstructions along the Salt River at the time of the Ingalls' surveys, and thus, their descriptions of the Salt River are particularly important in relation to that stream's navigability or non-navigability.

23. Signficantly, although the Ingalls brothers surveyed the interior section lines of seven different townships between the Gila River and the future location of Granite Reef Dam, they carried out no meanders whatsoever of the Salt River in any of those townships. Moreover, the brothers did not indicate on the survey plats that meanders had been conducted. Had such meanders been performed, those measurements would have been shown on the plats as angled lines along the Salt River, and the precise measurements would have been presented in a table on the right side of the plat containing the meander degree-bearing data. Furthermore, the manual directing the Ingalls' surveys required them to described the Salt River in their field notes where their section line surveys crossed the Salt River "on line." Rather than noting any characteristics that might have been consistent with navigability, the Ingalls brothers described the Salt River as being in some places relatively shallow and having multiple channels.[6] **Figures 1-7 from the 2014 Littlefield Lower Salt River Report**, illustrating the survey plats for township 1 north, ranges 1-5 east, and township 2 north, ranges 5 and 6 east, appear in **Appendix B** of this declaration.

Federal Resurveys of the Lower Salt River

24. While the entire lower Salt River between that stream's confluence with the Gila River and the future location of Granite Reef Dam was surveyed in 1868 by the Ingalls brothers, parts of those townships were resurveyed in 1888 by L.D. Chillson, in 1899 by Herbert R. Patrick, and in 1910-1911 just before Arizona statehood by Robert A. Farmer.[7] These resurveys were all done to define the boundaries and interior section lines of either the Salt River Indian

[6] For the details about the Ingalls brothers' 1868 surveys of the Salt River between its confluence with the Gila River and the future location of Granite Reef Dam, see the 2014 Littlefield Lower Salt River Report, pp. 28-48. In addition, those pages contain copies of the survey plats drawn by the Ingalls brothers.

[7] There were also a few resurveys of areas along the Salt River after Arizona's statehood, but since those resurveys did not deal with the river prior to 1912, they are not discussed here. Nevertheless, the results of those surveys do not contradict the indications of non-navigability found in the notes and plats of the pre-1912 surveys. See, for example, U.S. General Land Office, "Dependent Resurvey of a Portion of Township No. 1 North, Range No. 1 East, Gila and Salt River Meridian, Arizona – Gila River Indian Reservation," Sept. 2, 1920, U.S. Bureau of Land Management, Phoenix, Arizona.

Reservation or the Gila River Indian Reservation, and thus meanders along the Salt River were run to identify the edges of those reservations. In addition, the descriptions offered in the field notes and the details on the plats further indicated that the Salt River was a non-navigable body of water – as had been the conclusion of the Ingalls brothers in 1868.[8] **Figure 8 from the 2014 Littlefield Lower Salt River Report** illustrating the 1888 resurvey of the lower Salt River appears (as an example of the lower Salt River resurveys) in **Appendix B** of this declaration.

Federal Surveys of the Salt River above Granite Reef

25. Before Arizona's statehood in 1912, the interiors of the townships (or parts of those townships) through which the Salt River flows between Granite Reef and the upper limits of Theodore Roosevelt Lake's inundation area were surveyed by federal surveyors in 1868 (the area around Granite Reef – discussed above in relation to the Ingalls brothers' 1868 surveys), 1881 (lands later inundated by Theodore Roosevelt Lake), and 1911 (the area near the confluence of the Verde and Salt Rivers).

Federal Surveys in Townships 2 and 3 North, Range 7 East

26. In the reach of the Salt River just above Granite Reef, meanders were done of the right bank (going downstream) in townships 2 and 3 north, range 7 east, as part of those townships' exterior boundary surveys in 1887 and a resurvey in 1911 of the boundaries of township 2 north, range 7 east (which also included the northwest corner of the interior of that township). Those meanders, however, were conducted because the upper Salt River forms the southern boundary of the Salt River Indian Reservation (and hence, was the northern edge of the public domain), not because the upper Salt River was navigable.[9]

Federal Surveys in the Inundated Area under Theodore Roosevelt Lake

27. The most upstream portions of federal surveys in the upper Salt River area were conducted in the area later flooded by present-day Theodore Roosevelt Lake. These lands were in township 4 north, ranges 12 and 13 east. The interior subdivision lines of this township were surveyed in late April and early May 1881 by Deputy Surveyor Theodore S. White under his contract dated August 27, 1880, and the survey and related plat were approved by the Surveyor General on December 14, 1881. As the 2014 Littlefield Upper Salt River Report illustrates, White did not meander any portion of the Salt River in these townships. At each crossing of the upper Salt River in this township, Deputy Surveyor White noted that he only measured across the

[8] For details on the resurveys of the Salt River between its confluence with the Gila River and the future location of Granite Reef Dam, see the 2014 Littlefield Lower Salt River Report, pp. 48-54.

[9] L.D. Chillson, Plat of Exterior Boundaries of Township 2 North, Range 7 East, Gila and Salt River Meridian, approved by the Surveyor General July 11, 1887, U.S. Bureau of Land Management, Phoenix, Arizona; L.D. Chillson, Plat of Exterior Boundaries of Township 3 North, Range 7 East, Gila and Salt River Meridian, approved by the Surveyor General July 11, 1887, ibid.; R.A. Farmer, Field Notes of the Survey of the Subdivision of Township 2 North, Range 7 East, Salt River Indian Reservation, Jan. 1911, approved by the Surveyor General March 29, 1913, ibid.; R.A. Farmer, Resurvey Plat of Exterior Boundaries of Township 2 North, Range 7 East, Gila and Salt River Meridian, approved by the Surveyor General March 29, 1913, ibid. (The resurvey was conducted in 1911).

stream as survey instructions provided when encountering non-navigable bodies of water.[10] See **Figures 3 and 4 from the 2014 Littlefield Upper Salt River Report** in **Appendix C** for the 1881 survey plats by Theodore White.

Summary and Conclusions Regarding Federal Surveys

28. As the 2014 Littlefield Salt River reports demonstrate, federal government surveyors were specifically charged with the task of identifying navigable streams as part of their surveying duties, and the manuals and instructions under which they carried out their work were very precise about how navigable bodies of water were to be distinguished from non-navigable waterways. As part of the U.S. Government's surveying efforts, the area along the Salt River was surveyed and resurveyed many times in the years before Arizona's statehood in 1912 (except for portions above Granite Reef, some of which were never surveyed or were surveyed after statehood). Significantly, while the federal surveys were done in varying seasons, in different years, and by several individuals, all of the descriptions and plats consistently portrayed the Salt River as a non-navigable stream. In most cases, federal surveyors did not meander the Salt River, and in those few instances where meanders were run, they were to define the borders of Indian reservations and not because the surveyor believed the Salt River to be navigable.

FEDERAL AND STATE PATENTS

Background on Federal Patents

29. In addition to U.S. General Land Office survey plats and field notes, a second group of archival documents – federal patents and their supporting files – shed considerable light on whether the Salt River was navigable or non-navigable before or at the time of Arizona's statehood in 1912. In the mid-to-late nineteenth century, the U.S. Congress passed a variety of homesteading statutes designed to facilitate settlement of the American West, and those laws resulted in thousands of federal patents being issued to setters determined to establish homes and farms in the American West. Over two hundred of these federal patents touched or completely overlay the Salt River. The 2014 Littlefield Salt River reports both have lengthy discussions of these records,[11] but an abridged version is provided here.

30. Because historical mapping and document sources were different for the lower and upper Salt River areas, those regions are discussed separately in this declaration.

[10] Theodore S. White, Field Notes of the Survey of the Subdivision Lines of Township 4 North, Range 13 East, Gila and Salt River Base and Meridian, Arizona, approved by the Surveyor General Dec. 14, 1881, pp. 40-41, 69, U.S. Bureau of Land Management, Phoenix, Arizona; White, Plat of Township 4 North, Range 13 East, Gila and Salt River Meridian, approved by the Surveyor General Dec. 14, 1881, ibid. See also the 2014 Littlefield Upper Salt River Report, pp. 25-27.

[11] See Chapter 2 of the 2014 Littlefield Lower Salt River Report and Chapter 2 of the 2014 Littlefield Upper Salt River Report.

Federal Patents along the Lower Salt River

31. In order to determine the precise location of all federal patents along the Salt River, legal descriptions of those records close to the Salt River were obtained from the Bureau of Land Management's Historical Indices and Master Title Plats – documents that show how the U.S. Government disposed of or otherwise encumbered the public domain. The patents were then compared to two sets of historical maps to determine which patents actually touched or overlay the Salt River. Two types of historical maps were necessary due to the possibility that the Salt River might have changed channel over time or due to different historical cartographic techniques. The first set of historical maps consisted of the U.S. General Land Office survey plats described earlier in this declaration. The second set consisted of the historical U.S. Geological Survey topographic maps of the region through which the Salt River flows between Granite Reef and the Salt's confluence with the Gila River. The earliest of those topographic maps are: 1) "Phoenix, Arizona," (1912), 2) "Mesa, Arizona," (1913), 3) "Desert Well, Arizona" (1906), and 4) "Fort McDowell, Arizona," (1906). (A fifth, the 1957 "Tolleson" U.S. Geological Survey topographic map, which covers the confluence of the Salt and Gila rivers, apparently either was the original survey or has no available historical predecessors. Because of the "Tolleson" map's late date, it is not discussed in this declaration.) **Figures 9-12 of the 2014 Littlefield Lower Salt River Report** showing the U.S. Geological Survey topographic maps for the region below Granite Reef near the time of Arizona's statehood appear in **Appendix B** of this declaration.

32. Salt River Project Cartographic Services made two sets of exhibit maps using the historical maps and patent information, the first showing all federal patents that overlay or touched the lower Salt River according to the U.S. General Land Office survey plats and the second illustrating the location of patents in relation to the historical U.S. Geological Survey topographic maps. **Figures 13-20 of the 2014 Littlefield Lower Salt River Report**, which appear in **Appendix B** of this declaration, show the locations of all federal patents that overlay or touched the lower Salt River. The first set of four maps illustrates patents in relation to the Salt River in the 1860s, and the second set shows the same patents in relation to the U.S. Geological Survey's historical topographic maps from the early 1900s.

33. The patents themselves and the related patent files were then examined to determine if federal authorities had set aside acreage from the parcels due to the navigability of the Salt River. Had the Salt River been navigable, federal land office officials would not have patented that land because of the future state ownership of the bed when Arizona joined the Union.

34. Significantly, with over two hundred federal patents awarded that overlay or touched the lower Salt River between Granite Reef and the Gila River, in not one instance did the United States Government withhold any acreage due to the potential navigability of the Salt River – and hence, potential ownership by the State of Arizona. Indeed, many of the patent files for these patents specifically noted that the land being sought included the bed of the Salt River itself.

35. Moreover, there were also federal *Desert Land Act* patents awarded along the lower Salt River.[12] The *Desert Land Act* of 1877 required that a settler reclaim and cultivate arid acreage through irrigation before a final patent would be awarded. The law also specified that the water had to come from a non-navigable stream. The relevant part of the law stated:

> *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 public for irrigation, mining and manufacturing purposes subject to existing rights. [Emphasis added.][13]

36. In the townships along the Salt River from the confluence with the Gila River to Granite Reef, there were forty-one applications for patents under the *Desert Land Act*. According to the patent application files, all of the applicants intended to obtain water from the Salt River, and all forty-one applications were accepted by the U.S. General Land Office in Phoenix. The logical conclusion from these applications is that the Salt River (as the source of water for these lands) must have been considered non-navigable by the applicants as well as by the administrators of the U.S. General Land Office. Although many of the applications were subsequently canceled or relinquished due to failure to fulfill the *Desert Land Act*'s requirements, the mere fact that the applications were initially accepted indicates a belief that the Salt River was not navigable when those applications were made. There is no indication the cancellations or relinquishments were due to the navigability of the Salt River.

Federal Patents along the Upper Salt River

37. Much like the lower Salt River, there were also federal patents along the upper Salt River above Granite Reef (some of which were issued in the years after statehood, and therefore are not considered in this declaration) – including five *Desert Land Act* patents. The pre-statehood patents, however, were far fewer in number because of the presence of national forests or other federal acreage not available for homesteading.

38. Several upper Salt River patents later were flooded behind Roosevelt Dam (completed in 1910), yet – like the lower Salt River patents – they also provide information about the Salt River's navigability or non-navigability when they were awarded. The locations of those parcels can be seen on sketch maps by the U.S. Geological Survey drawn in 1903-1904 showing areas that would be needed for Roosevelt Lake. The Geological Survey's land ownership sketch maps subsequently were combined in 1904 into one map showing all parcel ownerships above Roosevelt Dam and indicating minor corrections from the original sketch

[12] The significance of *Desert Land Act* patents in relation to the Salt River's navigability or non-navigability can be found in the 2014 Littlefied Lower Salt River Report at pages 104-105.

[13] *An Act to Provide for the Sale of Desert Lands in Certain States and Territories*, 19 Stat. 377 (1877).

maps. The Geological Survey's 1903-1904 maps of land ownership under what is today Roosevelt Lake can be seen as **Figures 7-9 of the 2014 Littlefield Upper Salt River Report**. These are reproduced in **Appendix C** of this declaration.

39. Like the exhibit maps prepared by Salt River Project Cartographic Services showing the locations of patents along the lower Salt River, SRP Cartographics also drafted maps illustrating the upper Salt patents by combining the U.S. General Land Office survey plats discussed earlier in this declaration, the Geological Survey's 1903-1904 sketch maps, and U.S. Geological Survey's topographic maps of the Salt River above Granite Reef around the time Roosevelt Dam was being constructed. Those latter topographic maps are: 1) "Ft. McDowell, Ariz," (1904), and 2) "Roosevelt, Ariz." (1907). The two Geological Survey topographic maps and the SRP exhibit map can be seen as **Figures 5-6 and 10 of the 2014 Littlefield Upper Salt River Report** in **Appendix C** of this declaration.

Significance of U.S. Patents to Navigability or Non-Navigability

40. There were over two hundred patents issued by the United States that either touched or overlay the Salt River between that stream's confluence with the Gila River upstream to the inundation lines of Roosevelt Lake. In making application to obtain these lands, homesteaders were aware of the river's presence, as were the federal authorities who granted the patents. In not one instance was any acreage withheld from these patents due to the navigability of the Salt River. Moreover, nearly fifty of these patents were *Desert Land Act* patents, which had to be irrigated by water from a non-navigable river or stream. The files for these *Desert Land Act* patents contain no indication that U.S. officials believed the Salt River was navigable, and hence, that a *Desert Land Act* patent should not be awarded.

Federal Land Grants to Arizona and Arizona State Patents

41. Arizona, like other public land states, obtained acreage by Congressional grants to support certain public interest objectives prior to and following statehood. Some of this acreage included lands that touched or overlay the lower Salt River. Grants to Arizona covered a variety of purposes. For example, prior to statehood, Congress reserved for Arizona sections sixteen and thirty-six in each township for the purpose of supporting public schools. At statehood, sections two and thirty-two were added (also for schools), with all four sections totaling 8,093,156 acres. In addition to this land, 1,446,000 more acres were given to Arizona instead of the internal improvement, swamp, saline, and agricultural college land grants provided to other states. Moreover, an additional one million acres were granted to Arizona to pay for bonds issued by certain counties, thus bringing the total lands granted to Arizona to over ten and a half million acres.

42. In the years following statehood in 1912, Arizona's officials confronted the daunting task of issuing state patents disposing of the millions of acres given to the state by Congress. Some of this acreage included lands through which the Salt River flowed. (There were no state patents granted above Roosevelt Dam before the reservoir flooded that part of the Salt River). Using state patent legal descriptions, SRP Cartographics prepared an exhibit map

showing the locations of all Arizona state patents along the Salt River. This exhibit appears in **Appendix B** as **Figure 27 of the 2014 Littlefield Lower Salt River Report**.

Significance of State Patents to Navigability or Non-Navigability

43. While all state patents through which the Salt River flowed were issued post-statehood, it is significant to note that in granting fifteen such patents, Arizona's land officials did not reserve any acreage due to the Salt River's navigability, thus indicating that at the time those patents were awarded, officials of the Arizona State Land Department did not consider the Salt River to be navigable.

U.S. GOVERNMENT RECORDS, MISCELLANEOUS DOCUMENTS, AND HISTORICAL NEWSPAPER ARTICLES

44. The United States Government had interests in lands through which the Salt River flowed for reasons that went beyond federal surveys and the granting of patents. These interests included studies of the region by the U.S. Geological Survey, the development of irrigation and storage of water by the U.S. Reclamation Service (today, the Bureau of Reclamation) through what became the Salt River Project and Roosevelt Dam, reports about agricultural potential carried out by the U.S. Department of Agriculture's Office of Experiment Stations, and Indian Office (today, the Bureau of Indian Affairs) records connected to administering the Salt River and Gila River Indian Reservations.

45. In addition, there are a multitude of miscellaneous historical documents and historical newspaper articles that also describe the Salt River by many different individuals over time, in varying seasons and years, and at diverse places along the Salt River's channel.

Significance of U.S. Documents

46. The 2014 Littlefield Lower and Upper Salt River Reports describe documents by federal authorities and others in detail, noting that they wrote about the Salt River as being highly erratic, prone to dangerous and destructive flooding, at times torrential and at other times barely flowing, and containing shifting channels.[14] In addition to these verbal descriptions, the extreme variations in the Salt River's flows can be seen in **Figures 31-36, 40-44, 56-72, and 75-83 of the 2014 Littlefield Lower Salt River Report**. These photos are reproduced in **Appendix B** of this declaration. The tremendous differences in the Salt River's flows can also be seen in **Figures 11-20 and 22-27 of the 2014 Littlefield Upper Salt River Report**, which are reproduced in **Appendix C** of this declaration.

47. Moreover, none of the federal officials who wrote about the Salt River prior to the time of Arizona's statehood in 1912 gave any indication that navigation interests objected to the development of many diversion dams along the Salt River or to the plans of the Reclamation

[14] See Chapter 3 of the 2014 Littlefield Lower Salt River Report and Chapter 3 of the 2014 Littlefield Upper Salt River report.

Service to construct Roosevelt Dam, which obviously would interfere with any potential navigability by storing waters that might contribute to regular and reliable boating. The multitude of diversion dams that eventually were built along the Salt River can be seen in **Figures 37-39, 48-51, and 73-74 of the 2014 Littlefield Lower Salt River Report**, which appear in **Appendix B** of this declartion. The dams and their impact on the Salt River can be seen in **Figures 37-42 of the 2014 Littlefield Upper Salt River Report**, which appear in **Appendix C** of this declaration.

48. Indeed, the U.S. Reclamation Service itself constructed a lengthy road, now known as the Apache Trail, through extremely difficult terrain to the Roosevelt Dam site in the early twentieth century to carry supplies to and from the reservoir rather than using the Salt River to transport those materials. Furthermore, a ferry boat to be used on the lake behind Roosevelt Dam was hauled overland in 1908 from Mesa, Arizona, rather than using the Salt River to get the ferry to the lake.[15] The road built by the Reclamation Service can be seen in **Figures 45-47 and 52-55 of the 2014 Littlefield Lower Salt River Report**, which appear in **Appendix B** of this declaration. The road built by the Reclamation Service can also be seen in **Figures 28-36 of the 2014 Littlefield Upper Salt River Report**, which appear in **Appendix C** of this declaration.

Significance of Miscellaneous Documents

49. In addition to U.S. Government reports and other documents, the Arizona Territorial Legislature, seeking funds from Congress to clear obstructions from the Colorado River as one of its first official acts, declared in 1865 – a year that was prior to the construction of many diversion dams on the Salt River – that "*the Colorado River is the only navigable water in this Territory*[.]"[16] (Emphasis added.)

50. Finally, two Arizona court decisions both declared that the Salt River was not navigable. The first, *M. Wormser, et al., v. The Salt River Valley Canal Company, et al*., which was heard in Arizona's Second Judicial District Court in 1892, stated unequivocably that the Salt River was an "unnavigable river." The second Arizona court case, decided in 1910, was *Patrick T. Hurley v. Charles F. Abbott, et al*. The court's opinion in that case by Judge Edward Kent reviewed the principles of prior appropriation in Arizona, and he observed that those principles applied to non-navigable streams such as the Salt River.[17]

Significance of Historical Newspaper Articles

51. Historical newspaper articles are an enormously important source of information about the Salt River before at around the time of Arizona's statehood in 1912. With no television or radio available to residents in the Salt River region in the nineteenth or early twentieth centuries, the only way that inhabitants of the area could obtain news was through the

[15] See the 2014 Littlefield Lower Salt River Report at pp. 206-207.
[16] See the 2014 Littlefield Lower Salt River Report at p. 212.
[17] See the 2014 Littlefield Lower Salt River Report at pp. 213-218.

local press – information that potentially could affect multitudes of people. Thus, nineteenth and early twentieth century settlers in the American West were avid readers of local newspapers.[18]

52. But newspapers are not only important because they related events in the Salt River area and contained descriptions of that stream. They are also vital to understanding the Salt River's navigability or non-navigability due to the role newspapers played in being local community boosters. With communities such as Phoenix relatively isolated in the period before statehood – at least more isolated than today – newspapers played key roles in attracting settlers and businesses by detailing regional attributes available to potential newcomers. Thus, the local press emphasized the fertility of the soil, the types of existing businesses, the accesibility of schools, the numbers and types of houses of worship, and myriad other benefits of the area.

53. Importantly, the press near the Salt River also stressed the availability of transportation such as roads and railroads for carrying crops to market or bringing in supplies from other areas. It is significant to note that while much was made in the local newspapers regarding roads and railroads, there was little discussion of using the Salt River for boating purposes nor were there any reports of protests by boating interests to the construction of diversion dams or Roosevelt Dam. There were a few mentions of local parties attempting to boat on the Salt River, but these articles emphasized the novelty of those events, not the reliability of regular boating on the Salt River.

THE COLORADO RIVER AND NAVIGABILITY

54. As noted above, the Arizona Legislature in 1865 declared that the Colorado River was the only navigable body of water in the Territory. Regularly navigated from its mouth at the Gulf of California past Yuma to approximately present-day Bullhead City, the Colorado River was the subject of many stories in a multitude of newspapers, promotional publications, as well as in published government documents. The significance of such boating on the Colorado River – which carries substantially more water than the Salt River – was not lost on prospective businessmen, possible settlers, and military officials, all of whom hoped for easier access to the interior parts of the southwestern United States on the Colorado.[19] Such access, however, was not available on other southwestern rivers.

55. From accounts of expeditions on the Colorado River, therefore, some details about boat navigability and southwestern rivers around the time of Arizona statehood can be discerned – observations made by parties "on the scene" and not reconstructions of history by taking the present and projecting it backward. This is not to say that river travel was not attempted on southwestern streams other than the Colorado in the nineteenth century – indeed, it was because water travel was by far the most economical method of internal communication. Nevertheless, river navigation on those other southwestern streams such as the Salt River proved to be too risky and hazardous due to channel changes, floods, or insufficient water.

[18] Lengthy discussions of historical newspapers can be found in Chapter 4 of the 2014 Littlefield Lower Salt River Report and in Chapter 4 of the 2014 Littlefield Upper Salt River Report.

[19] Discussions of the Colorado River's navigability appear in Chapter 6 of the 2014 Littlefield Lower Salt River Report and in Chapter Chapter 5 of the 2014 Littlefield Upper Salt River Report.

56. In fact, the utility of the Colorado River as a navigable waterway was recognized by the middle of the nineteenth century when the the United States sent Lieutenant J.C. Ives up the Colorado on an expedition to investigate and report on the stream's navigabilty. Ives later concluded that the Colorado was indeed navigable, but sometimes only by overcoming many obstacles and sandbars. **Figures 84-88 in the 2014 Littlefield Lower Salt River Report**, which appear in **Appendix B** to this declaration, illustrate the expedition by Lietenant Ives. (The same illustrations appear in the 2014 Littlefield Upper Salt River Report and thus are not reproduced in **Appendix C** to this declaration.)

57. Further exploratory trips along the Colorado River to assess its utility as a navigable waterway were subsequently conducted by John Wesley Powell in 1869 and 1871-1872 (**Figures 89-102 in the 2014 Littlefield Lower Salt River Report**, which appear in **Appendix B** to this declaration) and by George M. Wheeler in 1871, shown in **Figures 103-105 in the 2014 Littlefield Lower Salt River Report**, also in **Appendix B**. (The same illustrations appear in the 2014 Littlefield Upper Salt River Report and therefore are not reproduced in **Appendix C**.) These expeditions clarified that the Colorado River was useful for regular boating on its lower reaches but not through the Grand Canyon.

58. In short, the state of boating technology as it was used on the Colorado River around the turn of the century makes it clear that the Salt River was not susceptible to navigation before or at the time of Arizona's statehood. The historical accounts show that the erratic and irregular flow in the Salt was not consistent enough to support boats used for transporting commerce such as those used by Ives, Powell, and Wheeler. A dependable and reliable draft of two feet could not be had in a river that was sometimes only a few inches deep, although at flood stage, the Salt could contain very deep water. Then, however, the raging torrents were too dangerous to be navigated. Based on historical accounts, even the dories used by John Wesley Powell to go down the Colorado River in 1869 and 1871-1872 or the rowboats used in the Wheeler expedition in 1871 likely would have had a difficult time using the Salt River on a regular basis, if at all. Furthermore, the Salt's shifting nature made its course undependable as well as dangerous. The status of watercraft at the time of Arizona's statehood in 1912 – as described in historical literature and illustrated in photographs – make it clear that no such vessels could have been utilized on a regular and dependable basis on the Salt River.

THE ARIZONA STATE LAND DEPARTMENT'S EVIDENCE

59. The Arizona State Land Department has submitted to ANSAC several hundred exhibits that the Land Department contends support a finding of navigability of the Salt River. This declaration does not attempt to discuss all of those exhibits, but a few are addressed here as examples of why they do not support navigability. All of the Land Department's evidence discussed below appears as part of ANSAC Evidence Item C018.

60. Many of the Land Department's submissions do not even discuss the Salt River but other Arizona rivers. In addition, a large number describe fishing in the Salt River, which has no bearing on navigability because even small mountain streams support fish life. Moreover, a significant number of these submissions deal with ferries on the Salt River, a means of crossing the river rather than a demonstration of transport up or down the river. And, many of these

submissions are secondary sources with no means to verify their accuracy. Finally, although some of these submissions – notably historical news articles – describe boating attempts on the Salt, many of those also note that the individuals involved frequently were washed overboard, had their boats destroyed by obstacles, or had to carry the boats around obstructions or stretches of dry riverbed. Specific examples from the Arizona State Land Department's submissions are discussed below.

Item 10 (1917 *Evening Public Ledger* news article): This news article purports to describe a canoe going up Arizona's Salt River, but as the paragraph before the highlighted text in the exhibit makes clear, the Salt River being discussed in the article is in Kentucky, not Arizona.

Item 11 (1903 USGS Water Supply Paper, "Water Storage on Salt River"): This Water Supply Paper describes both the Salt and Verde rivers, observing: "Both streams are more or less torrential in character, the combined flow dwindling at times to about 100 cubic feet per second, and at other times reaching a volume more than one hundred times as great. . . . The agitation for storage [on the Salt River] led to the formation of the citizens' committee in Phoenix for promoting investigations and for developing some project for the storage of water." (p. 9). There apparently were no objections by navigation interests and the Water Supply Paper does not discuss storage impacts on navigation. Indeed, the report has an entire section devoted to "damages" (assessment of agricultural lands that would be flooded by Roosevelt Lake and losses of existing buildings in the reservoir area), but there is no discussion about how Roosevelt Dam (then called the Salt River Dam) would impact navigation interests. (pp. 51-52).

Item 12 (HAER Report AZ-29 about the Ash Avenue Bridge in Phoenix): This study describes the arrival of the Southern Pacific and Phoenix and Eastern railroads in Phoenix and notes: "The railroad in the Salt River Valley greatly increased the economic potential of this fast-developing agricultural region. When the rail system was completed, it enabled trading to grow between the cities of Salt River Valley and between the Valley and the rest of the nation. The growth and prosperity of the Valley radiated outward, attracting new settlers and investors. This development culminated in the move of the territorial capitol from Prescott to Phoenix in 1889." (p. 4). Even though this quotation specifically notes the impact of the railroad on the local economy and focuses on a bridge over the Salt River, the HAER report offers no comment on the impact of navigation on the Salt River on the region. The HAER report also states: "Passenger service by train in the Salt River Valley began in the late 1880s and reached a peak in the decade after the turn of the century. At that time, horse-drawn vehicles were the main mode of family transportation; buggies, buckboards, and surreys were privately owned or could be hired from local liveries. With the advent of the automobile at the end of the first decade of the twentieth century, 'auto liveries' opened, and an 'auto stage' operated throughout the Valley. The increasing popularity of the auto caused a sharp decline in the use

of passenger trains in the Tempe area, as well as in other valley communities." (p. 5). Again, there is no discussion of utilizing the Salt River for transportation.

Item 13 (Story of Charles Trumbull Hayden): This biographical review of the life of early Tempe resident Charles Trumbull Hayden makes the observation that "Hayden's freighting company expanded, with wagon teams stocking goods in Independence, Port Lavaca, Texas, and Fort Smith, Arkansas. He also made purchases in San Francisco, which were brought by boat to Los Angeles, San Diego, Guaymas and Port Isabel, thence by wagon to Tucson." (p. 2). Yet although Hayden used water transportation to bring goods to ocean ports near Arizona, he did not use the Salt River for transportation. The article also contains descriptions of Hayden's participation in building several early Phoenix-area irrigation ditches, again without noting any objections by boating interests. The article further states: "Ever the entrepreneur, Hayden installed a ferry while the mill was under construction by stretching a cable across the Salt River from near the western base of the butte. He had the ferry built of heavy lumber sufficiently sturdy to transport a wagon and team of horses across the river. The ferry was needed during times of high water when the river was not crossable by other means and provided yet another line of income for Hayden." (p. 5). Yet Hayden, who already was in the freighting business, never utilized the Salt River for carrying goods, which would have been much more economically efficient had the Salt River been navigable. He also did not use the Salt River to deliver flour from his mill adjacent to the river to other regions.

Item 14 (Hayden Flour Mill & Silos): Like the previous item, this brief survey of the significance of the Hayden flour mill notes that the mill was extremely important to the Tempe area but that all of its product was shipped by land, not on the Salt River: "From the start of operations in 1874, the Hayden mill became one of the most widely known institutions in the Arizona Territory. In early territorial days the product of this mill was carried in freight wagons and by pack-trains to most of the mining camps and military posts in the Territory and its output was estimated in millions of dollars. Army and government contracts running into hundreds of thousands of dollars were filled from this mill and Hayden Flour was known in every town and mining camp in Arizona. *The Salt River Pima Indians grew wheat which they brought to the mill by horseback*, and Hayden established trading posts on the Gila River Indian Reservation to supply the mill. Hayden Mills flour sacks were an important source of children's clothing for many pioneer families. The mill, along with Hayden's store, warehouses, blacksmith shop, and ferry, became the trade center for the south side of the Salt River Valley." (p. 2, emphasis added.)

Item 15 (Hayden Flour Mill): Like the other discussions of Hayden's freighting and milling business, this exhibit similarly underscores that Charles Trumbull Hayden did not take advantage the better economics of water transportation by using the Salt River had it been navigable. Moreover, this lengthy study contains an entire section devoted to a discussion of transportation corridors. This part of the report discusses in detail trails, wagon roads, mail and

stage lines, railroads, and ferries, but it offers no discussion about utilizing the Salt River for transporation. In addition, in recounting the establishment of Hayden's ferry, the report states: "*Through most of the year, the river was seldom more than a foot deep, and could easily be crossed at the fords. . . .* However, spring freshets could last several days, and the current generally ran faster and higher throughout the spring. A few boats were kept near the river in the late 1860s, and John Smith briefly operated a ferry at McDowell Crossing. Hayden established a more permanent ferry at the Tempe Crossing in 1871. . . . *These ferries were seasonal and could only run during times of high water. . . .* On several occasions, raging flood waters tore the ferry from its mooring and sent it drifting far downstream." (p. 65, emphases added.)

The report also notes that Charles Hayden was a major advocate for road development, but the study says nothing about him calling for navigation improvements on the Salt River. In addition, the study observes: "The location that Charles T. Hayden chose for the Hayden Flour Mill and his freighting business headquarters was strategically situated to take advantage of the Tempe [ferry] Crossing site. Subsequent development of roads and railroads enhanced the importance of the location as it evolved into an essential link in local, regional, and national transportation corridors. This was of great benefit to Hayden and his successors, considering the need to effectively distribute flour and other finished products to communities throughout Arizona. Easy access to all modes of transportation, whether by wagon, rail, and/or truck, has always been important to the success of the Hayden Flour Mill." (p. 79). Nothing is said about water transport, however. In fact, the report later reproduces a transcribed version of an advertisement for Hayden's Mill that stated in part: "Freighters will find it for their interest to give me a call, as I am distributing flour and grain to all parts of the Territory and *can frequently furnish back freights to their advantage*, as well as supplies; and will have a blacksmith's shop and wagonmaker's shop supplied for convenient repairs." (p. 176, emphasis added.)

Another section of the report, devoted to a discussion of Hayden as an entrepreneur, relates his attempt to use the Salt River to float logs to his mill and his conclusion that the river was not capable of being so used on a reliable basis: "Clearly, Hayden was a passionate entrepreneur, constantly devising new ways to diversify his income. The difficulties of hauling lumber from Prescott encouraged Hayden to find a way to float logs to Hayden's Ferry via the White and Salt rivers; this river route had been previously navigated by Logan, a Scottish carpenter, who determined this was certainly possible. The *Arizona Sentinel* . . . reported: 'Charles T. Hayden left his home at Hayden's Ferry on the 24th ult., in company with his cousin, three Americans and three Mexicans, for the purpose of prospecting along the Salt River for timber suitable to saw into lumber.' It was determined, however, that the rivers were too shallow for floating logs reliably; furthermore, the meandering river courses through canyons would create log jams. . . ." (p. 177).

Item 18 (Story of 1893 Boating Trip across Arizona): This 1945 news article tells about an "older timer" who attempted to boat the Salt River in a small canvas boat about 1893. The article adds, however, that much of the trip on the Salt River consisted of carrying the boat because the riverbed was dry.

Item 24 (1892 News story about "Narrow Escape"): The article sets out how the ferry at Bryant's Crossing (location unknown) broke loose due to two-foot wave and drifted downstream causing one of its occupants to be thrown overboard (thus demonstrating how dangerous the Salt River could be for boats).

Item 29 (1908 Salt River Valley booklet): This booklet describes the Salt River Valley and provides information for potential settlers. Nowhere in the booklet does it indicate that the Salt River would be useful for navigation, despite considerable discussion about the construction of the Tonto (Roosevelt) Dam and various diversion dams. In fact, in the question-and-answer section at the end of the booklet, question number 26 is: "What advantage does this valley offer to the farmer over other sections?" (booklet is unpaginated). Here, the booklet lists multiple advantages to the Salt River region, including "good roads to market," but no there is no similar discussion of the Salt River being capable of carrying any kind of goods.

Item 62 (1919 Newspaper account of canoe trip from Roosevelt to Phoenix): The article notes specifically that the canoe overturned several times in the Salt River canyon below Roosevelt Dam. The canoe trip was also described as being "so unusual."

Item 63 (1913 news article about Rivers and Harbors): This article sarcastically wonders why federal monetary appropriations for rivers and harbors did not include money for improving navigation of the Salt River near Phoenix.

Item 64 (1920 news article regarding meaning of phrase "up Salt River"): This article, like **Item 10** above, is about a canoe on the Salt River in Kentucky, not the Salt River in Arizona.

Item 72 (1916 news article about a sheriff warning people to leave the Salt River lowlands due to an impending flood): This article notes a forthcoming flood and also details how the sheriff's boat capsized in raging waters.

Item 77 (1911 *Arizona Sentinel* article): This article from the *Arizona Sentinel* (published in Yuma) does not describe the Salt River at all – the discussion is about a boating trip leaving Yuma and going down the Colorado River.

Item 134 (1885 *Arizona Gazette* article): This article recounts a boating trip through the Salt River Canyon to determine if logs could be floated down to Phoenix and Tempe. The boat flipped and the parties lost most of their supplies.

Item 135 (1885 *Arizona Gazette* article): This news article describes a trip on foot through the Salt River Canyon. There is no mention of any boat, but the article notes that those who went through the canyon lost much of their equipment because the river was dangerous (even for those on foot).

Item 190 (Bucky O'Neill history from Arlington National Cemetery): This document has no apparent relevance to the issue of the Salt River's navigability or non-navigability. It is simply a historical tribute to William O'Neill and says nothing about the Salt River.

Item 196 (transcription of 1885 *Daily Phoenix Herald*): This article describes an 1885 boating adventure through the Salt River Canyon. The article includes, however, the following: "Continued on our course after dinner in high glee and found the river bed rapidly descending between low mountains, the sailing was grand but it was necessary to look out for rocks ahead; had several narrow escapes in our rapid descent and finally we shot up on top of a large rock in mid-channel, which we did not see, our gallant host was upset and we were left perched on the rock like 'ye ancient mariner.' Worked all afternoon to get our boat off, but without success, so we swam ashore and slept on granite boulders. Meadows having swam downstream two miles for an ax with which he returned to cut poles to pry off the boat." (The transcription is unpaginated, but the quoted portion is on the second page of the transcript.)

Item 201 (1905 *Arizona Republican* news article): This article describes a boat trip on the Salt River and notes that: "The captain reported having encountered rough water and for a time the boat was semi-submarine."

Item 249 (1905 *Arizona Republican* news article): This article describes the high line road (the Apache Trail) being built by the U.S. Government to the Roosevelt Dam site. There is no indication that the Government intended to use the Salt River for transportation.

SUMMARY AND CONCLUSIONS ABOUT THE SALT RIVER

61. Since modern settlement began in the Salt River Valley in the mid-nineteenth century, there have been a multitude of documents created describing that stream. These cover a wide spectrum of published and unpublished sources, including federal and state (and territorial) materials, newspaper accounts, diaries, journals, reminiscences, historical photographs, and other archival records.

62. Some of the most important sources for ascertaining the nature of the Salt River prior to and at the time of Arizona's statehood in 1912 are survey field notes and plats created by U.S. Government surveyors as they carried out their responsibilities mapping Arizona. Directed by manuals conveying precise instructions, surveyors were to make careful notes of the region in which they were working, and they were provided with specific instructions about how to record the presence of navigable bodies of water. The area through which the Salt River flows below Granite Reef Dam and the confluence with the Gila River was fully surveyed in 1868, and resurveys were

done for sections of the river in 1888, 1899, and 1910-1911. Significantly, although these surveys were undertaken by different parties at different times and under various seasonal conditions, none of the federal surveyors indicated in his field notes or on the related plats that the Salt River was navigable. On the contrary, the field notes and plats illustrated a stream that varied enormously in flow, that had a constantly changing channel, and that sank into the bed in places only to reemerge slightly downstream. Moreover, the notes and plats contain references to roads paralleling the Salt, suggesting that transportation was carried out on land and not on the river.

63. Supporting the U.S. Government surveys' determination that the Salt River was not navigable are federal government homestead patents, U.S. grants to Arizona, and Arizona's disposition of those lands. Over two hundred patents were issued by the U.S. Government Land Office to parcels of land through which the Salt River ran. In every single case when these patents were formalized, the United States made no effort to deny title to the applicants for the Salt River's bed based on a possible claim of ownership due to Arizona's sovereignty. In addition, in some cases the patent files that accompanied the applications made it clear that what the prospective homesteader wanted was the actual bed of the river itself. Furthermore, when lands were granted to Arizona through which the Salt River flowed, the State made no effort to obtain in-lieu selections for the acreage covered by the stream's bed – as it would have been entitled to do had the Salt River been navigable at the time of statehood. And, when Arizona subsequently disposed of lands it had acquired from the federal government through which the Salt River ran, the State made no indication that it was withholding the bed of the river due to navigability.

64. The federal and state grant and patenting process is significant in relation to determining the Salt River's navigability because with so many different parcels and transfers of land involved, a large number of parties ultimately reached the same conclusion – that the Salt River was not navigable. Each applicant who requested land through which the river flowed implicitly asserted the river's non-navigability; each federal official approving a homestead application or grant to Arizona reached the same conclusion, as did each State authority who sold Arizona's federally-granted lands. Not only did many individuals all indicate the same finding with regard to the Salt River's non-navigability, but they did so over a lengthy span of time beginning in the nineteenth century and continuing well past statehood. In addition, their actions covered a large and diverse geographic area along the Salt.

65. Further strengthening the finding that the Salt River was not navigable before or in 1912 are other published and unpublished records of the U.S. Government and related historical photographs. Records of the U.S. Reclamation Service, the Geological Survey, and the Department of Agriculture all describe a stream that was extremely erratic in flows, unreliable in relation to channels, subject to severe floods, blocked by obstacles (both natural and man-made), prone to extensive seepage losses, and potentially dangerous. While the duties of the Reclamation Service, the Geological Survey, and the Department of Agriculture brought them most directly into contact with the Salt River, records generated by other federal agencies (notably, the Indian Service) substantiated these conclusions. Related historical photographs amply illustrate the textual observations by federal agencies.

66. Newspapers and additional historical photographs also support the conclusion that the Salt was not navigable before or at statehood. While there were stories in the Arizona press about boating on the river, those articles emphasized how unusual such activities were, not how

regularly they happened. Moreover, the press stressed that roads and railroads carried commerce in the Salt River region, not the stream itself. And, of course, the newspapers took note of the tremendously destructive Salt River floods and how those altered the channel and surrounding landscape. Historical photos back up the press's observations.

67. Much like the press, explorers' journals, personal reminiscences, private engineering reports, correspondence, and other historical documents all reached the same conclusion regarding the lack of navigability of the Salt River. Indeed, as noted above, the Arizona Territorial Legislature, as one of its first acts in 1865, declared that the only stream in Arizona that was navigable was the Colorado River.

68. From this wealth of historical information covering a huge array of documentary sources – sources with first-hand knowledge about the Salt River, and not sources from the present projecting back into the past – only one conclusion can be reached: The Salt River was not navigable on or before February 14, 1912.

APPENDIX A:

CURRICULUM VITA OF DOUGLAS R. LITTLEFIELD

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EDUCATION:

Ph.D. American history. University of California, Los Angeles, 1987. Dissertation: "Interstate Water Conflicts, Compromises, and Compacts: The Rio Grande, 1880-1938." Fields: history of California and the American West, water rights history, legal history, environmental history.

M.A. American history. University of Maryland, College Park, 1979. Master's thesis: "A History of the Potomac Company and Its Colonial Predecessors." Fields: business history, colonial history, early republic history, trans-Appalachian West history, British history.

B.A. English literature. Brown University, 1972.

CONSULTING AND EXPERT WITNESS EXPERIENCE:

2014-Present: Research historian and consultant for Coachella Valley Water District, Palm Desert, California (attorney: Gene Tanaka of Best, Best & Krieger, Walnut Creek, California). Providing historical research, documentation, and expert report on water rights in the Palm Springs, California, area for use in *Agua Caliente Band of Cahuilla Indians v. Coachella Valley Water District*, U.S. District Court, Central District of California, Eastern Division, Case No. ED CV 13-00883, JGB SPX.

2013-2014: Research historian and consultant for Gallo Cattle Company, Merced, California (attorneys: Marshall C Whitney and Ben Nicholson of McCormick, Barstow & Sheppard, Fresno, California). Provided historical research, affidavits, deposition, and testimony regarding the history of the water rights and uses in the vicinity the Merced Irrigation District and the "Livingston Drain" for use in *Gallo Cattle Company v. Lincoln White Crane Hunter, Merced Irrigation District, et al*., Merced County Superior Court Case No. CV001051.

2008-2010: Research historian and consultant for McAfee & Taft in Tulsa, Oklahoma (attorney Robert Joyce). Provided historical research, written report, depositions, and testimony regarding lead and zinc mining and land use in northeastern Oklahoma for use in *Quapaw*

Tribe of Oklahoma, et al., v. Blue Tee Corp, et al., U.S. District Court for the Northern District of Oklahoma, Civil Action No. 03-CV-486-CVE-PJC.

2006-Present: Research historian and consultant for State of Montana. Providing historical research, reports, affidavits, and testimony in *Montana v. Wyoming and North Dakota*, No. 137 Original, U.S. Supreme Court.

2006-2007: Research historian and consultant for Loeb & Loeb in Los Angeles (attorney Anthony Murray). Provided historical research and deposition testimony regarding the history of natural disasters (mudslides, floods, fires, earthquakes, etc.) in Southern California for use in *Dane W. Alvis, et al., v. La Conchita Ranch Company, et al.*, Ventura County (California), Superior Court Case No. CIV 238700.

2005-2009: Research historian and consultant for the Stinson Beach County Water District in Marin County, California (counsel: Hanson, Bridgett, Marcus, Vlahos & Rudy of San Francisco). Provided historical research on the history of the water rights of the District.

2005-2006: Research historian and consultant for Salt River Project, Phoenix, Arizona (attorney: Mark A. McGinnis of Salmon, Lewis & Weldon of Phoenix, Arizona). Provided historical research and report on the history of public domain lands, land grants to Arizona, and water rights for use in *In re: General Adjudication of All Rights to the Use of Water in the Gila River System and Source*, and *In re: General Adjudication of All Rights to the Use of Water in the Little Colorado River System and Source,* Apache and Maricopa Superior Court Case No. CV 6417-100.

2005: Research historian and consultant for the Lake Arrowhead Community Services District (counsel: Best, Best & Krieger of Riverside, California). Provided historical research and documentation on the history of water rights associated with Lake Arrowhead in southern California. Testified before the California State Water Resources Control Board concerning the District's pre-1914 water rights claims (and post-1914 claims).

2004 – 2006: Research historian and consultant for City of Santa Maria, California (counsel: Best, Best & Krieger of Riverside, California). Provided historical research, deposition, and court testimony on the history of water rights of the U.S. Bureau of Reclamation's Santa Maria Project (California) for use in *Santa Maria Valley Water Conservation District v. City of Santa Maria, Southern California Water Company, City of Guadalupe, et al.*, Santa Clara County (California) Superior Court, Case No. CIV 770214.

2004 – 2008: Research historian and consultant for City of Pocatello, Idaho (counsel: Beeman & Associates of Boise, Idaho, and White & Jankowski of Denver, Colorado). Provided historical research, documentation and affidavit testimony on the history of Pocatello's water rights for use in Snake River Basin Adjudication (*In Re: the General Adjudication of Rights to the Use of Water From the Snake River Drainage Basin Water System, State of Idaho v. United States; State of Idaho; and all unknown claimants to the use of water from the Snake River Drainage Basin Water System*, County of Twin Falls (Idaho) District Court, Case No. 39576. Provided affidavit testimony.

2003 – 2004: Research historian and consultant for U.S. Bureau of Reclamation (Mid-Pacific Region). Provided historical research and report on the history of the water rights of the Friant Unit of the Bureau's Central Valley Project (California).

2002: Research historian and consultant for the Alameda County Water District (counsel: Hanson, Bridgett, Marcus, Vlahos & Rudy of San Francisco). Provided historical research and report on the history of the water rights of the District.

2001 – 2007: Research historian and consultant for Paloma Investment Limited Partnership (counsel: Mesch, Clark & Rothschild of Tucson, Arizona). Provided historical research and deposition regarding whether the Gila River was commercially navigable in 1912 when Arizona became a state for use in *Flood Control District of Maricopa County v. Paloma Investment Limited Partnership* and *Paloma Investment Limited Partnership v. Flood Control District of Maricopa County*, Maricopa County (Arizona) Superior Court, Case No. CV97-07081.

2000 – 2001: Research historian and consultant for Salt River Project, Arizona (counsel: Salmon, Lewis & Weldon of Phoenix, Arizona). Provided historical research and documentation on Zuni Indian water rights and land claims in Arizona and New Mexico for use in *In re the General Adjudication of All Rights to Use of Water in the Little Colorado River System and Source*, Apache County (Arizona) Superior Court, Case No. 6417.

2000 – 2001: Research historian and consultant for the Maryland Attorney General. Provided historical research and affidavit testimony on the 1785 "Mount Vernon" interstate compact between Maryland and Virginia for use in U.S. Supreme Court case of *Virginia v. Maryland*, No. 129 Original.

1998 – 2000: Research historian and consultant for the Idaho Attorney General. Provided historical research on whether the Salmon River and selected tributaries were commercially navigable in 1890 when Idaho became a state.

1998 – 1999: Research historian and consultant for the Idaho Coalition, a landowners' group (counsel: John K. Simpson of Rosholt, Robertson & Tucker of Boise, Idaho, and Shawn Del Ysura of J.R. Simplot Company of Boise, Idaho). Provided historical research, and affidavit testimony on the impacts of various dams in the Columbia River and Snake River watersheds on anadromous fish for use in Snake River Basin Adjudication (*In Re: the General Adjudication of Rights to the Use of Water From the Snake River Drainage Basin Water System, State of Idaho v. United States; State of Idaho; and all unknown claimants to the use of water from the Snake River Drainage Basin Water System*, County of Twin Falls (Idaho) District Court, Case No. 39576.

1998 – 2000: Research historian and consultant for Sacramento Municipal Utility District of California (counsel: Ronald Aronovsky of Alden, Aronovsky & Sax of San Francisco). Provided research on toxic waste and land site history for use in *Sacramento Municipal Utility District v. California Department of Transportation, Sacramento Housing and*

Redevelopment Agency, et al., Sacramento County (California) Superior Court, Case No. 96AS04149.

1997 – Present: Research historian and consultant for City of Las Cruces, New Mexico (counsel: Stein & Brockmann of Santa Fe, New Mexico). Providing historical research, documentation, and affidavit testimony on the city's water rights for use in *State of New Mexico v. Elephant Butte Irrigation District*, Dona Ana County (New Mexico) District Court, Case No. CV 96-888.

1997 – 2003: Research historian and consultant for Fort Hall Water Users' Association, Idaho (counsel: Richard Simms of Hailey, Idaho). Provided historical research and report the Association's water rights in relation to the Shoshone and Bannock Indian land cessions on the Fort Hall Indian Reservation in Idaho for use in *Fort Hall Water Users' Association, et al., v. United States of America*, U.S. Court of Federal Claims, Case No. 01-445L.

1997 – Present: Research historian and consultant for Kern Delta Water District (counsel: McMurtrey, Hartsock & Worth of Bakersfield, California). Providing historical research and report on Kern Delta's water rights for use in *North Kern Water Storage District v. Kern Delta Water District, et al.*, Tulare County (California) Superior Court, Case No. 96-172919. Testified in that case as an expert witness historian for ten days in the initial trial, which was remanded for additional testimony and evidence. Provided additional research and written reports on water rights for the remanded trial. Also providing research for use in water rights hearings before the California Water Resources Control Board.

1996 – 1998: Research historian and consultant for Idaho Attorney General. Provided historical research on water rights in relation to the Deer Flat National Wildlife Refuge for use in Snake River Basin Adjudication (*In Re: the General Adjudication of Rights to the Use of Water From the Snake River Drainage Basin Water System, State of Idaho v. United States; State of Idaho; and all unknown claimants to the use of water from the Snake River Drainage Basin Water System*, County of Twin Falls (Idaho) District Court, Case No. 39576.

1995 – 1998: Research historian and consultant for U.S. Department of Justice. Provided historical documentation on the history of water rights on the Santa Margarita River at U.S. Marine Corps Base, Camp Pendleton, in southern California.

1995 – Present: Research historian and consultant for the Salt River Project (counsel: Salmon, Lewis & Weldon of Phoenix, Arizona). Providing historical documentation and reports on whether the Salt, Gila, and Verde rivers were commercially navigable in 1912 when Arizona became a state. Testified multiple times between 1995 and 2014 before the Arizona Navigable Stream Adjudication Commission regarding the navigability of the Salt, Verde, and Gila rivers. Testified on the same subject in 1998 and 1999 before the Arizona State Legislature.

1995 – 2001: Research historian and consultant for Nebraska Department of Water Resources (counsel: Simms & Stein of Santa Fe, New Mexico). Provided historical documentation and report on water rights and the history of *Nebraska v. Wyoming*, 325 U.S. 589 (1945), for use in U.S. Supreme Court case of *Nebraska v. Wyoming*, Original No. 108, regarding the apportionment of the waters of the North Platte River. Deposed in that case, but the case was settled before trial.

1993 – 1994: Research historian and consultant for Simms and Stein, attorneys specializing in water law in Santa Fe, New Mexico. Provided historical documentation and affidavit testimony on Arapaho and Shoshone land claims and cessions along the Wind River in Wyoming for use in *In Re: the General Adjudication of All Rights to Use Water in the Big Horn River System and All Other Sources, State of Wyoming*.

1991 – 2003: Research historian and consultant for Legal Counsel, Division of Water Resources, Kansas State Board of Agriculture (counsel: Montgomery & Andrews of Santa Fe, New Mexico). Provided historical research on water rights and history of apportionment of the Republican River and its tributaries among Kansas, Nebraska, and Colorado for use in U.S. Supreme Court case of *Kansas v. Nebraska and Colorado*, No. 126 Original, regarding the interstate apportionment of the Republican River. Provided affidavit testimony.

1991 – 1993: Research historian and consultant for Nickel Enterprises (Bakersfield, California; counsel: Anthony Murray of Carlsmith, Ball, Wichman, Murray, Case, Mukai & Ichiki of Long Beach, California. Provided historical documentation and report on the navigability of the Kern River for use in *Nickel Enterprises v. State of California*, Kern County (California) Superior Court, Case No. 199557. Testified as an expert witness historian in this case for eleven days.

1989 – 1990: Research historian for Pacific Enterprises, Los Angeles, California. Directed historical research for and coauthored a corporate history of this southern California holding company entitled *The Spirit of Enterprise: A History of Pacific Enterprises, 1867-1989* (1990).

1988 – 1989: Research historian and consultant for Water Defense Association, Roswell, New Mexico (counsel: Simms & Stein of Santa Fe, New Mexico). Provided historical documentation of water rights claims along the Bonito, Hondo, and Ruidoso rivers in southeastern New Mexico for use in *State v. Lewis*, Chaves County (New Mexico), Case Nos. 20294 & 22600, Consolidated.

1986 – 1990: Research historian and consultant for Legal Counsel, Division of Water Resources, Kansas State Board of Agriculture (counsel: Simms & Stein of Santa Fe, New Mexico). Provided historical documentation, report, deposition, and testimony on water rights and interstate apportionment of the Arkansas River between Kansas and Colorado for use in U.S. Supreme Court case of *Kansas v. Colorado*, October Term 1985, Original No. 105, regarding the interstate apportionment of the Arkansas River. Testified as an expert witness historian in court for twelve days.

1986 – 1989: Research historian and consultant for Legal Counsel, State Engineer Office, State of New Mexico. Provided historical documentation and report on water rights in the Carlsbad Irrigation District in southeastern New Mexico for use in *State v. Lewis*, Chaves County (New Mexico) Case Nos. 20294 & 22600, Consolidated.

1986 – 1987: Historical consultant for *National Geographic Magazine*. Advised editors on June 1987 article, "George Washington's Patowmack Canal."

1984 – 1986: Research historian and consultant for Legal Counsel, State Engineer Office, State of New Mexico. Provided historical documentation and report on the history of water rights on the Rio Grande and interstate apportionment disputes between New Mexico and Texas for use in *El Paso v. Reynolds*, U.S. District Court, Civ. Case No. 80-730-HB.

AWARDS AND OTHER PROFESSIONAL EXPERIENCE:

2014: Faculty lecturer for Continuing Legal Education (CLE) International, New Mexico Water Law Conference. Taught course on "The Compromise of 1904 and the First Congressional Apportionment of an Interstate River: The Rio Grande, 1905."

2008: Winner of the National Council on Public History's Consultant Award.

July 1, 2007 – 2012: Member, Board of Directors, California Supreme Court Historical Society.

2006: Faculty lecturer for Continuing Legal Education (CLE) International, Arizona Water Law Conference. Taught course on "Historians and Water Rights – The Role of Historians in U.S. Supreme Court Interstate Stream Litigation."

1999: Gave keynote address at New Mexico Water Resources Institute's 44th Annual New Mexico Water Conference on "The History of the Rio Grande Compact of 1938."

January 1992 – 1994: Member of Board of Editors of *Western Historical Quarterly*.

1991 – 1995: Lecturer, Department of History, California State University, Hayward. Taught courses on California and U.S. history as well as a graduate seminar on environmental history.

1980 – 1984: Editorial Assistant, *Pacific Historical Review*. Edited scholarly articles and book reviews.

1979 – 1979: Lecturer, University of Maryland's University College off-campus program. Taught courses on the history of the American West and U.S. History surveys at the Pentagon and at a military base.

PUBLICATIONS:

Books:

Conflict on the Rio Grande: Water and the Law, 1879-1938. University of Oklahoma Press (2009).

The Spirit of Enterprise: A History of Pacific Enterprises, 1867-1989 (coauthor, 1990).

Articles:

"Jesse W. Carter and California Water Law: Guns, Dynamite, and Farmers: 1918-1939," *California Legal History* (2009).

"History and the Law: The Forensic Historian in Court," *California Supreme Court Historical Society Newsletter* (2008).

"The History of the Rio Grande Compact of 1938," in Catherine T. Ortega Klett, ed., *44th Annual New Mexico Water Conference – Proceedings – The Rio Grande Compact: It's the Law* (Las Cruces: New Mexico Water Resources Research Institute, 2000).

"The Forensic Historian: Clio in Court," *Western Historical Quarterly* (1994).

"The Rio Grande Compact of 1929: A Truce in an Interstate River Apportionment War," *Pacific Historical Review* (1991).

"Eighteenth Century Plans to Clear the Potomac River: Technology, Expertise, and Labor in a Developing Nation," *Virginia Magazine of History and Biography* (1985).

"The Potomac Company: A Misadventure in Financing an Early American Internal Improvement Project," *Business History Review* (1984).

"Water Rights During the California Gold Rush: Conflicts over Economic Points of View," *Western Historical Quarterly* (1983).

"Maryland Sectionalism and the Development of the Potomac Route to the West, 1768-1826," *Maryland Historian* (1983).

Book Reviews:

Sarah S. Elkind, *Bay Cities and Water Politics: The Battle for Resources in Boston and Oakland* (Lawrence: University Press of Kansas, 1998), in *Environmental History* (2000).

David C. Frederick, *Rugged Justice: The Ninth Circuit Court of Appeals and the American West, 1891-1941* (Berkeley: University of California Press, 1994), in *Pacific Historical Review* (1995).

Daniel Tyler, *The Last Water Hole in the West: The Colorado - Big Thompson Project and the Northern Colorado Water Conservancy District* (Niwot, Colorado: University Press of Colorado, 1992), in *Montana: The Magazine of Western History* (1994).

Lloyd Burton, *American Indian Water Rights and the Limits of Law* (Lawrence: University Press of Kansas, 1991), in *Journal of the West* (1994).

Zachary A. Smith, ed., *Water and the Future of the Southwest* (Albuquerque: University of New Mexico Press, 1989), in *Western Historical Quarterly* (1991).

F. Lee Brown and Helen Ingram, *Water and Poverty in the Southwest* (Tucson: University of Arizona Press, 1987), in *The Public Historian* (1990).

David J. Eaton and Michael Andersen, *The State of the Rio Grande/Rio Bravo: A Study of Water Resource Issues Along the Texas/Mexico Border* (Tucson: University of Arizona Press, 1987), in *New Mexico Historical Review* (1988).

Pat Kelley, *River of Lost Dreams: Navigation on the Rio Grande* (Lincoln: University of Nebraska Press, 1986), in *Pacific Historical Review* (1988).

Marc Reisner, Cadillac Desert: The American West and Its Disappearing Water (New York: Viking Penguin, Inc., 1986), in *Environmental History Review* (1987).

Thomas F. Hahn, *The Chesapeake and Ohio Canal: Pathway to the Nation's Capitol* (Metuchen, N.J.: Scarecrow Press, Inc., 1984), in *Business History Review* (1987).

PROFESSIONAL AFFILIATIONS:

American Historical Association, American Society for Environmental History, California Committee for the Promotion of History, California Historical Society, California Supreme Court Historical Society, National Council on Public History, Ninth Judicial Circuit Court Historical Society, Organization of American Historians, Western History Association, Western Council on Legal History.

APPENDIX B: FIGURES FROM 2014 LITTLEFIELD LOWER SALT RIVER REPORT CITED IN THIS DECLARATION

(NOTE: ALL FIGURE NUMBERS ARE FROM 2014 REPORT)

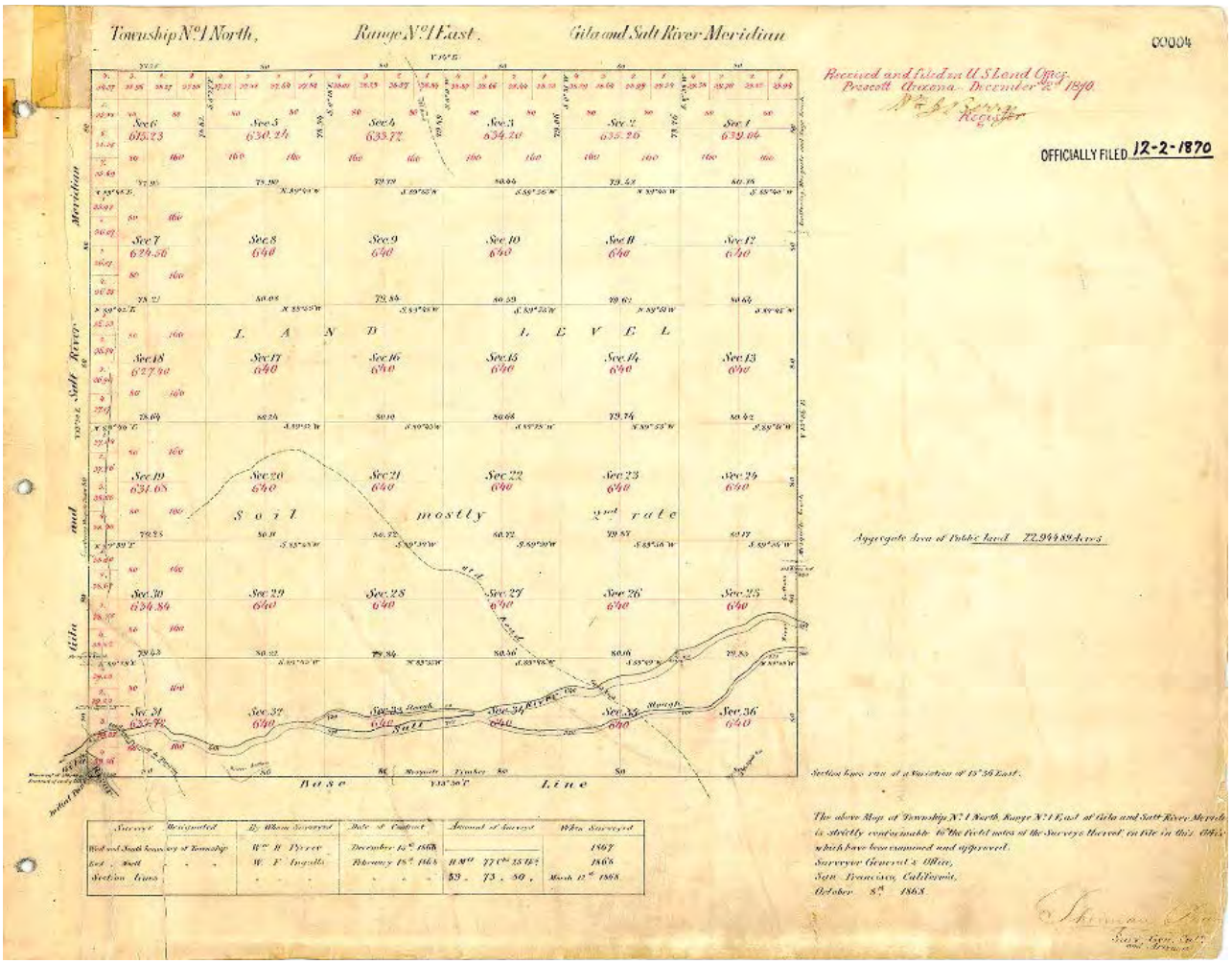

Figure 1: Survey Plat of Township 1 North, Range 1 East, Gila and Salt River Meridian, Oct. 8, 1868, U.S. Bureau of Land Management, Phoenix, Arizona.

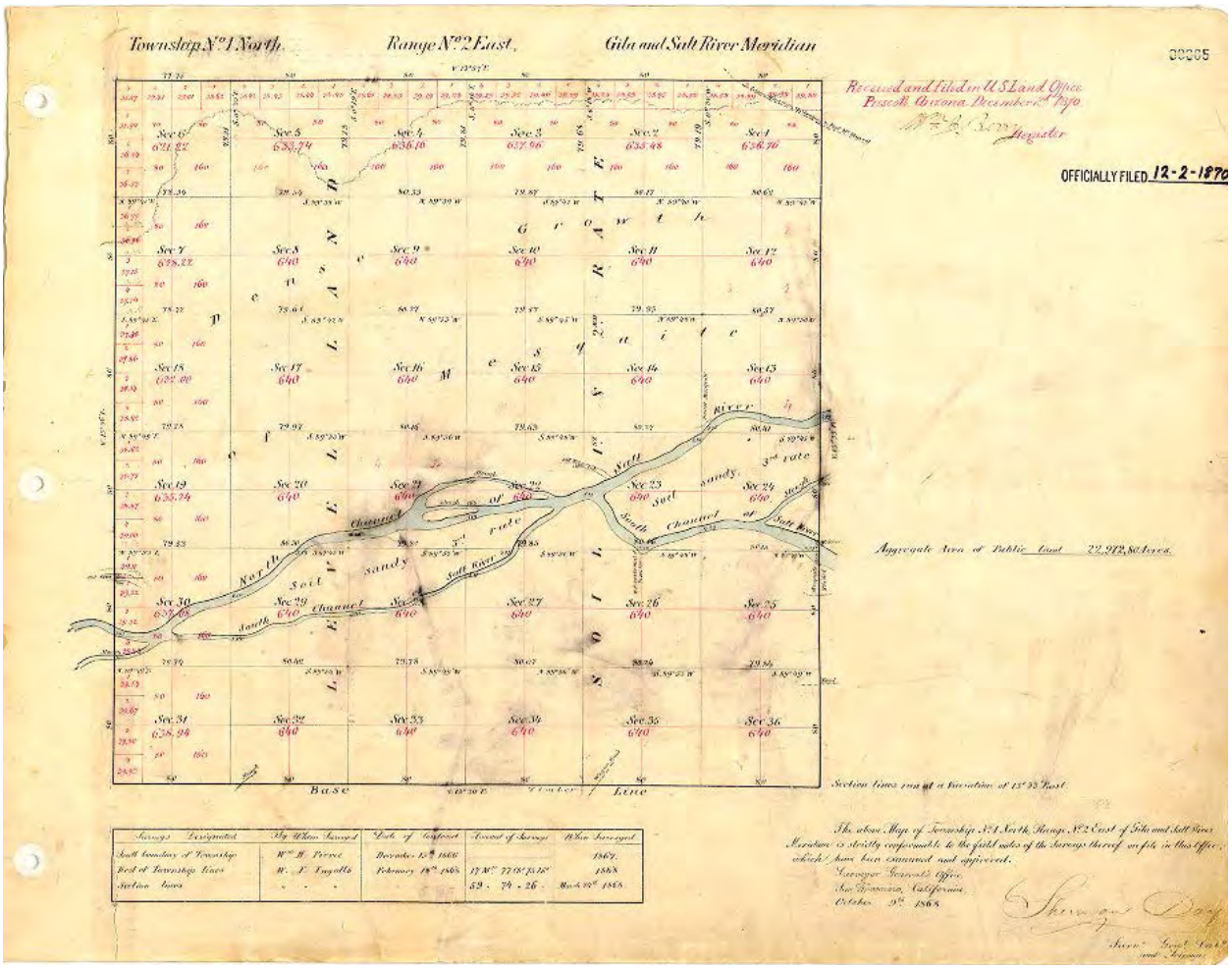

Figure 2: Survey Plat of Township 1 North, Range 2 East, Gila and Salt River Meridian, Oct. 9, 1868, U.S. Bureau of Land Management, Phoenix, Arizona.

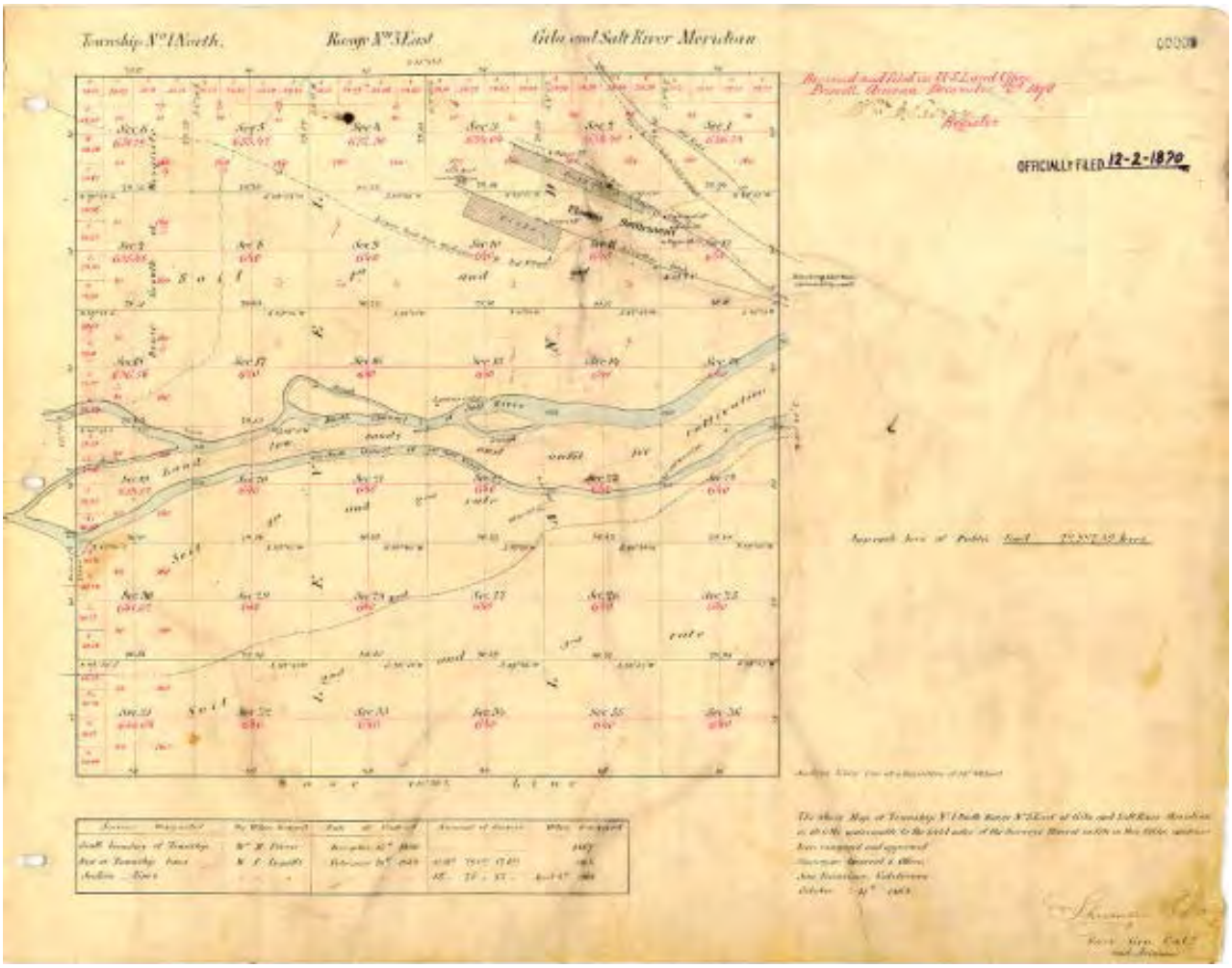

Figure 3: U.S. General Land Office Survey Plat of Township 1 North, Range 3 East, Gila and Salt River Meridian, Dec. 2, 1870, U.S. Bureau of Land Management, Phoenix, Arizona.

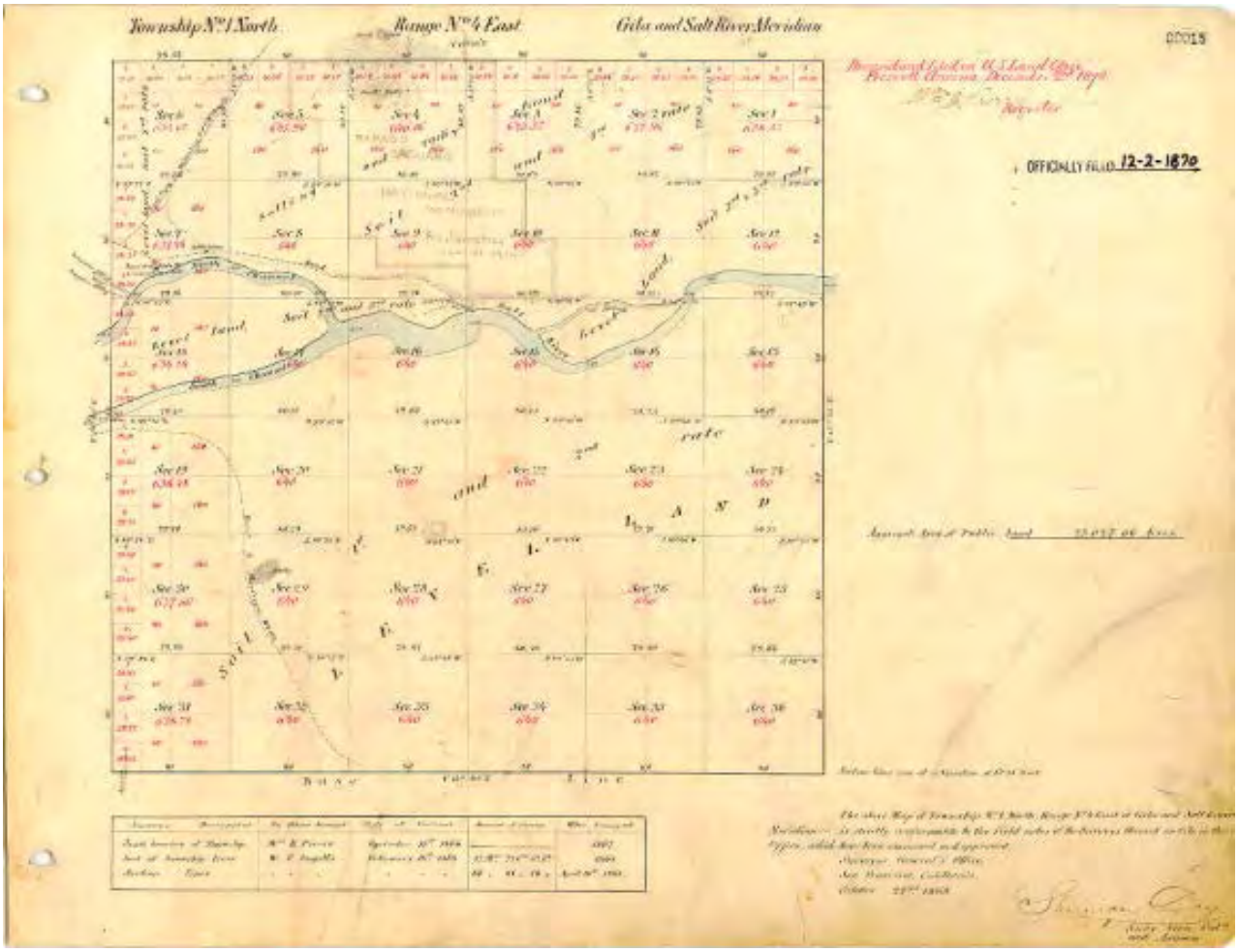

Figure 4: U.S. General Land Office Survey Plat of Township 1 North, Range 4 East, Gila and Salt River Meridian, Oct. 21, 1868, U.S. Bureau of Land Management, Phoenix, Arizona.

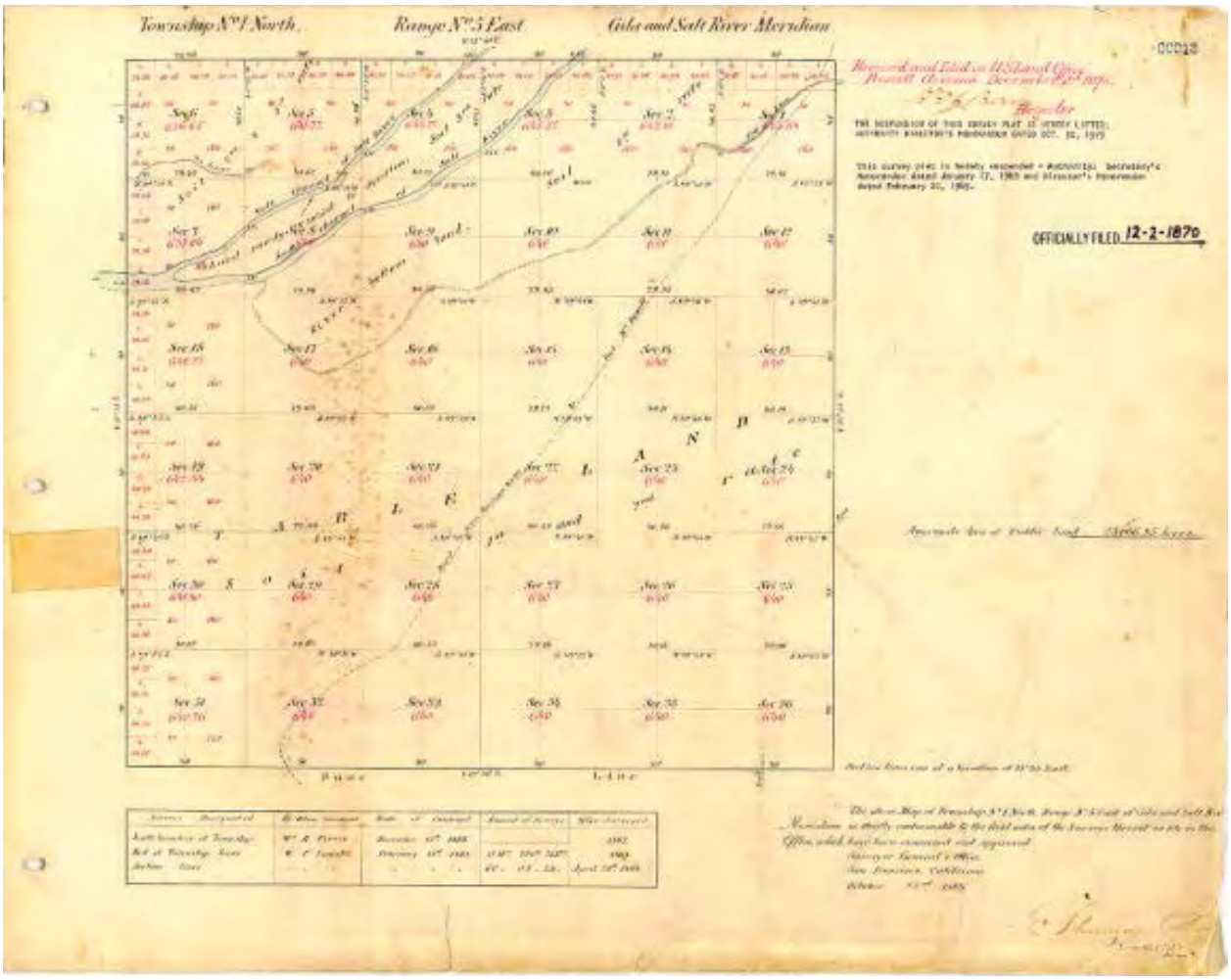

Figure 5: U.S. General Land Office Survey Plat of Township 1 North, Range 5 East, Gila and Salt River Meridian, Oct. 22, 1868, U.S. Bureau of Land Management, Phoenix, Arizona.

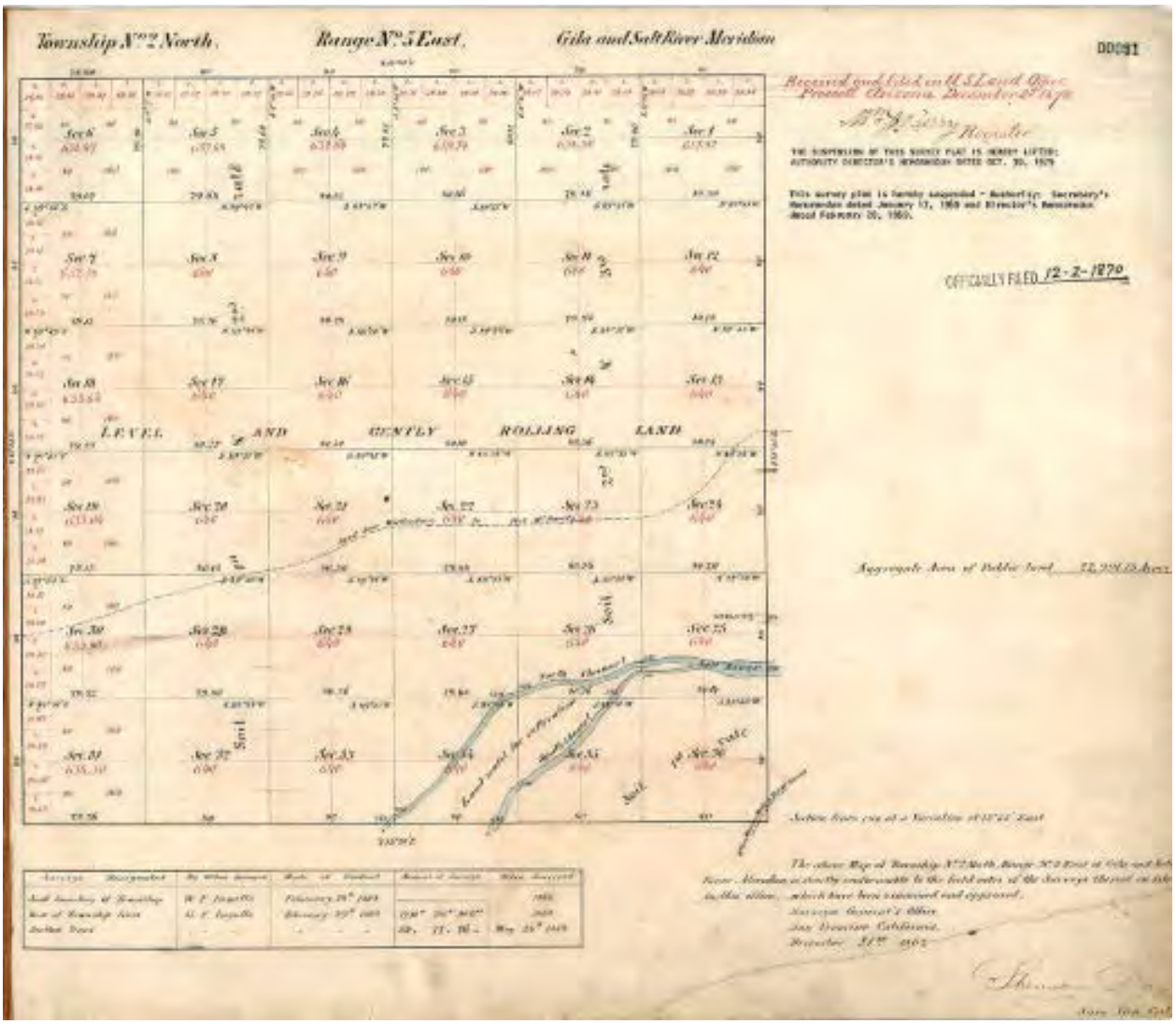

Figure 6: U.S. General Land Office Survey Plat of Township 2 North, Range 5 east, Gila and Salt River Meridian Dec. 31, 1868, U.S. Bureau of Land Management, Phoenix, Arizona.

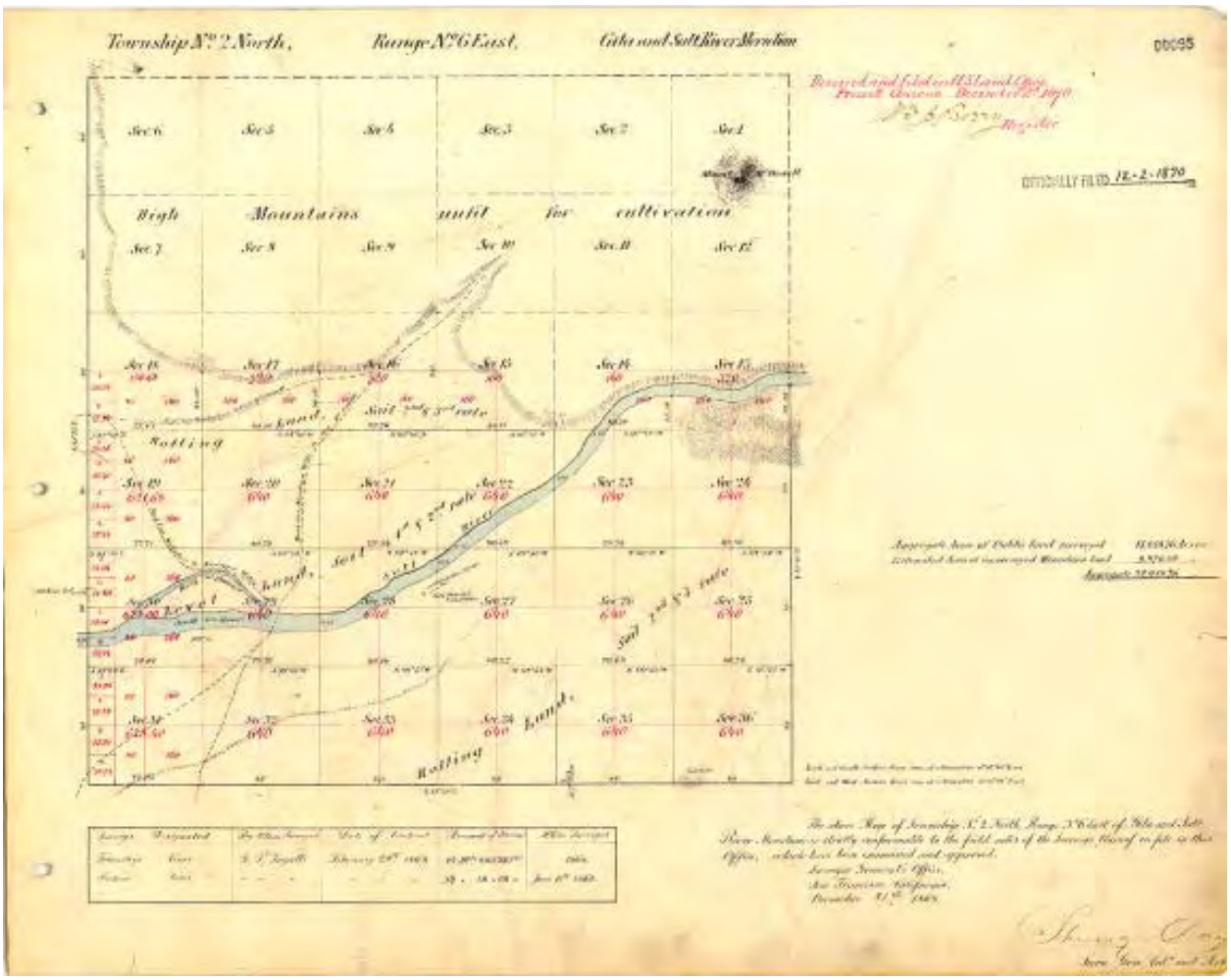

Figure 7: U.S. General Land Office Survey Plat of Township 2 North, Range 6 East, Gila and Salt River Meridian, Dec. 31, 1868, U.S. Bureau of Land Management, Phoenix, Arizona.

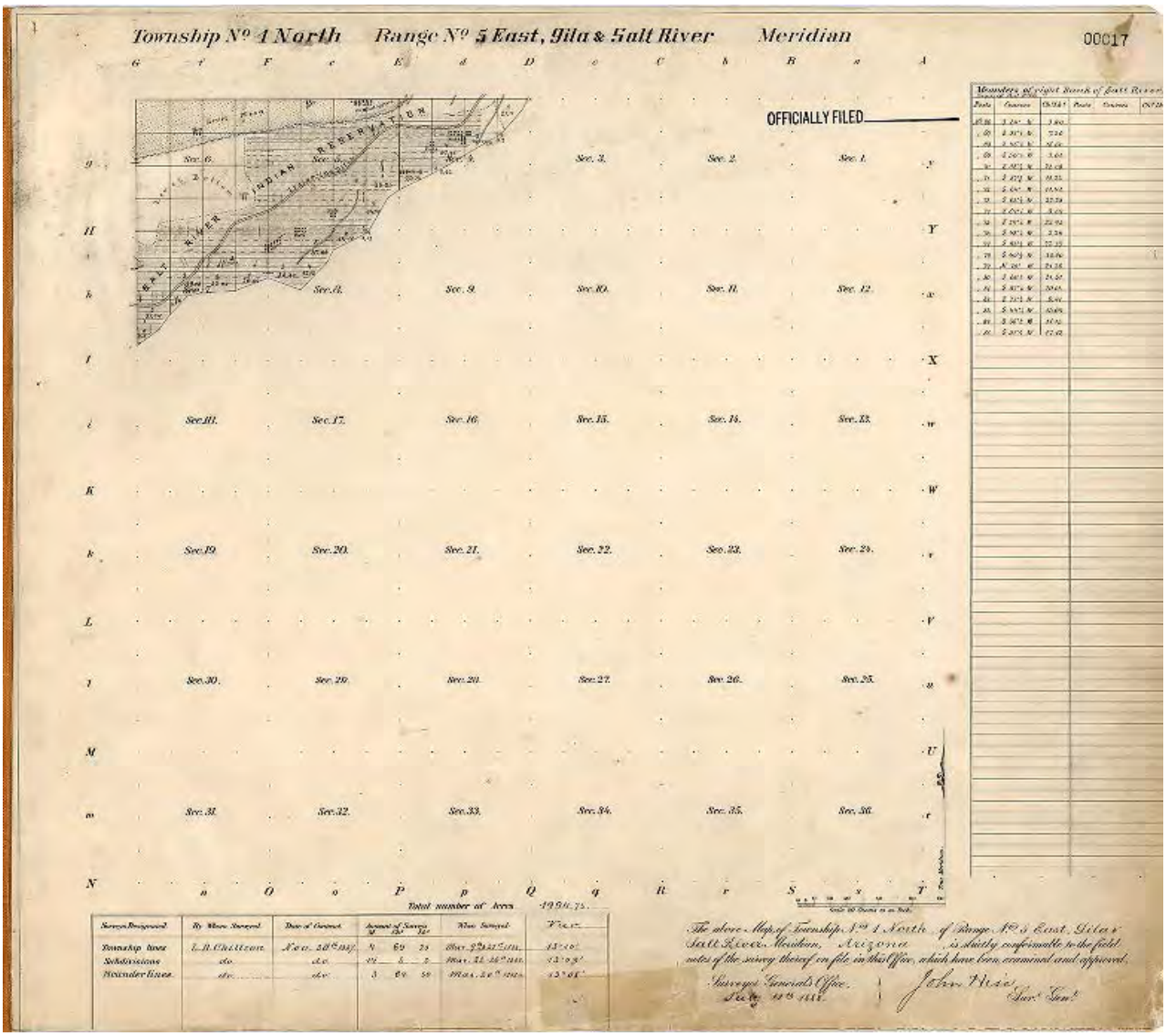

Figure 8: U.S. General Land Office Interior Resurvey of the Northwest Corner of Township 1 North, Range 5 East, March 28, 1888, Gila and Salt River Meridian, U.S. Bureau of Land Management, Phoenix, Arizona.

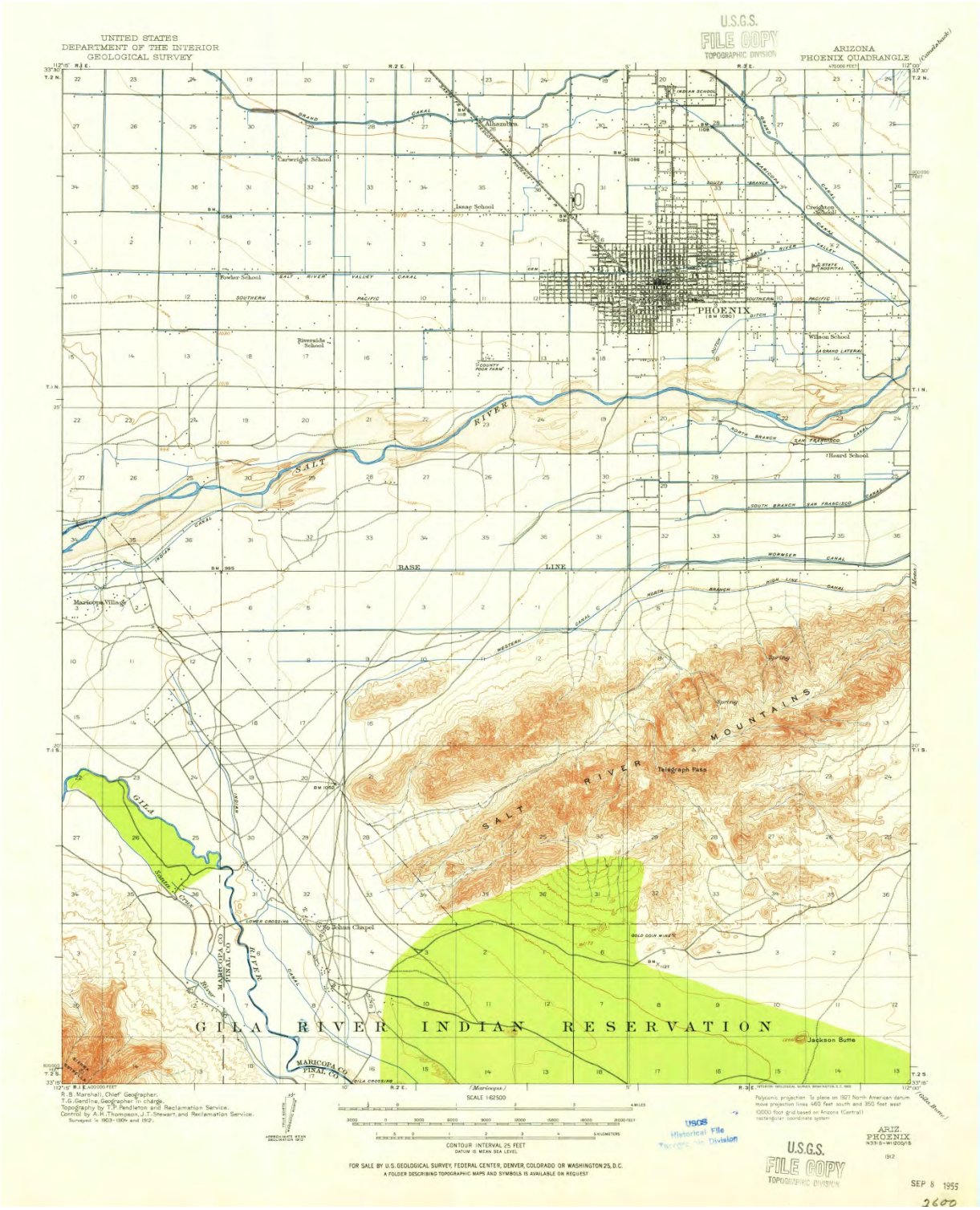

Figure 9: U.S. Geological Survey "Phoenix, Arizona" Topographical Map, 1912. Source: U.S. Geological Survey Online Historical Map Collection.

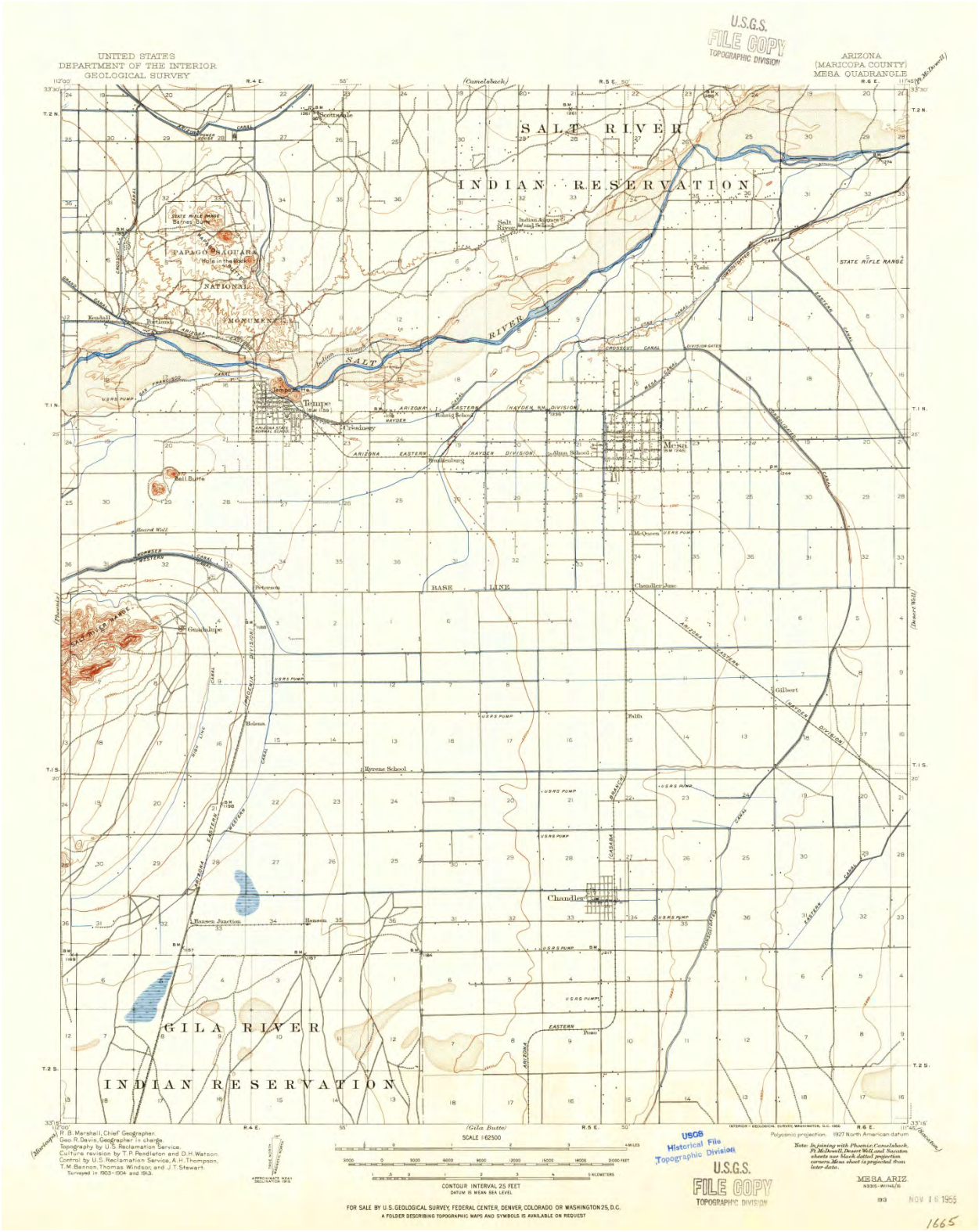

Figure 10: U.S. Geological Survey "Mesa, Arizona" Topographical Map, 1913. Source: U.S. Geological Survey Online Historical Map Collection.

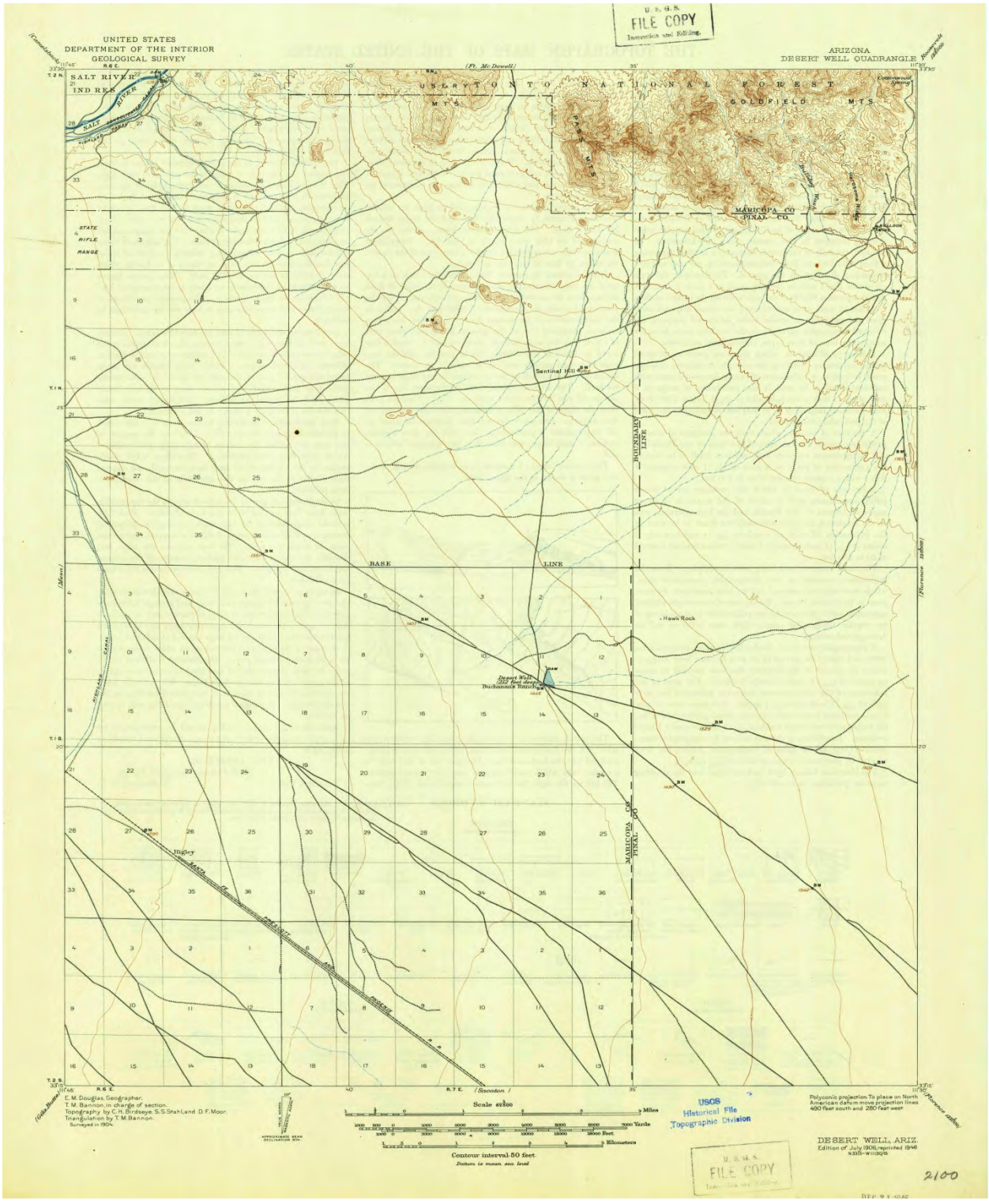

Figure 11: U.S. Geological Survey "Desert Well, Arizona" Topographic Map, 1906. Source: U.S. Geological Survey Online Historical Map Collection.

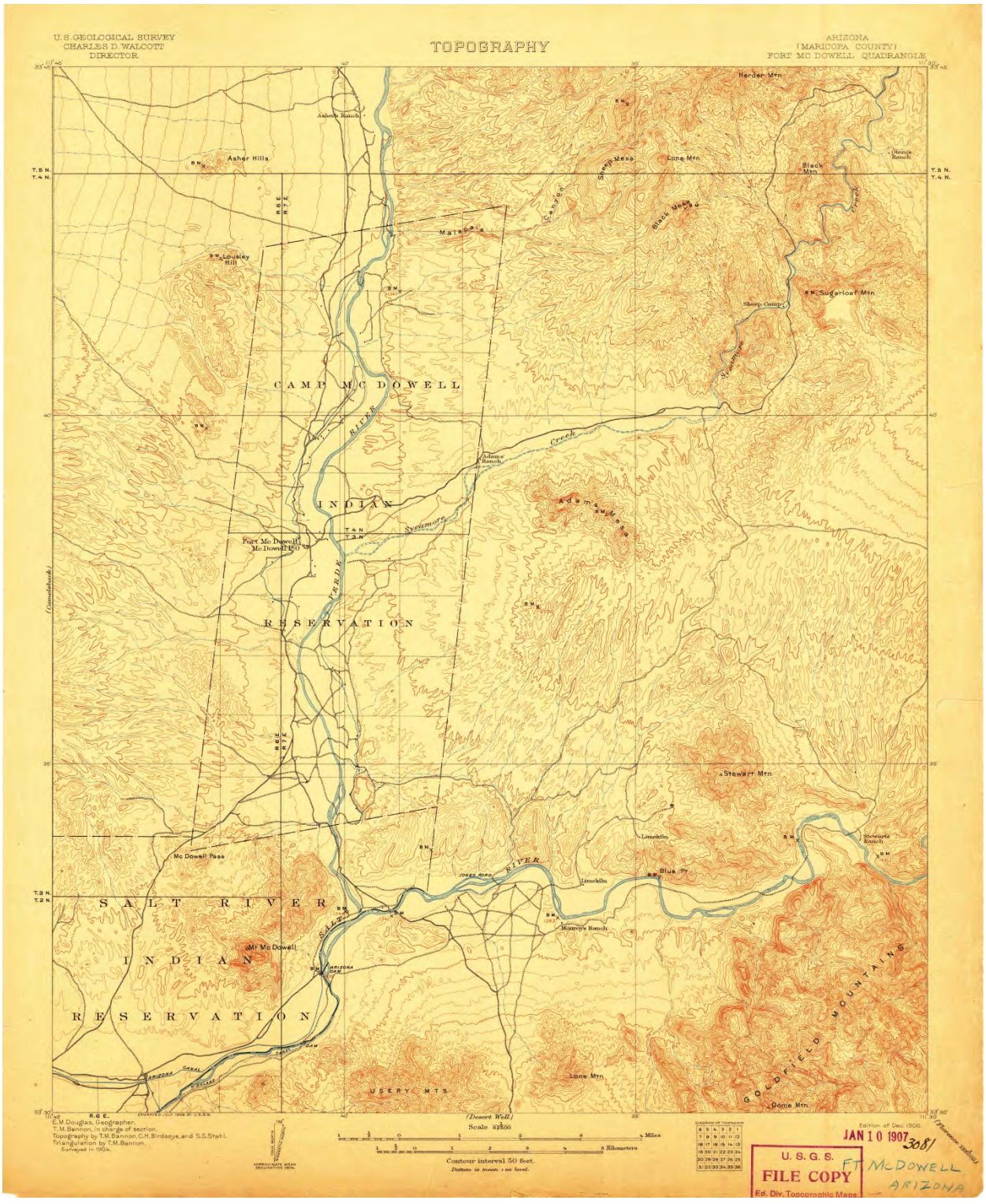

Figure 12: U.S. Geological Survey "Fort McDowell, Arizona" Topographical Map, 1906. Source: U.S. Geological Survey Online Historical Map Collection.

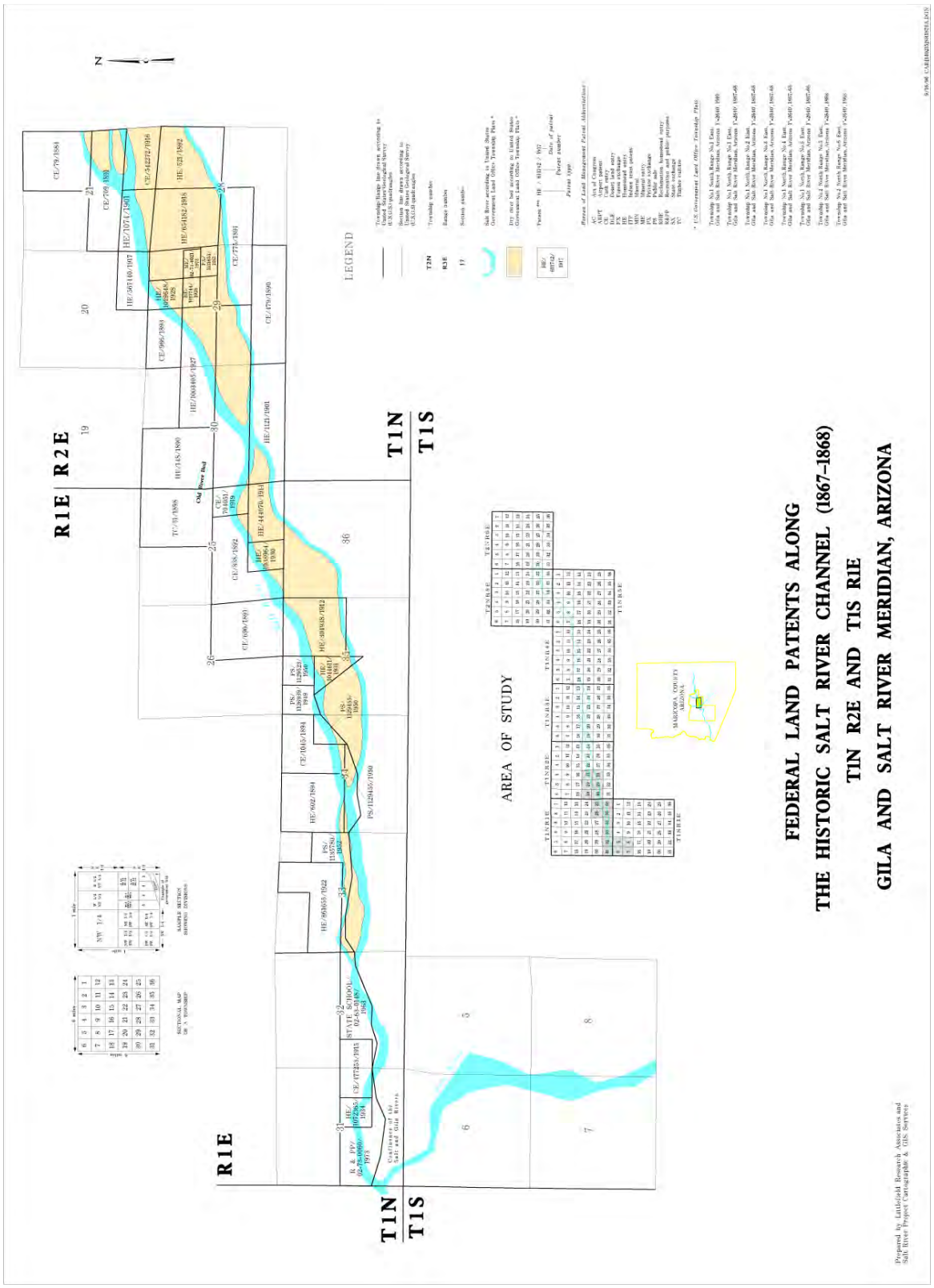

Figure 13: Federal Land Patents along the Salt River Channel (1867-1868), T1N, R2E, and T1S, R1E. Source: Salt River Project Cartographics and Littlefield Historical Research.

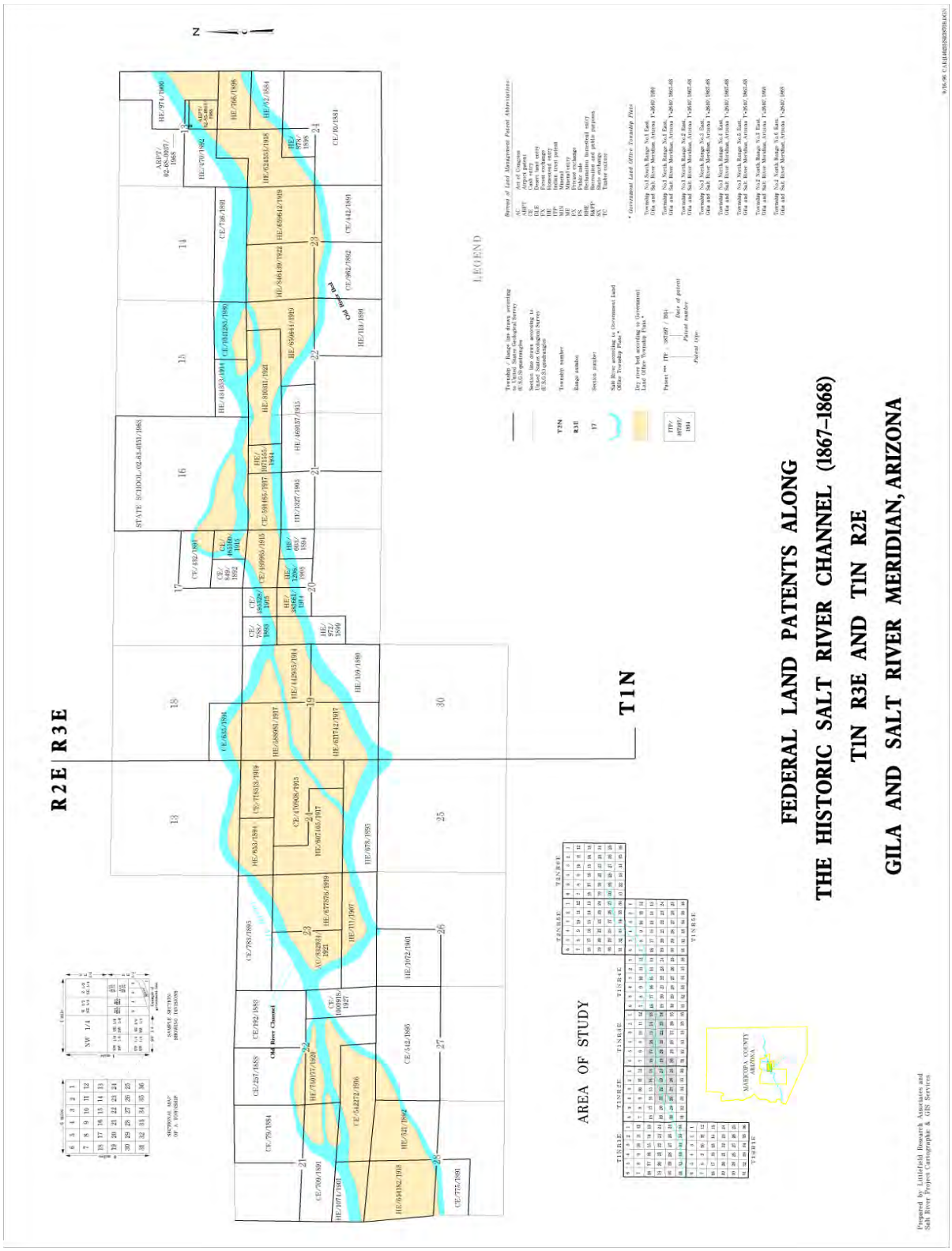

Figure 14: Federal Land Patents along the Historic Salt River Channel (1867-1868), T1N, R3E, and T1N, R2E. Source: Salt River Project Cartographics and Littlefield Historical Research.

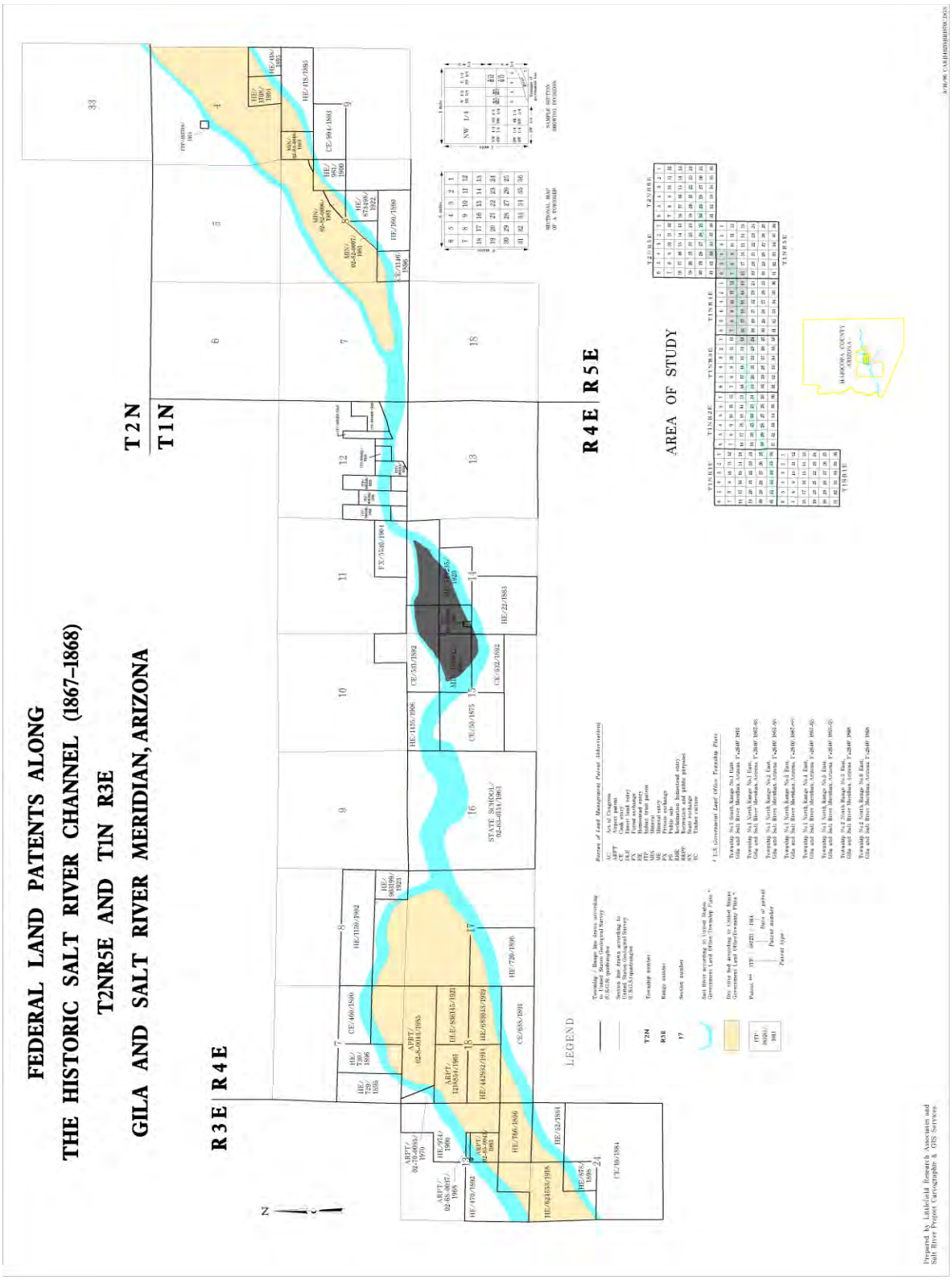

Figure 15: Federal Land Patents along the Historic Salt River Channel (1867-1868), T2N, R5E, and T1N, R3E. Source: Salt River Project Cartographics and Littlefield Historical Research.

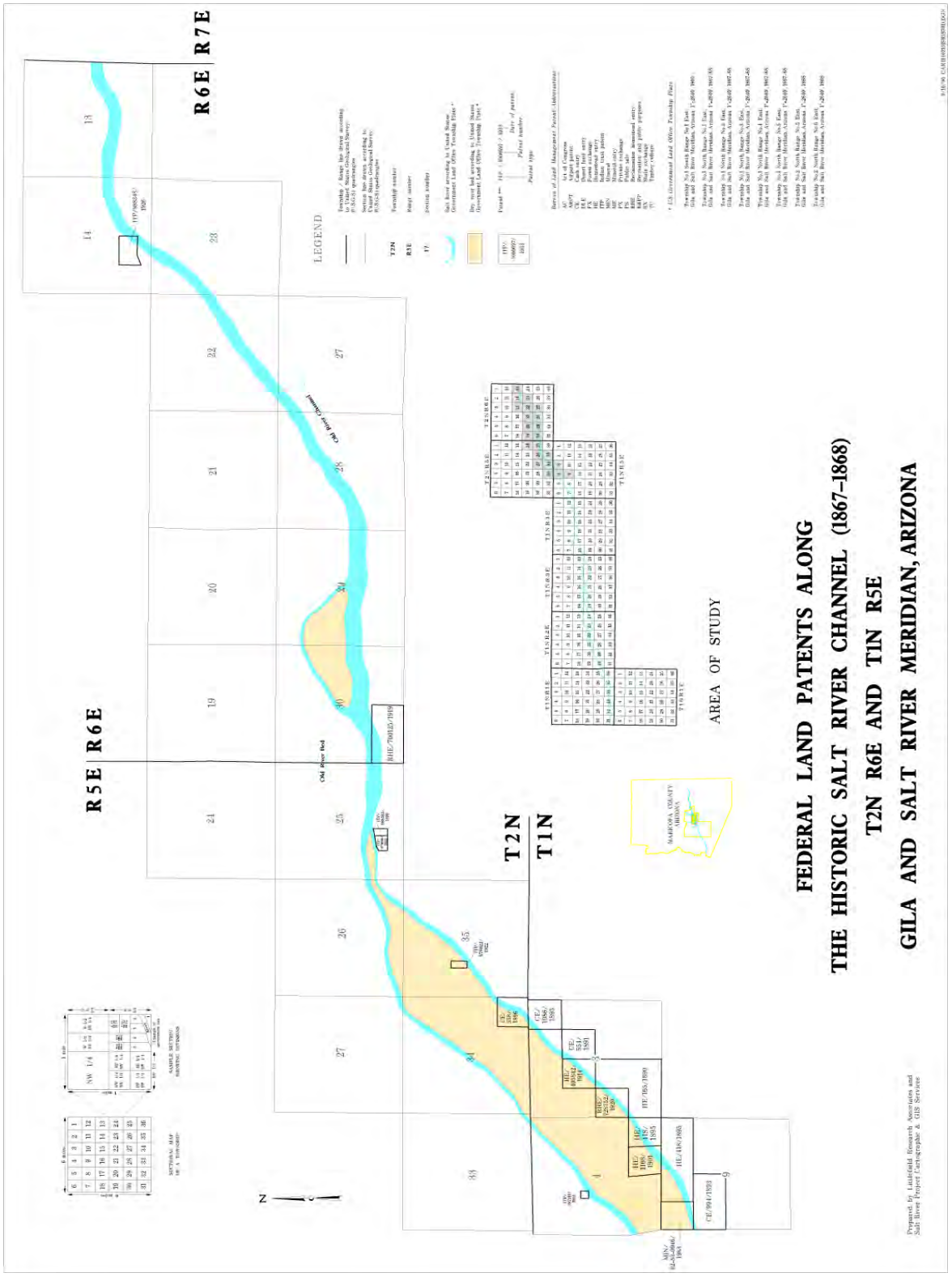

Figure 16: Federal Land Patents along the Historic Salt River Channel (1867-1868), T2N, R6E, and T1N, R5E. Source: Salt River Project Cartographics and Littlefield Historical Research.

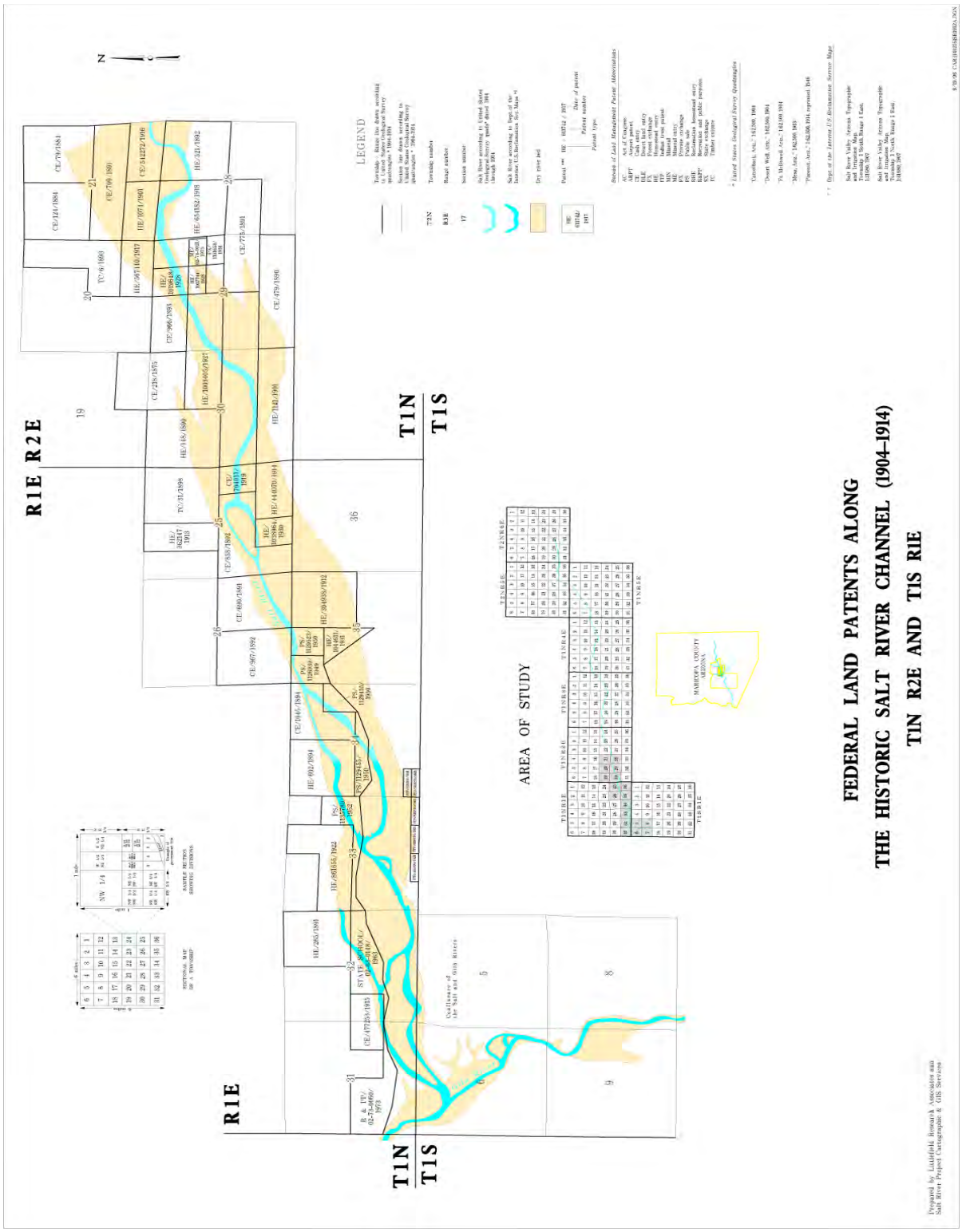

Figure 17: Federal Land Patents along the Historic Salt River Channel (Early 1900s), T1N, R2E, and T1S, R1E. Source: Salt River Project Cartographics and Littlefield Historical Research.

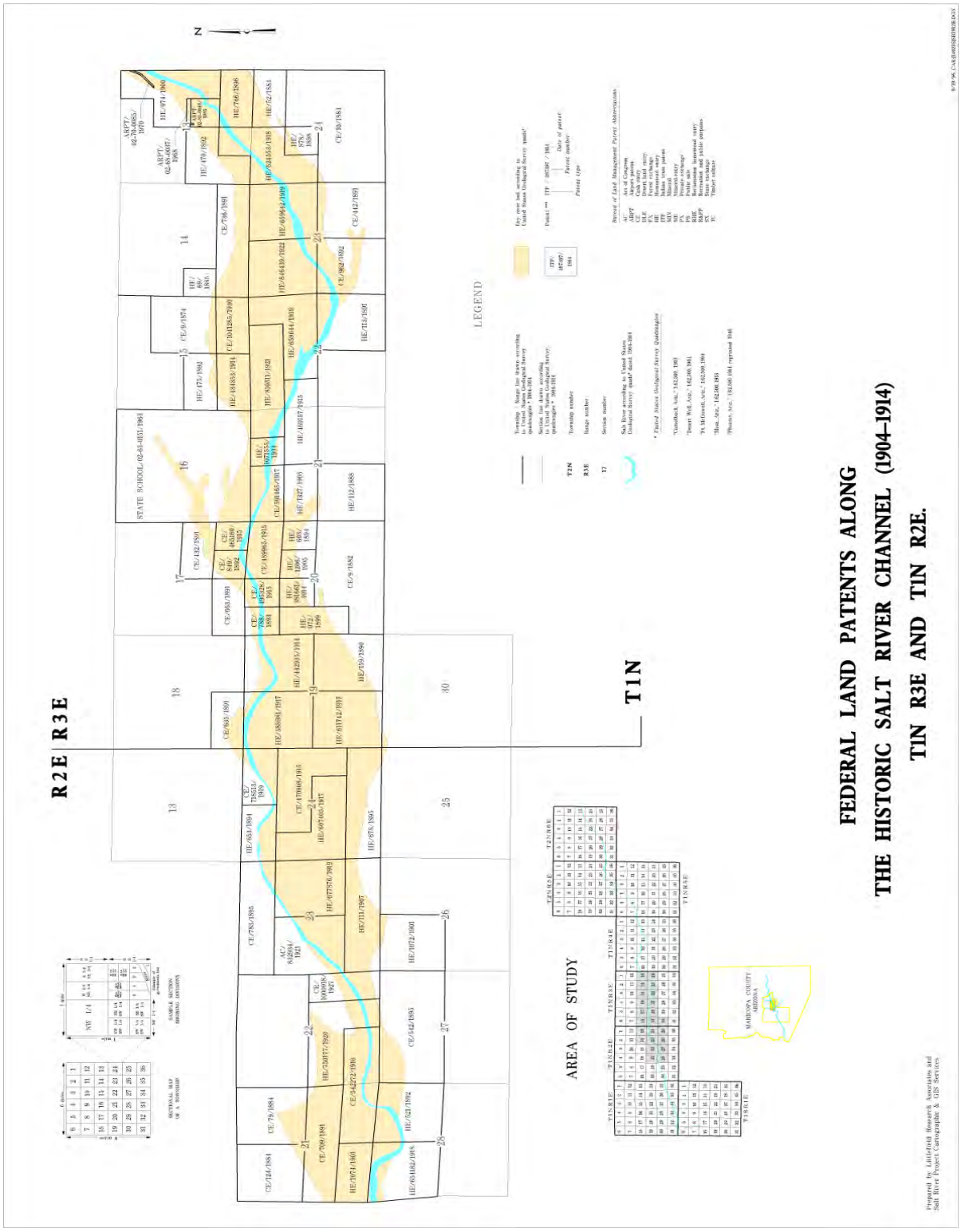

Figure 18: Federal Land Patents along the Historic Salt River Channel (Early 1900s), T1N, R3E, and T1S, R2E. Source: Salt River Project Cartographics and Littlefield Historical Research.

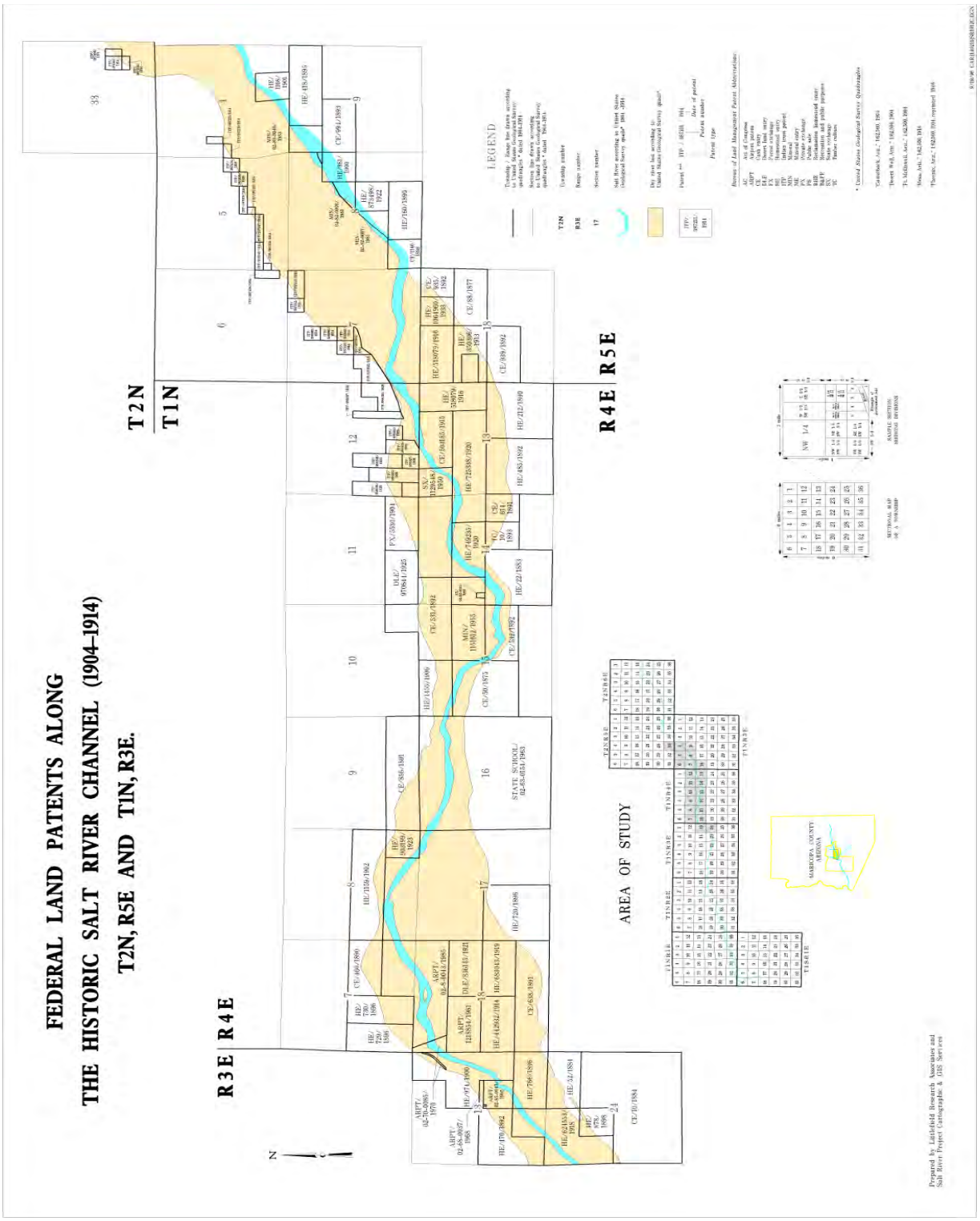

Figure 19: Federal Land Patents along the Historic Salt River Channel (Early 1900s), T2N, R5E, and T1S, R3E. Source: Salt River Project Cartographics and Littlefield Historical Research.

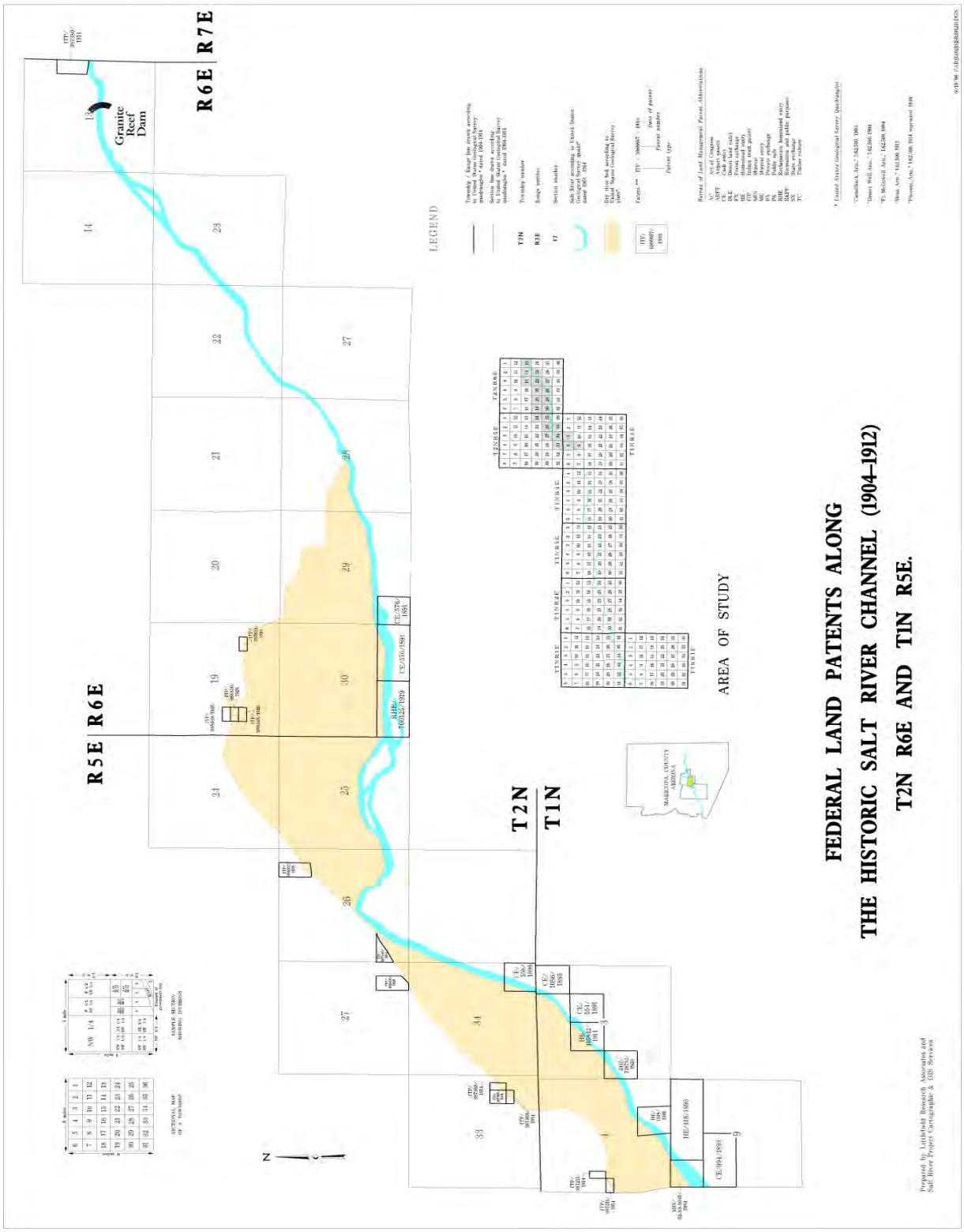

Figure 20: Federal Land Patents along the Historic Salt River Channel (Early 1900s), T2N, R6E, and T1S, R5E. Source: Salt River Project Cartographics and Littlefield Historical Research.

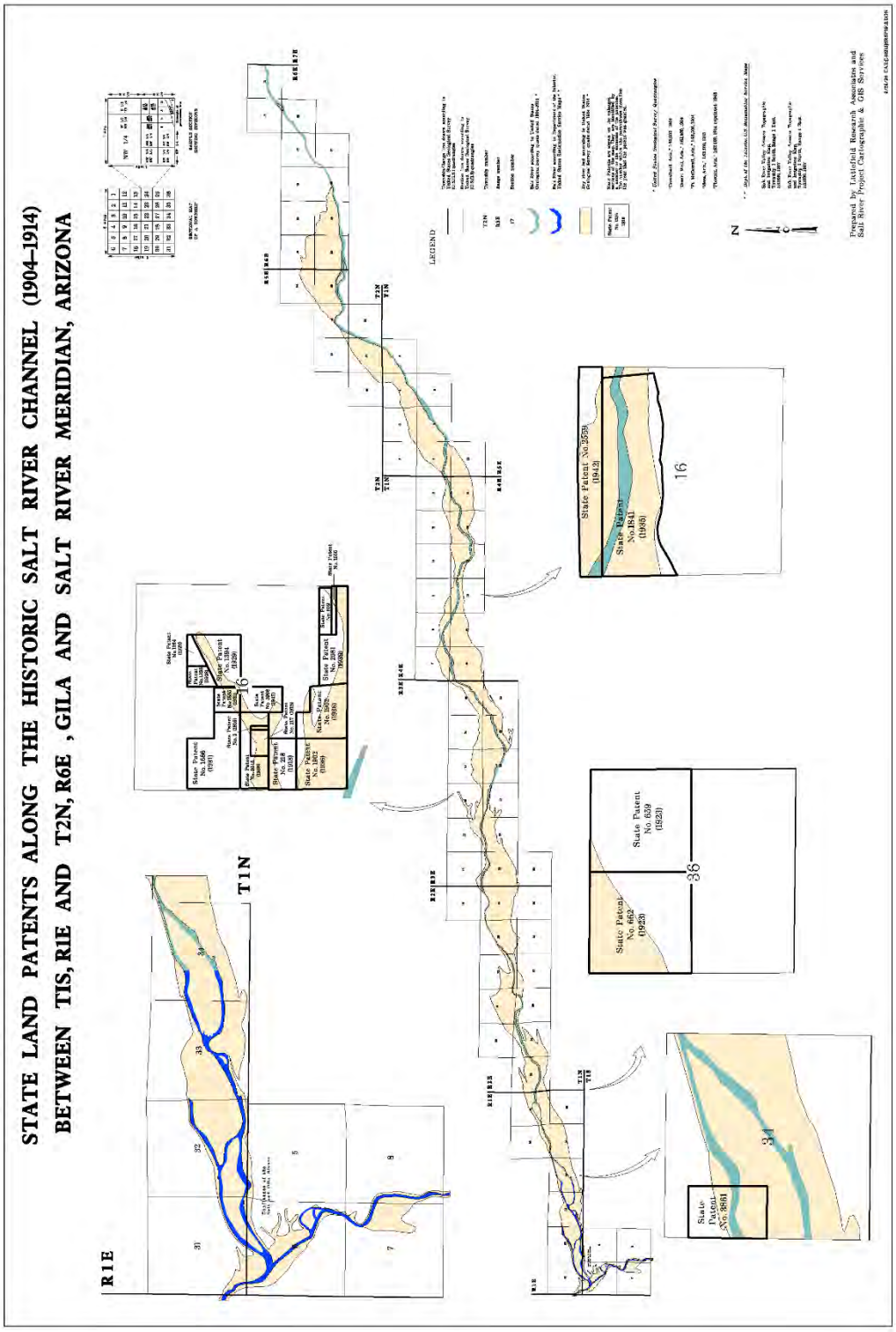

Figure 27: Arizona State Land Patents along the Historical Salt River Channel, T1N, R3E, and T1S, R2E. Source: Salt River Project Cartographics and Littlefield Historical Research.

Figure 31: Salt River in flood, 1888, as viewed from Tempe Butte toward Phoenix. Note that the river spreads out downstream from the railroad bridge, a characteristic that contributed to the multiple and shifting channels recorded by U.S. Government surveyors on their survey plats and in their field notes in the nineteenth century. The building in the foreground is Charles T. Hayden's mill. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 32: View from Tempe Butte toward Phoenix, 1905, with the Salt River not in flood. Note the narrow channel just below the railroad bridge followed by the streambed swinging to the right (where in the previous 1888 photo, the Salt River in flood spread out across the entire countryside). Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 33: Train wreck on Salt River railroad bridge, 1902. Also observe the height of the concrete towers supporting the bridge and compare to how little of those towers appear during floods. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 34: Train wreck on Salt River railroad bridge, 1902. Note that the engine and men are standing in the Salt River's bed. Source: Special Collections, Arizona State University, Tempe, Arizona.

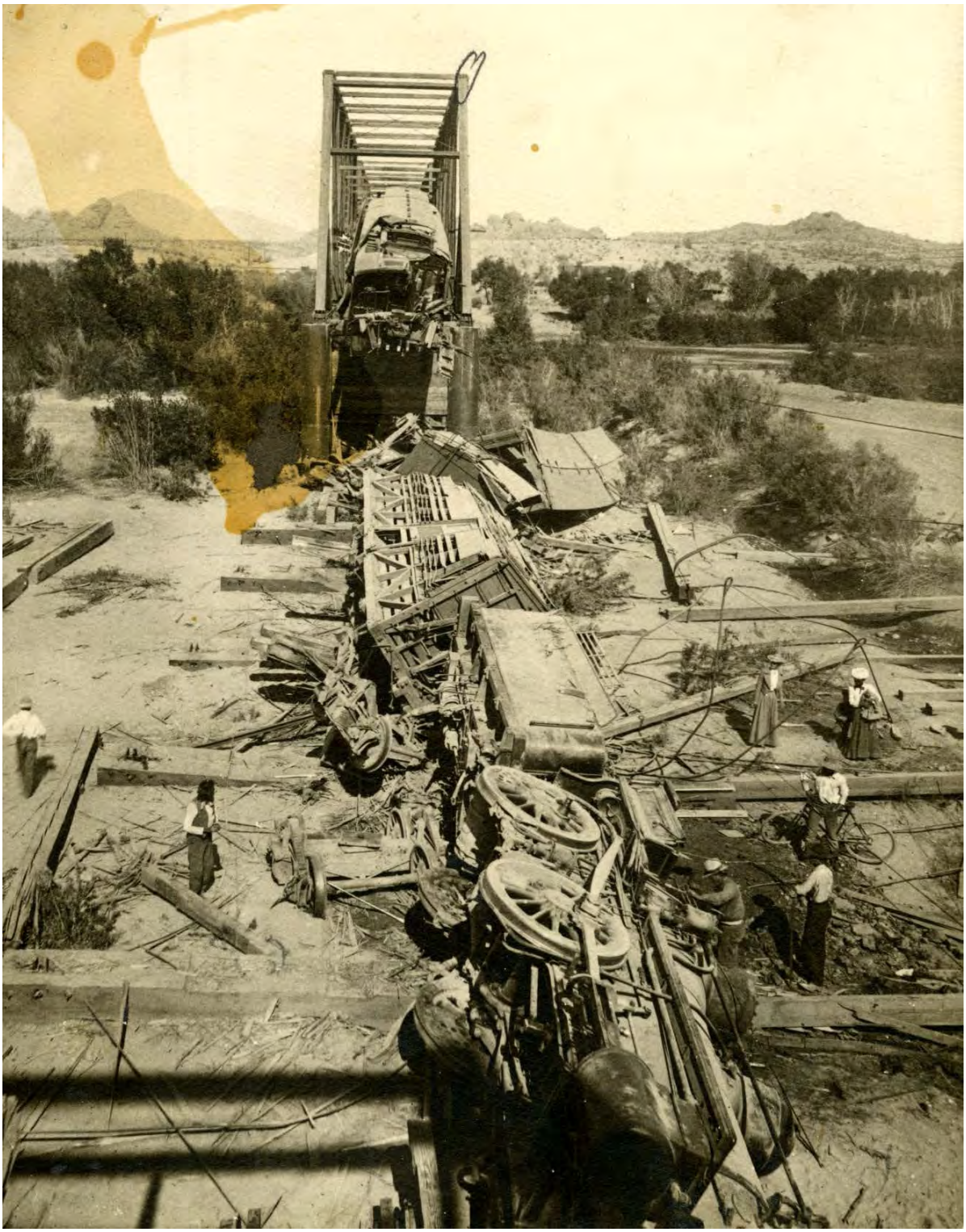

Figure 35: Train wreck on Salt River railroad bridge, 1902. View from Tempe end of bridge. Also observe the phreatophyte growth in the river bed – a characteristic of rivers that are frequently dry. (Stain is on the original source photograph.) Source: Special Collections, Arizona State University, Tempe, Arizona.

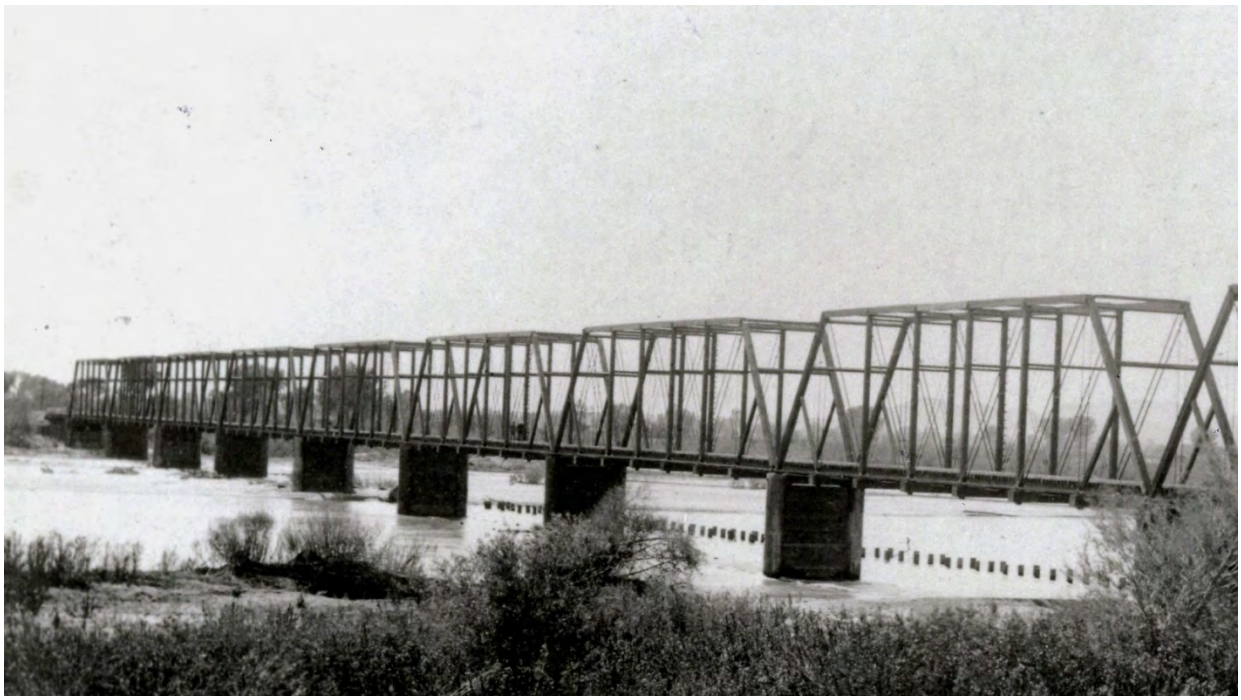

Figure 36: Salt River in flood at the railroad bridge near Phoenix and Tempe, 1900. Observe the height of the water around the towers supporting the bridge, and contrast that to the preceding photos of the train wreck on the bridge. Also note the rapid current around the tower in the foreground. Source: Special Collections, Arizona State University, Tempe, Arizona.

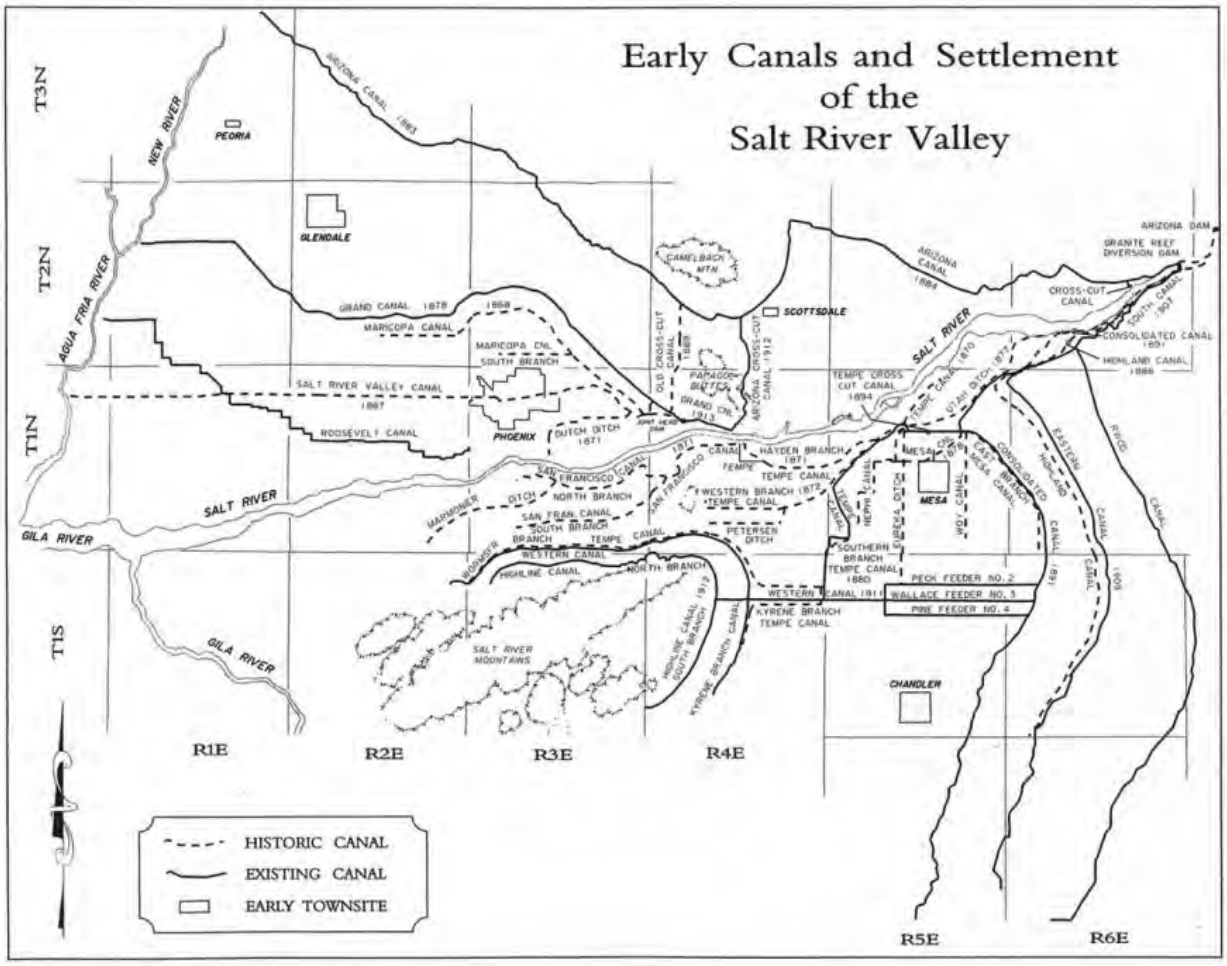

Figure 37: Early Canals and Settlement of the Salt River Valley. Source: Salt River Project, Phoenix, Arizona.

Figure 38: Arizona Canal wood-crib diversion dam, 1902. Source: U.S. Library of Congress, Washington, D.C.

Figure 39: Remains of Arizona Dam, washed out April 13, 1905. Source: Salt River Project Archives, Phoenix, Arizona.

Figure 40: Salt River Canyon, ca. 1900. Note the shallow stream and rapids. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 41: Salt River Canyon, ca. 1900. Note the precipitous cliffs that made constructing the Reclamation Service road from Phoenix to Roosevelt very difficult. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 42: Salt River Canyon, ca. 1900. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 43: Salt River Canyon showing Roosevelt Dam site, January 16, 1904. Note shallow and narrow stream. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.

Figure 44: Roosevelt Dam under construction, July 27, 1906. There were no objections by navigation interests to the construction of the dam found in any Reclamation Service records. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.

Figure 45: Site of cut for Roosevelt Road (notch in rocks) before excavation, ca. 1906. Cut location is immediately above Roosevelt Dam site. Note man on right side of notch. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.

Figure 46: Work on excavating notch on Roosevelt Road above Roosevelt Dam site, ca. 1906. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver Colorado.

Figure 47: Completed through cut on high line wagon road directly above the east wall of the Salt River dam site, 1907 (viewed from opposite side of cut from previous illustration). Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.

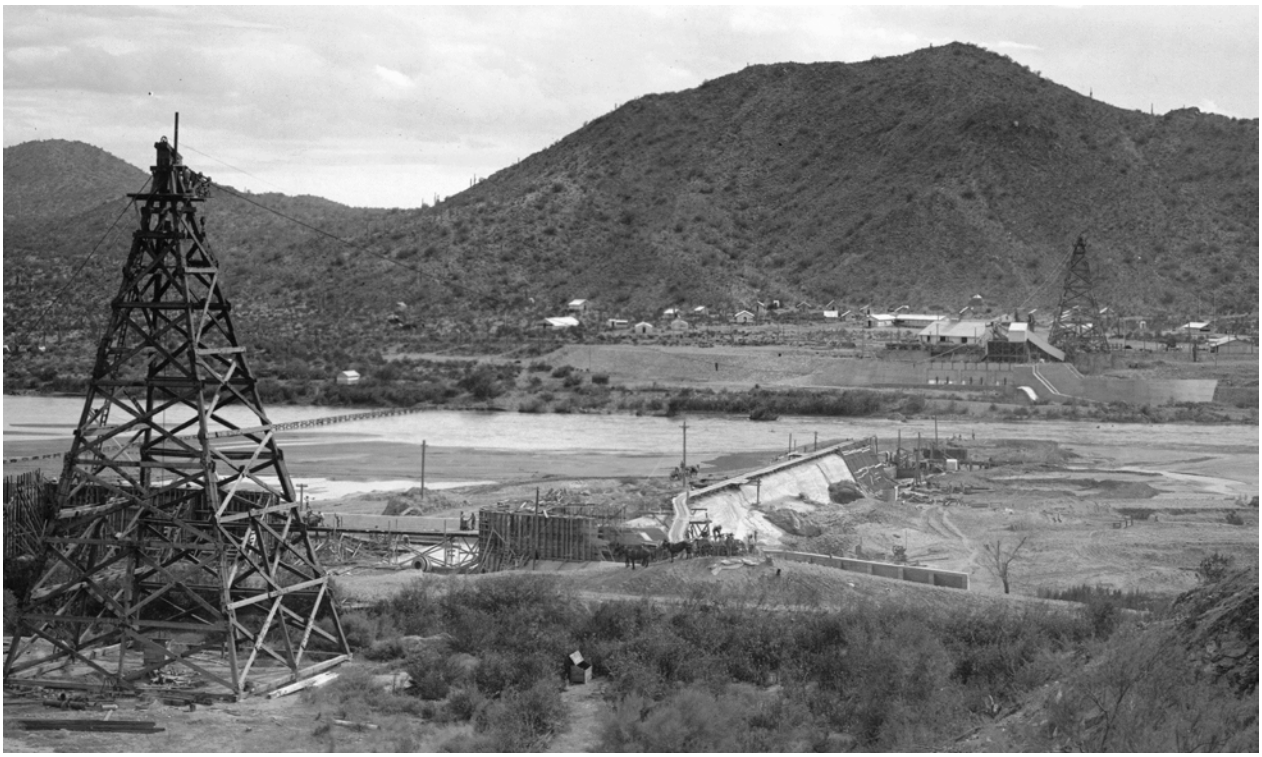

Figure 48: Granite Reef Dam under construction, October 31, 1907. Note the wooden footbridge across the shallow Salt River in the left rear of the photograph. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.

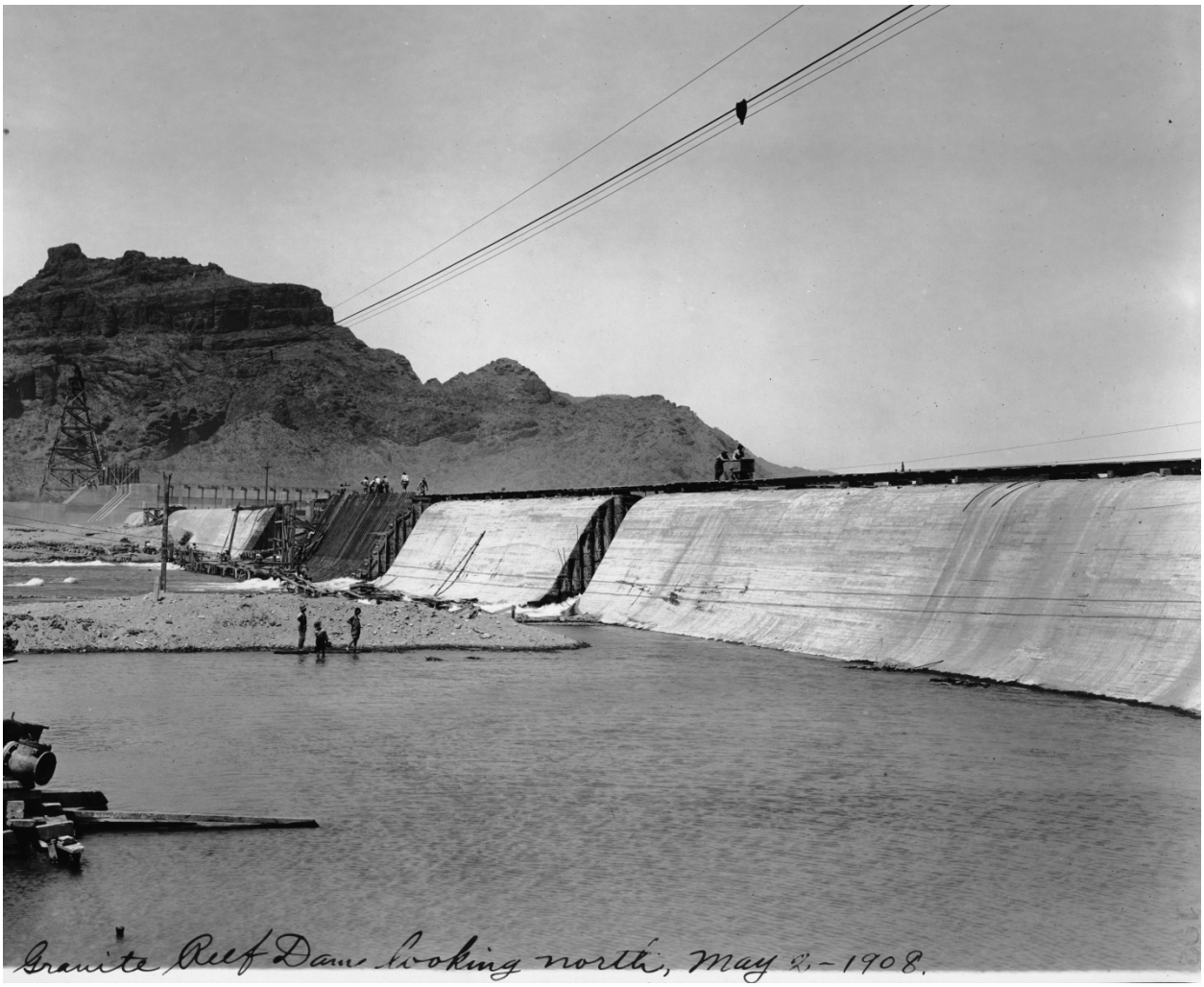

Figure 49: Granite Reef Dam, May 2, 1908. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.

Figure 50: Granite Reef Dam nearing completion, May 31, 1908. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.

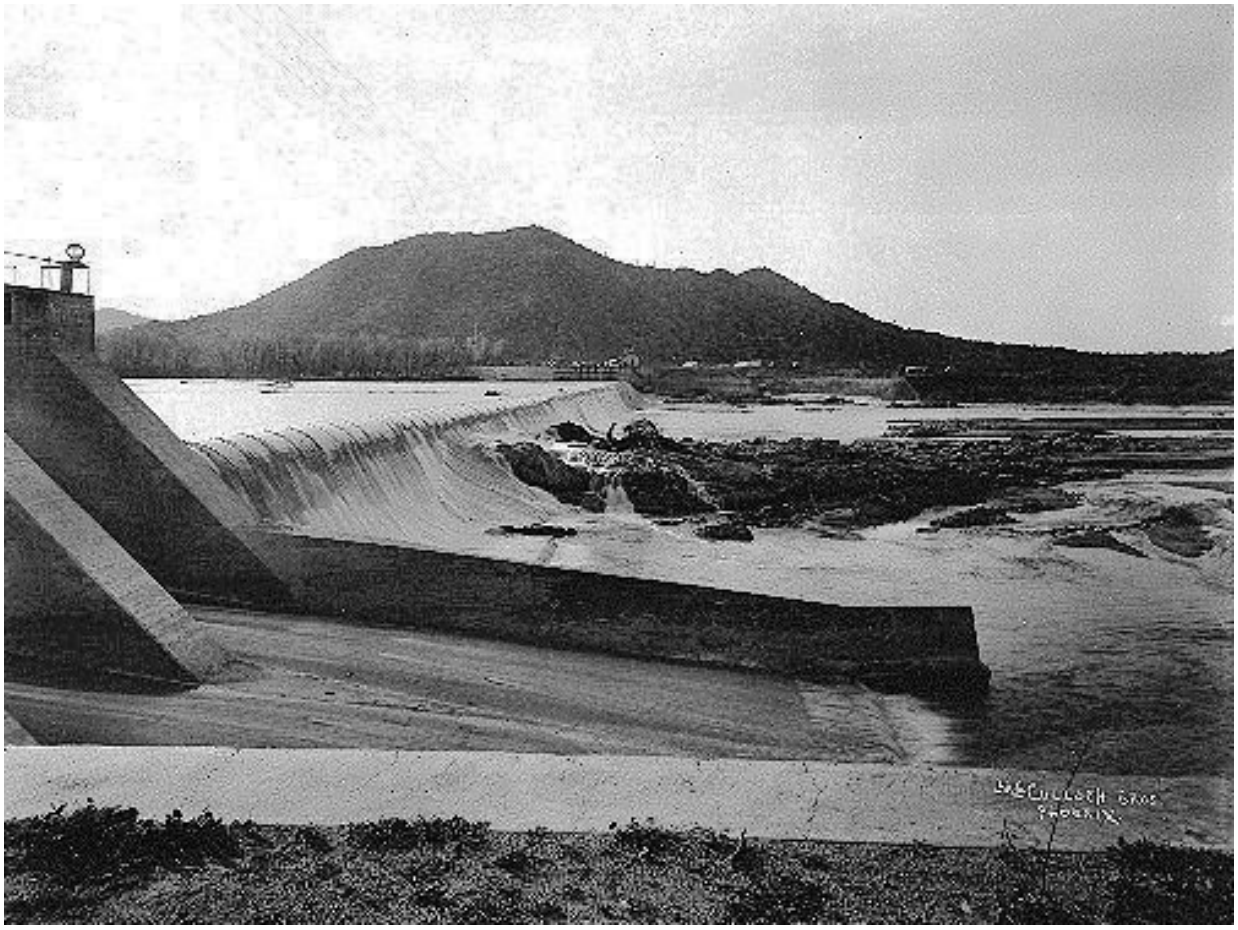

Figure 51: Granite Reef Dam after completion, ca. 1909. Source: Phoenix Public Library, Phoenix, Arizona.

Figure 52: Freighting supplies to Roosevelt Dam site, ca. 1907. The Salt River was not used to carry supplies either to or from the dam site. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.

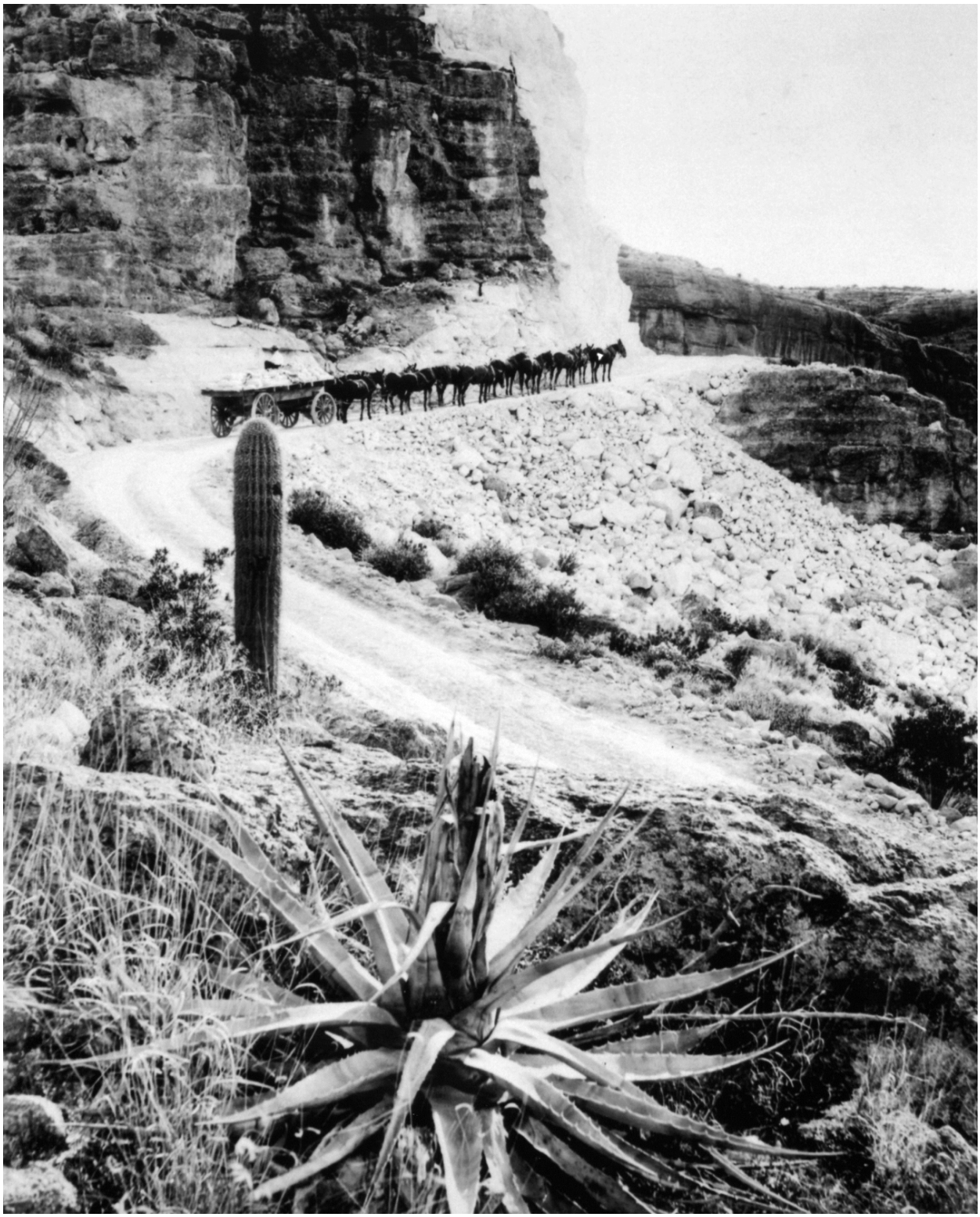

Figure 53: Freighting supplies along Roosevelt Road to dam site, ca. 1907. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.

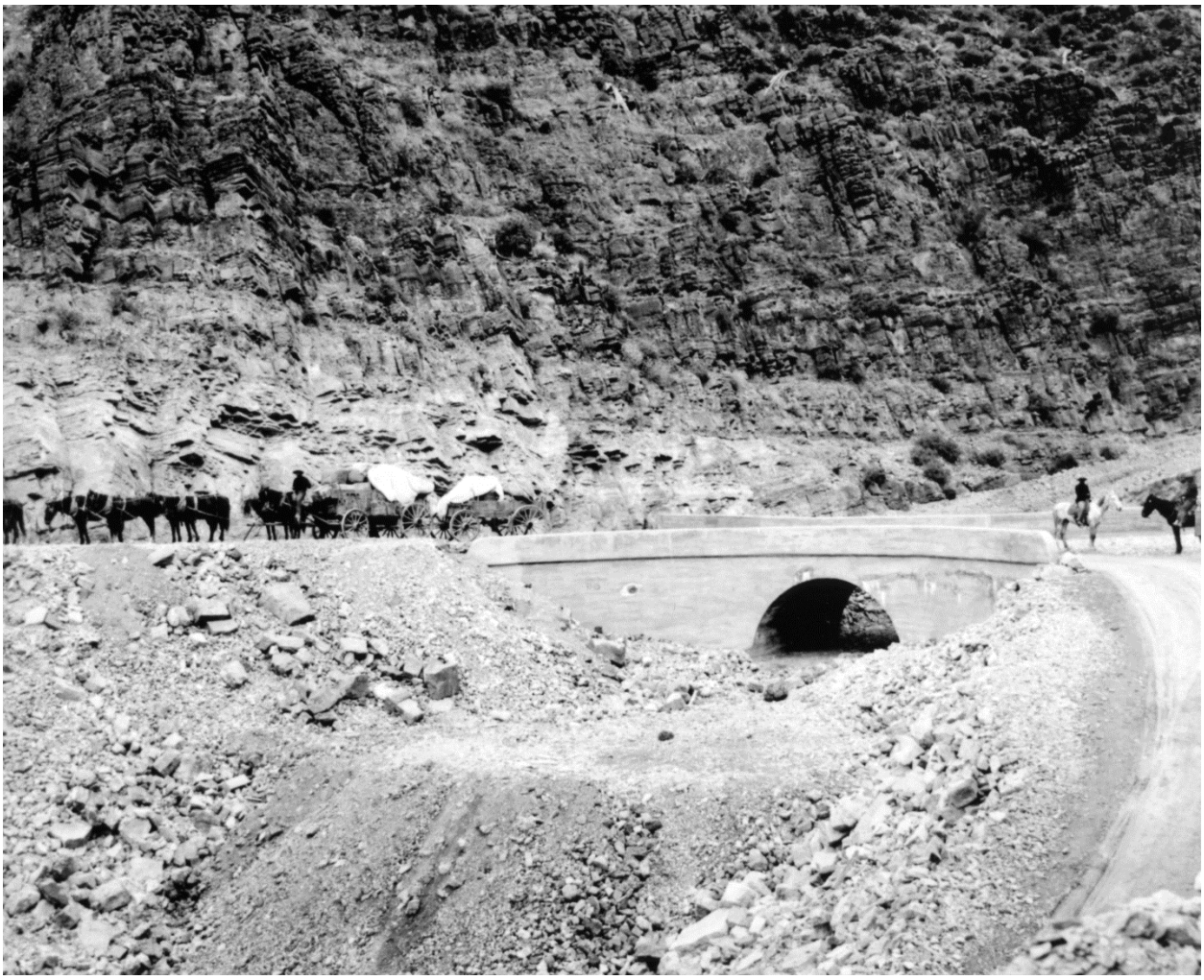

Figure 54: Freighting supplies to Roosevelt Dam site along the Roosevelt Road, 1906. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.

Figure 55: Hauling sacks of concrete down from site of Roosevelt Dam to Granite Reef Diversion dam site, ca. 1907. Not only did the Reclamation Service have to haul supplies up to the Roosevelt Dam site, but the Service also had to carry concrete down from Roosevelt, where the Service's concrete plant was located. The river was not used to convey materials in either direction. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.

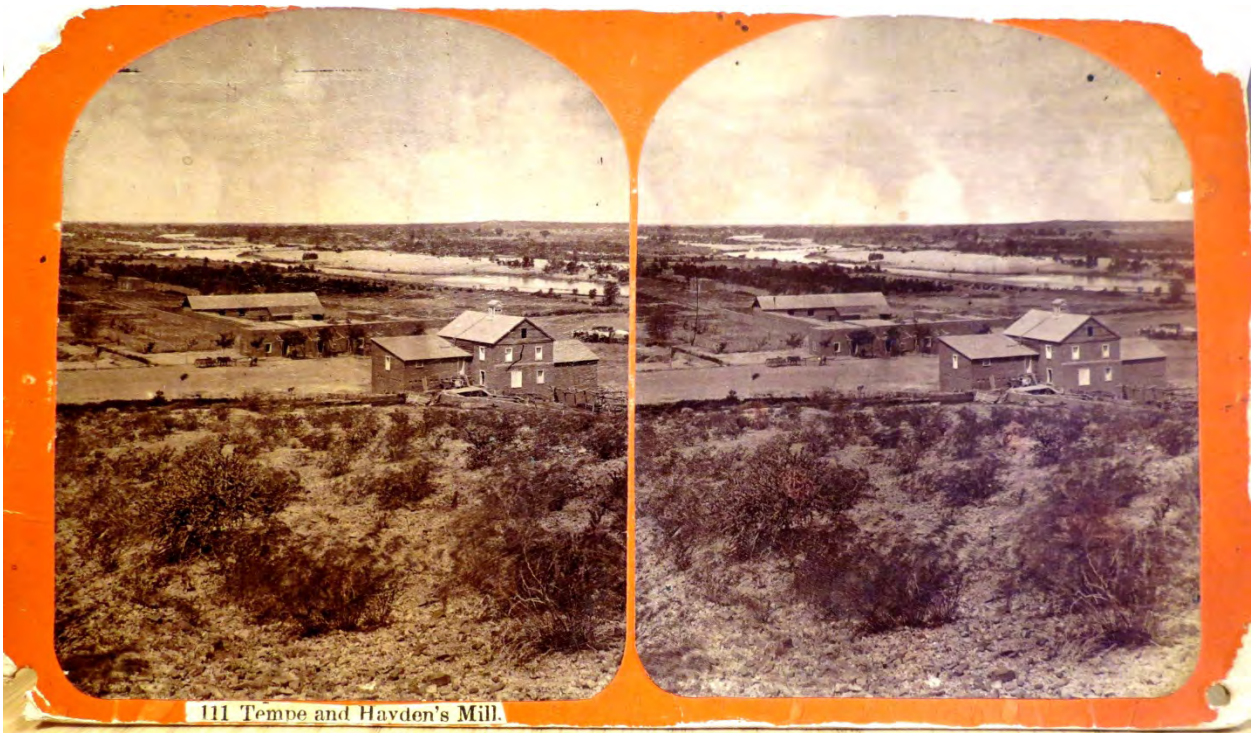

Figure 56: Stereographic photograph of Charles T. Hayden's mill, ca. 1880, as seen from Tempe Butte with Salt River and Phoenix in background. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 57: Fording the Salt River ca. early to mid-1870s, with Tempe Butte in background. The top of Charles Hayden's mill can be seen just to the right above the buggy's top. Source: U.S. Library of Congress, Washington, D.C.

Figure 58: Charles T. Hayden's ferry between Phoenix and Tempe, 1895. Note the line used to move ferry across the Salt River. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 59: Charles T. Hayden's Ferry, January 15, 1901. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 60: "Mr. Wilson's" ferry across the Salt River, 1900. Note the size of the skiff and the adjacent log footbridge. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 61: Fording the Salt River from Phoenix to Tempe, ca. 1910. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 62: Automobiles being towed out of the Salt River near Phoenix, ca. 1910. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 63: Fording the Salt River near Phoenix, ca. 1910. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 64: Stuck in the sand in the Salt River, 1914. Source: Salt River Project Archives, Phoenix, Arizona.

Figure 65: Automobile stuck in Salt River, 1915. Source: Special Collections, Arizona State University, Tempe, Arizona.

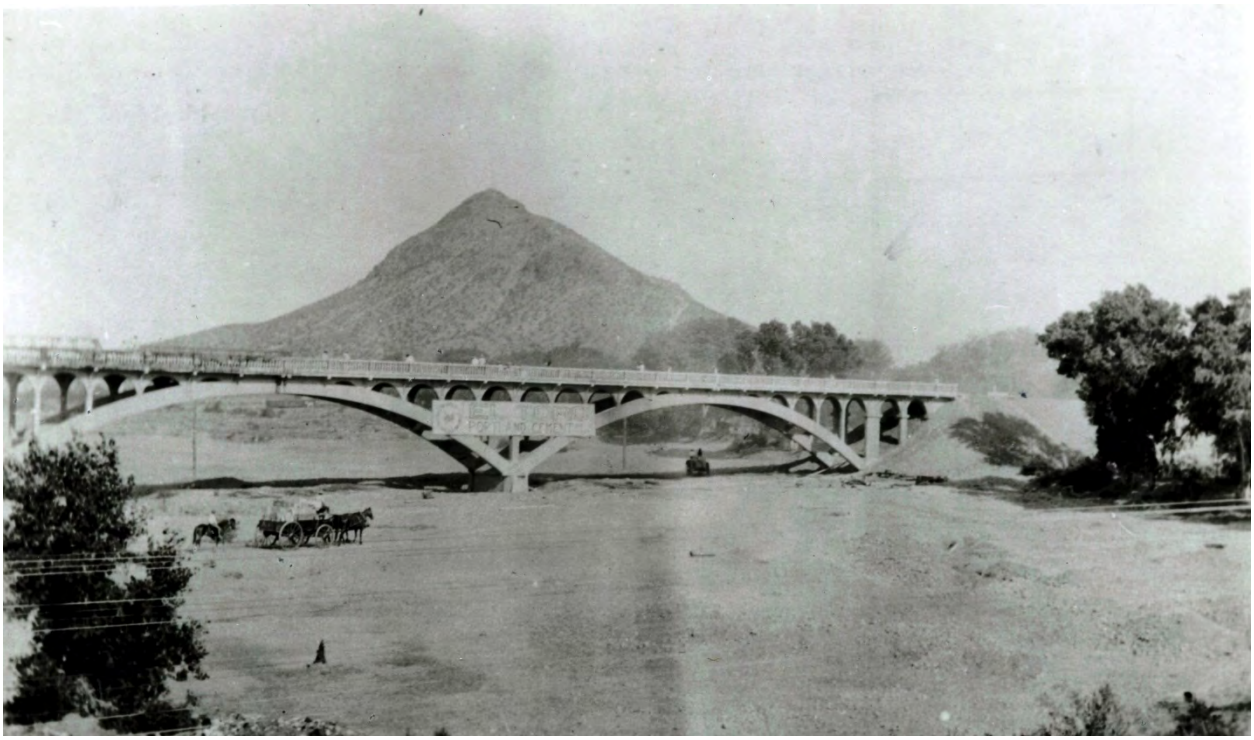

Figure 66: Wagon fording Salt River, ca. 1914. Note second wagon under Ash Avenue Bridge. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 67: Salt River flood, February 1905. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 68: Salt River flood at foot of Seventh Street, Phoenix, April 1905. Source: Special Collections, Arizona State University, Tempe, Arizona.

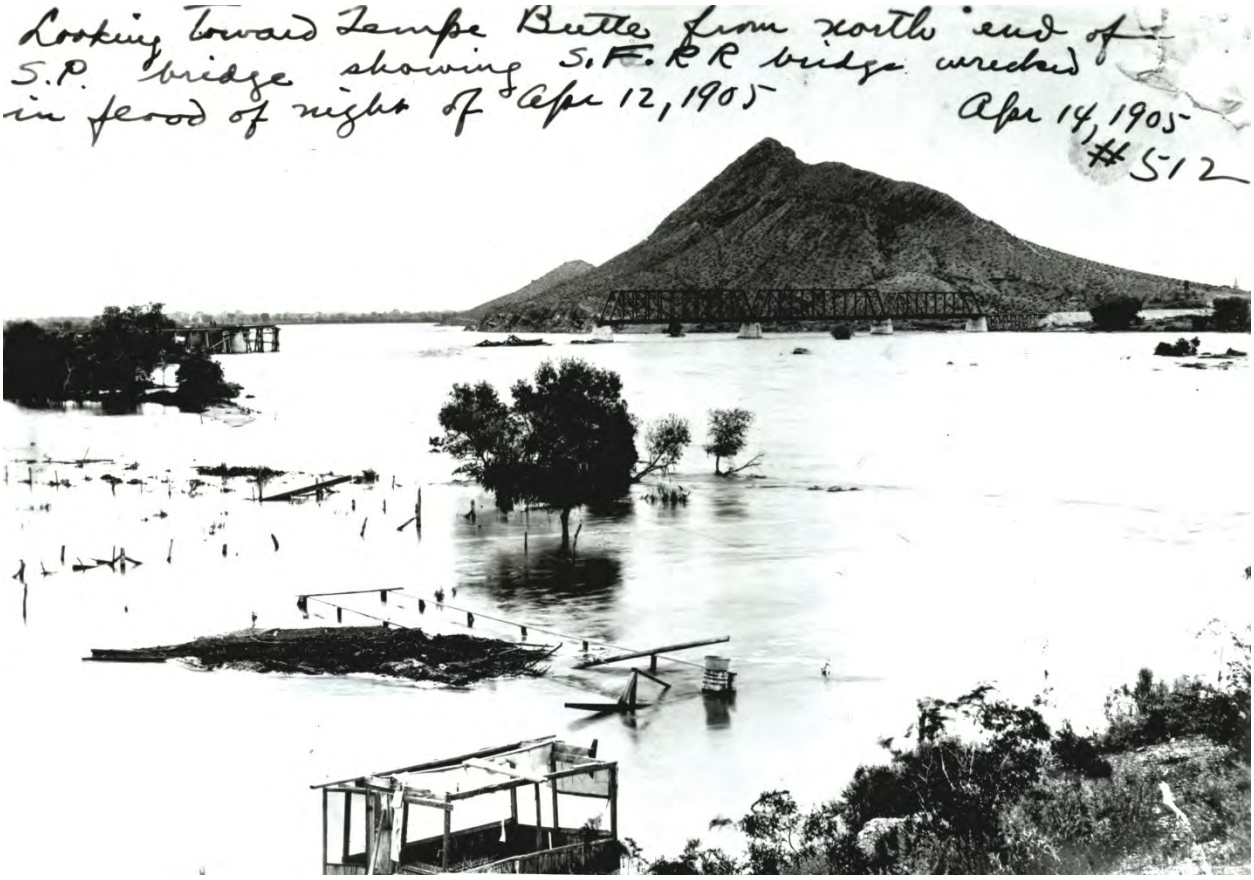

Figure 69: Salt River flood, April 1905. Note destroyed railroad bridge in background. Source: Special Collections, Arizona State University, Tempe, Arizona.

Figure 70: Salt River railroad bridge destroyed by April 1905 flood. Source: Arizona Memory Project (online photographs from multiple archival sources).

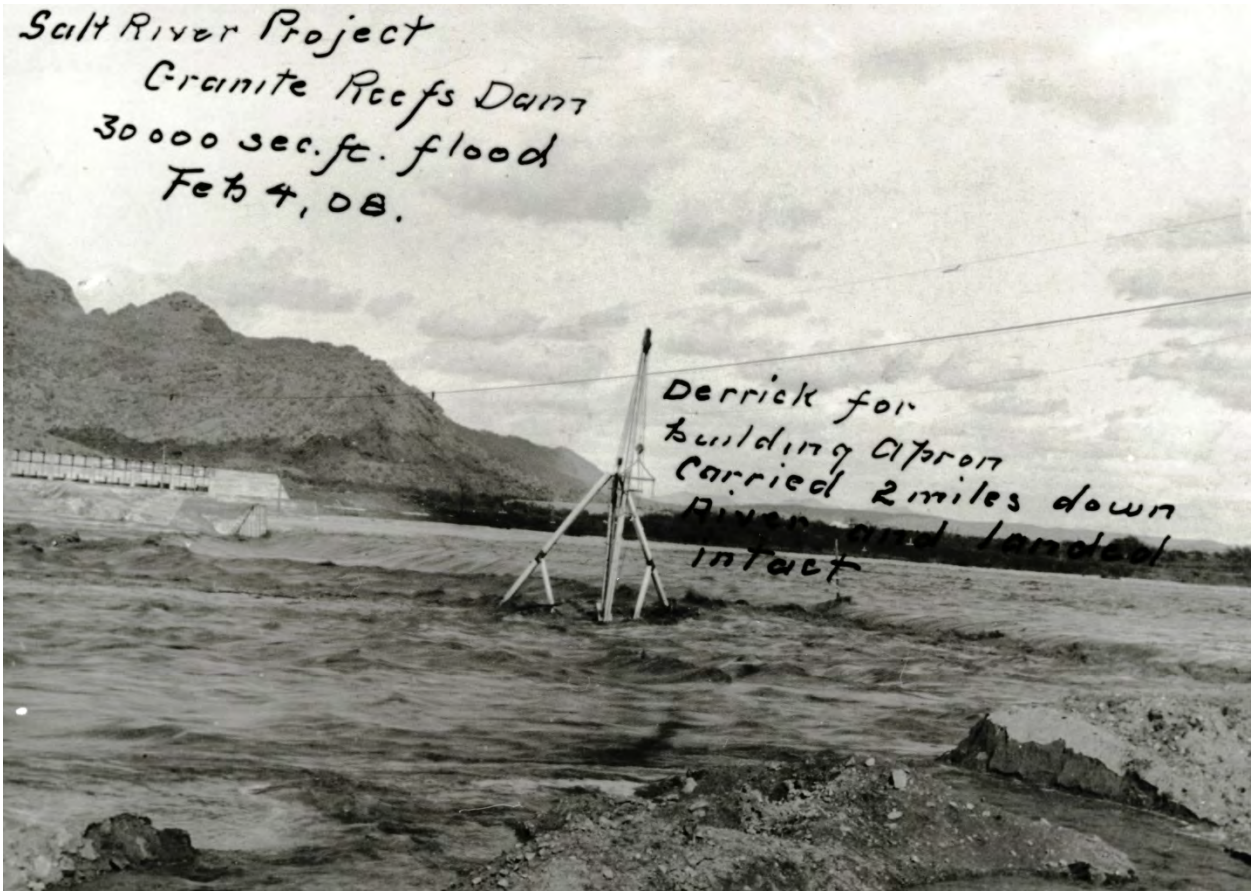

Figure 71: Flood damage at Granite Reef Dam (then under construction), February 4, 1908. Source: Salt River Project Archives, Tempe, Arizona.

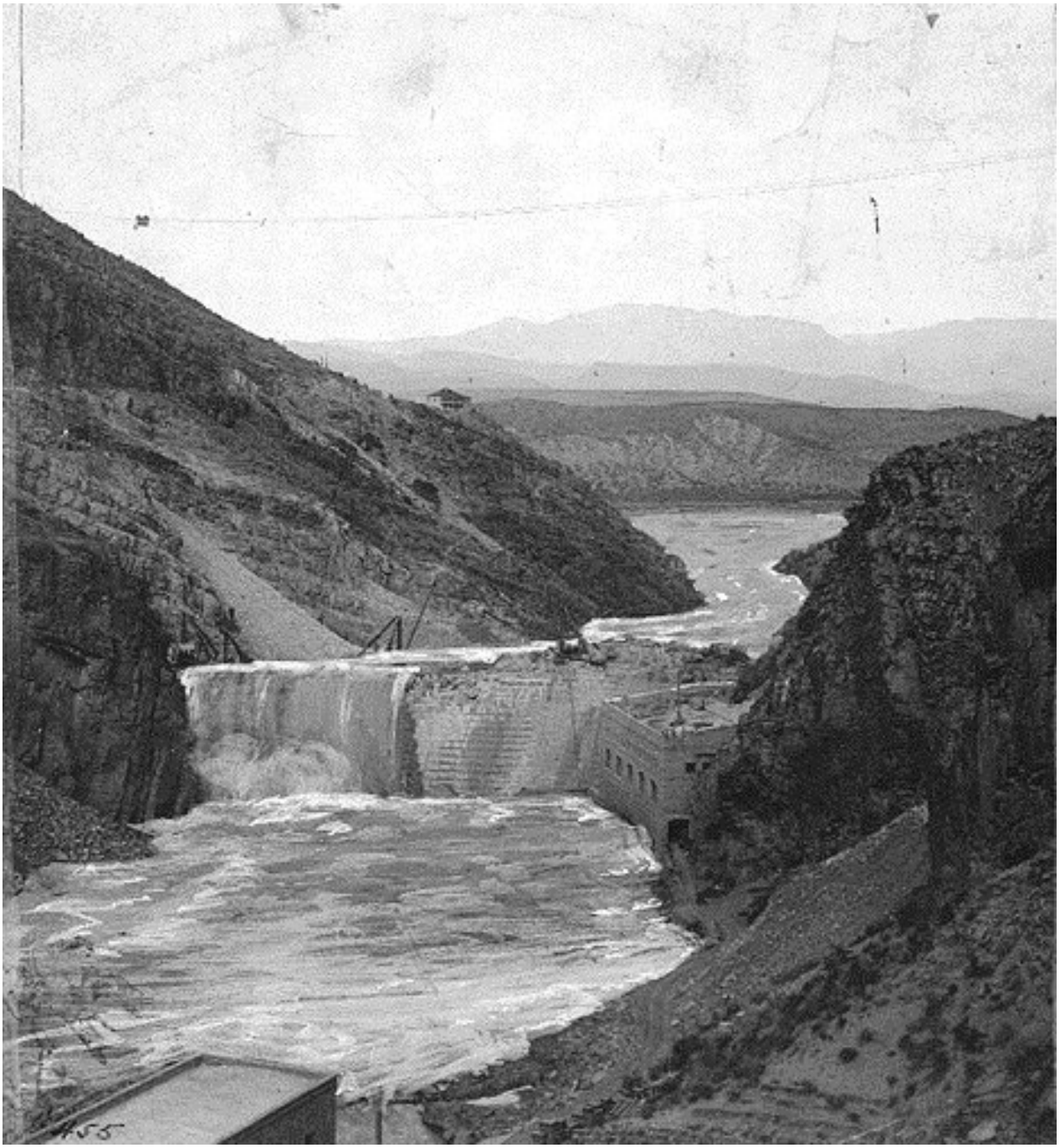

Figure 72: Roosevelt Dam under construction during flood, ca. 1907 or 1908. Source: Phoenix Public Library, Phoenix, Arizona.

Figure 73: President Theodore Roosevelt dedicating Roosevelt Dam in 1910. Despite its size, Roosevelt Dam did not stop all flooding on the Salt River. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.

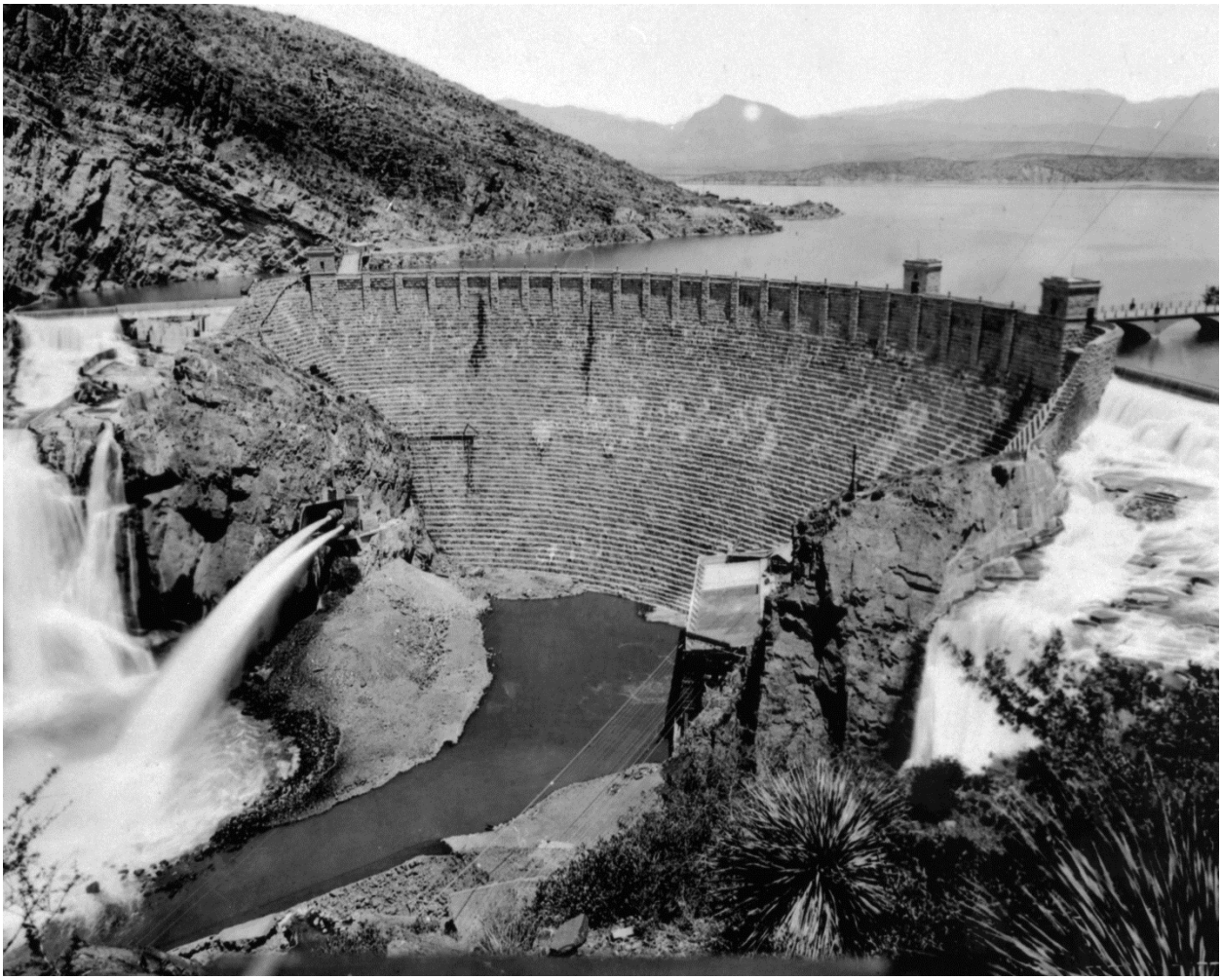

Figure 74: Roosevelt floodways overflowing, 1912. Source: Records of the U.S. Bureau of Reclamation, U.S. National Archives branch, Denver, Colorado.

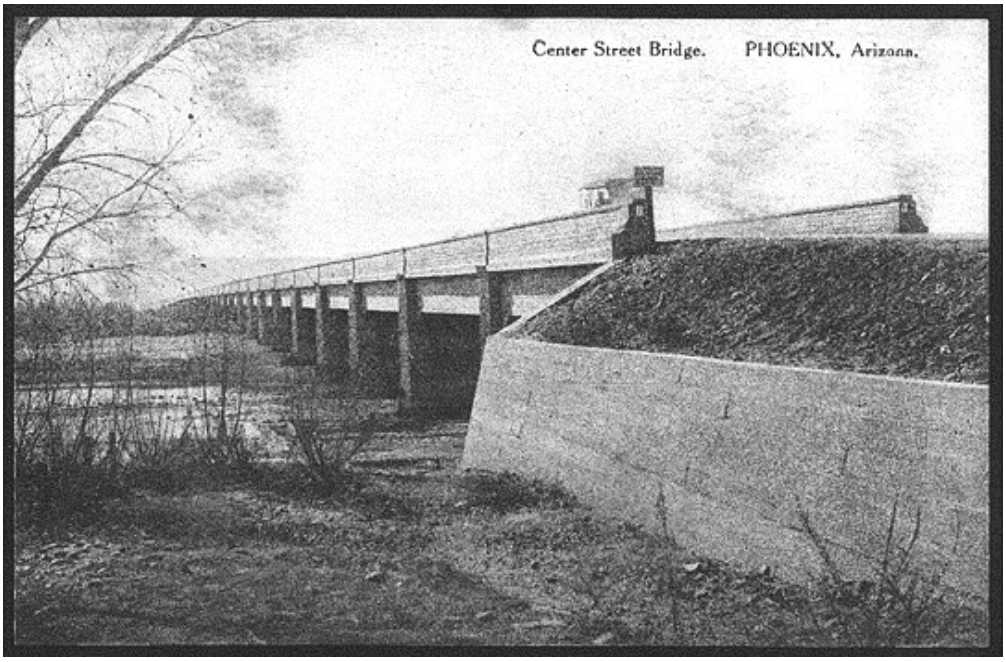

Figure 75: Center Street Bridge in Phoenix, ca. 1910. Note low flow in the Salt River. Source: Phoenix Public Library, Phoenix, Arizona.

Figure 76: Ash Avenue Bridge between Phoenix and Tempe under construction using convict labor, 1912. Note heavy flow in Salt River. Source: U.S. Library of Congress, Washington, D.C.

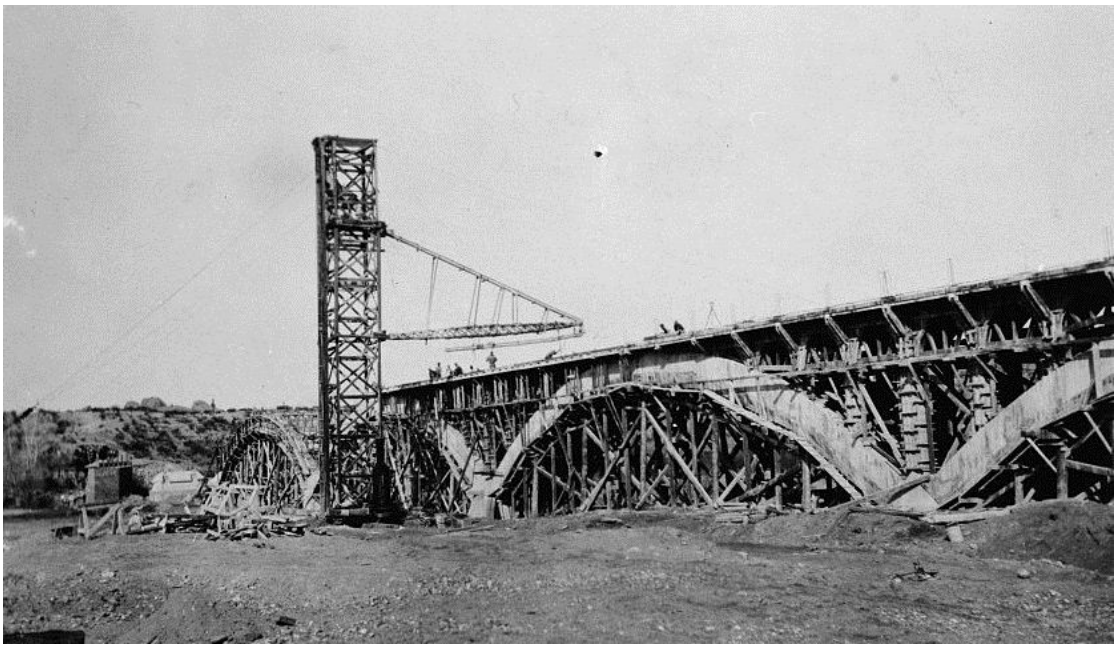

Figure 77: Ash Avenue Bridge under construction, 1912. Note dry Salt River bed. Source: U.S. Library of Congress, Washington, D.C.

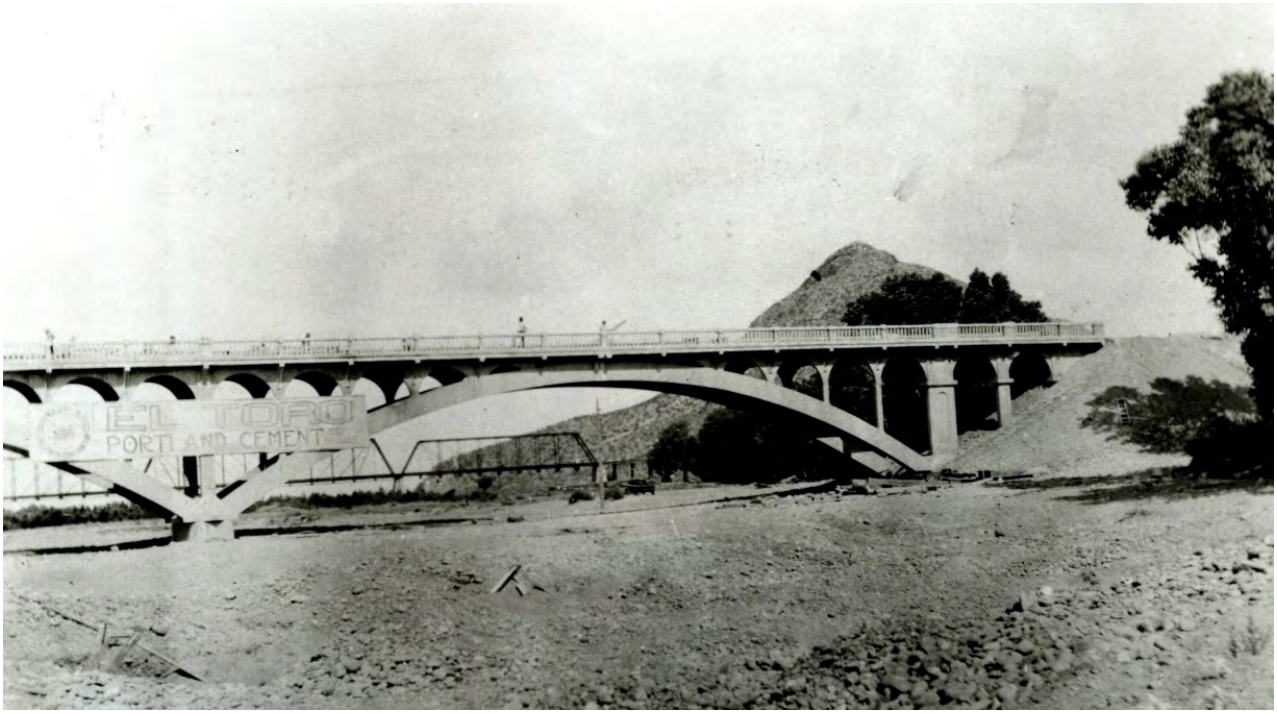

Figure 78: Ash Avenue Bridge, ca. 1913. Railroad bridge and Tempe Butte in background. Note dry Salt River. Source: Special Collections, Arizona State University, Tempe, Arizona.

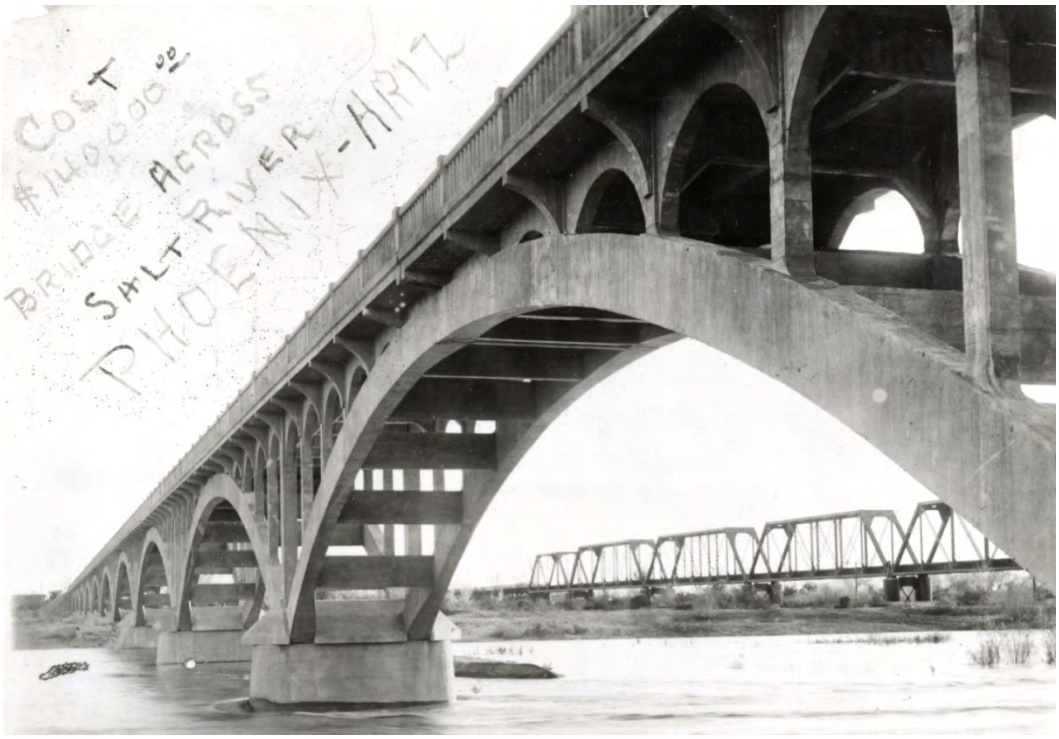

Figure 79: Ash Avenue Bridge over Salt River during high water, ca. 1913. Note cost of bridge. Source: Special Collections, Arizona State University, Tempe, Arizona.

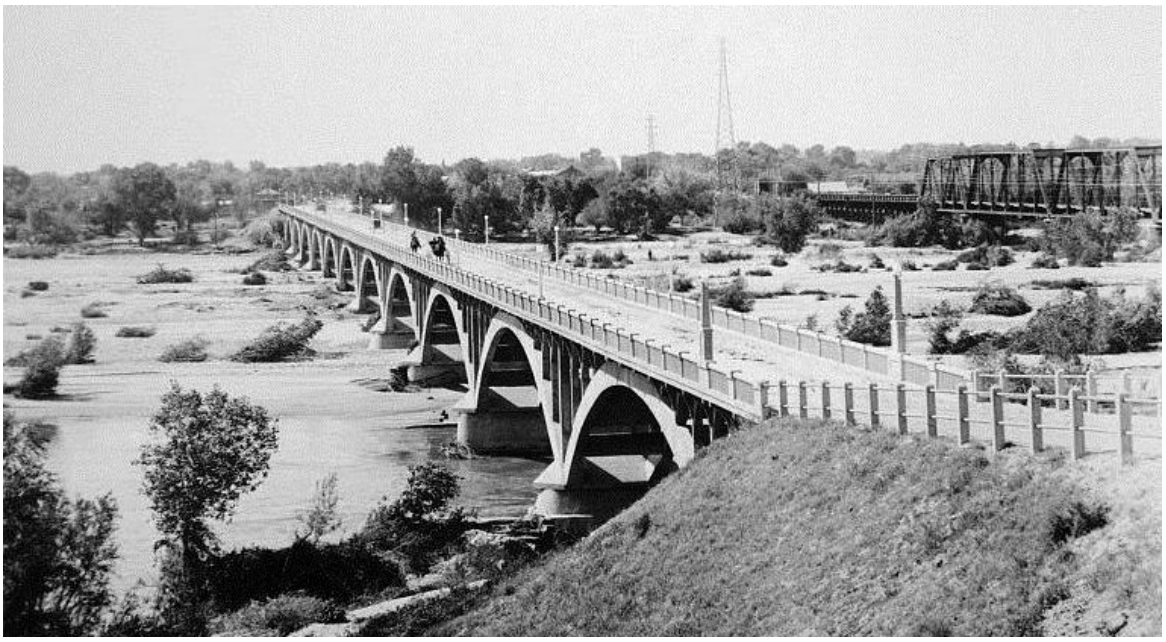

Figure 80: Ash Avenue Bridge, ca. 1913. Note low flow in the Salt River. Also note the bent brush in the bed of the river from repeated floods. Source: U.S. Library of Congress, Washington, D.C.

Figure 81: Ash Avenue Bridge during flood, ca. 1913. Source: Special Collections, Arizona State University, Tempe, Arizona.

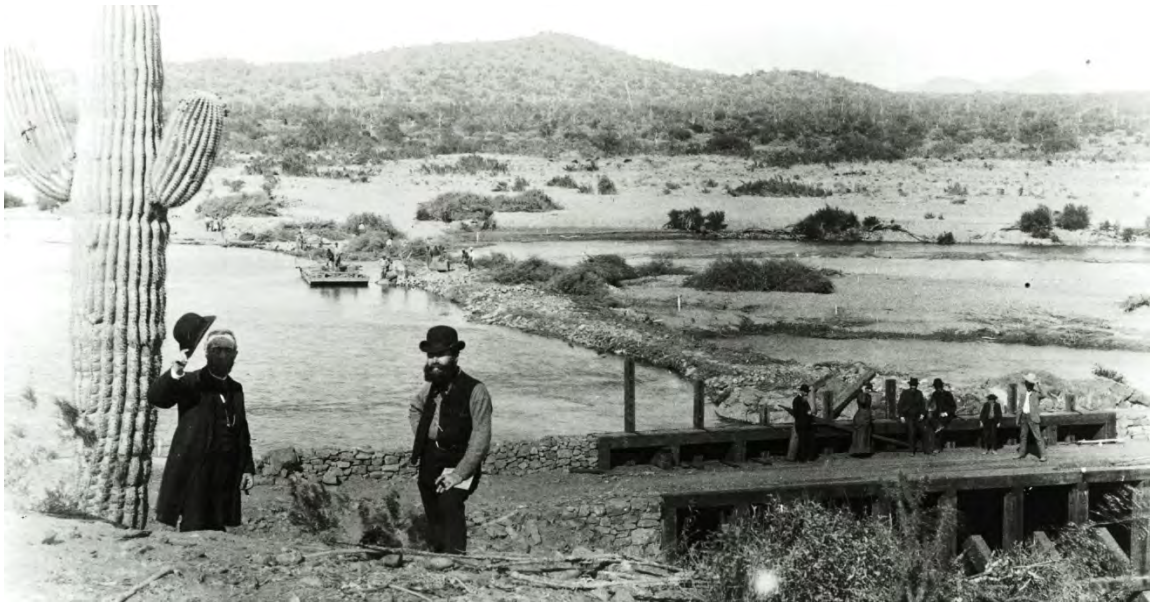

Figure 82: Arizona Canal construction (or repair), 1885, with skiff in background. Note headgate in foreground, and immediately above the group of people on the headgate is one channel of the Salt River (blocked by rocks and dirt). The remaining channel above is still open, but workers on the skiff appear to be filling that channel to divert all of the Salt River into the headgate. Source: Special Collection Collections, Arizona State University, Tempe, Arizona.

Figure 83: Close-up view of flat-bottomed skiff working on Arizona Canal Diversion Dam, 1885. Note Line across open channel of Salt River being used to pull skiff. Source: Special Collections, Arizona State University, Tempe, Arizona.

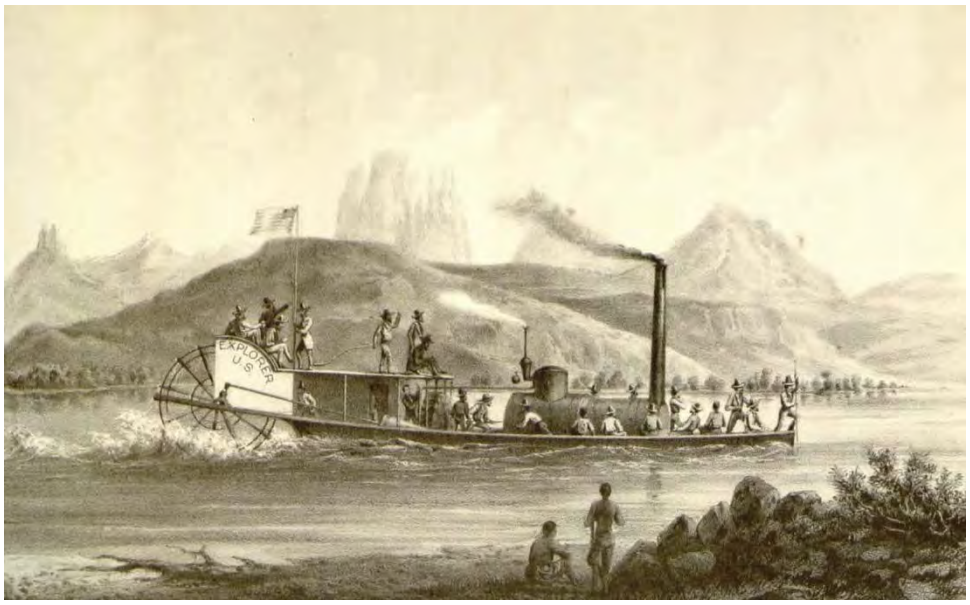

Figure 84: J.C. Ives's sketch of the *Explorer* navigating the Colorado River, ca. mid-1850s. Source: Joseph C. Ives, *Report upon the Colorado River of the West* (1861).

Figure 85: Drawing of Ives's exploration of the Colorado River at West Mohave Canyon, mid-1850s. Note Ives's boat at bottom of sketch. Source: Joseph C. Ives, *Report upon the Colorado River of the West* (1861).

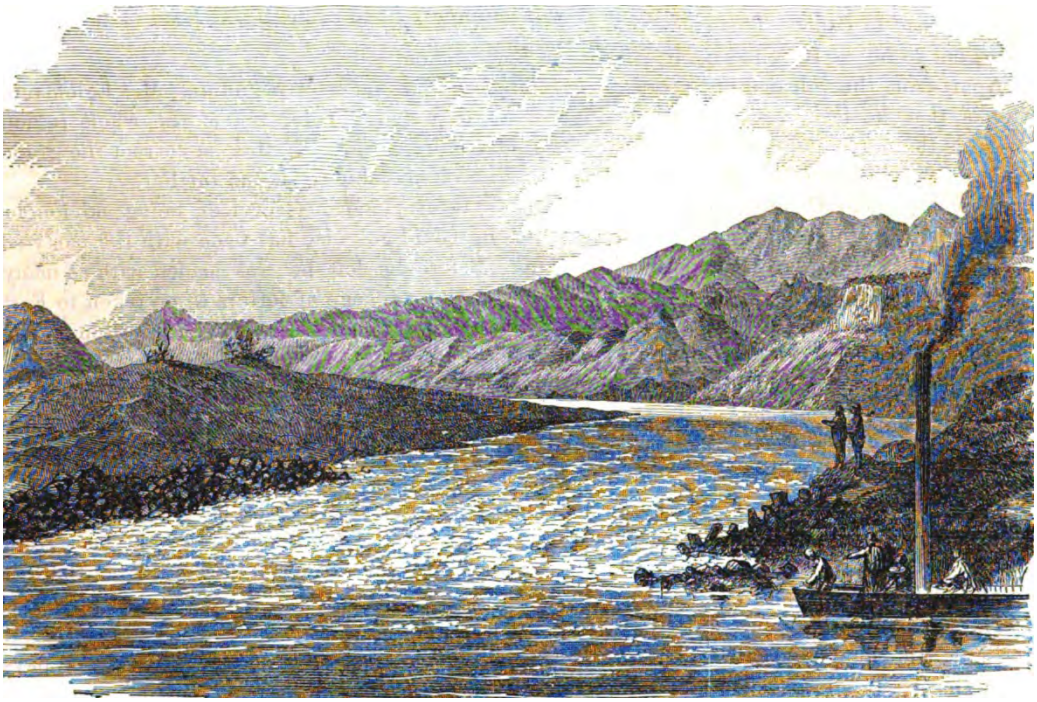

Figure 86: Drawing of Ives's exploration of the Colorado River at Deep Rapid, mid-1850s. Note Ives's boat at right. Source: Joseph C. Ives, *Report upon the Colorado River of the West* (1861).

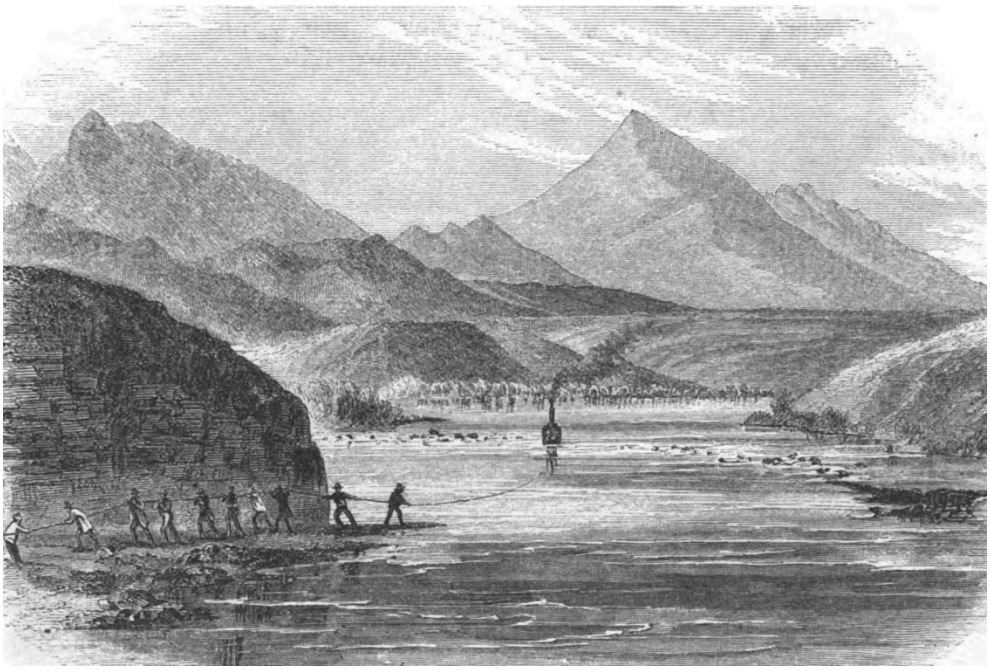

Figure 87: Drawing of Ives's exploration of the Colorado River – lining the boat through rapids, mid-1850s. Source: Joseph C. Ives, *Report upon the Colorado River of the West* (1861).

Figure 88: Photograph of the type of stern wheel steamboat suggested by J.C. Ives for navigating the Colorado River, ca. 1870. This photo was taken near present-day Lee's Ferry, Arizona. Source: www.grandcanyonhistory.

Figure 89: Photographs of John Wesley Powell in 1869 and 1874. Source: U.S. National Park Service online photograph collections.

Figure 90: 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.

Figure 91: Photograph of Powell's crew with dories in the Grand Canyon, 1871-1872. Source: U.S. National Park Service online photo collection.

Figure 92: Photograph of a closer view of Powell's dories on the Colorado River, 1871-1872. Note the arm chair lashed to the top of the boat in the background. Source: Grand Canyon National Park Collection, Grand Canyon, Arizona.

Figure 93: Another photographic view of Powell's dories on the Colorado River, 1871-1872. Source: Grand Canyon National Park Collection, Grand Canyon, Arizona.

Figure 94: Photograph of Powell's dory tied up in the Grand Canyon with the armchair strapped on top. Note life rings tied to the chair. Source: U.S. National Park Service online photograph collection.

Figure 95: Photograph of Powell's expedition on the Colorado River, 1871-1872, with boats tied up. Source: U.S. National Park Service online photograph collection.

Figure 96: Photograph of John Wesley Powell's second expedition through the Grand Canyon, 1871-1872. Source: U.S. Library of Congress, Washington, D.C.

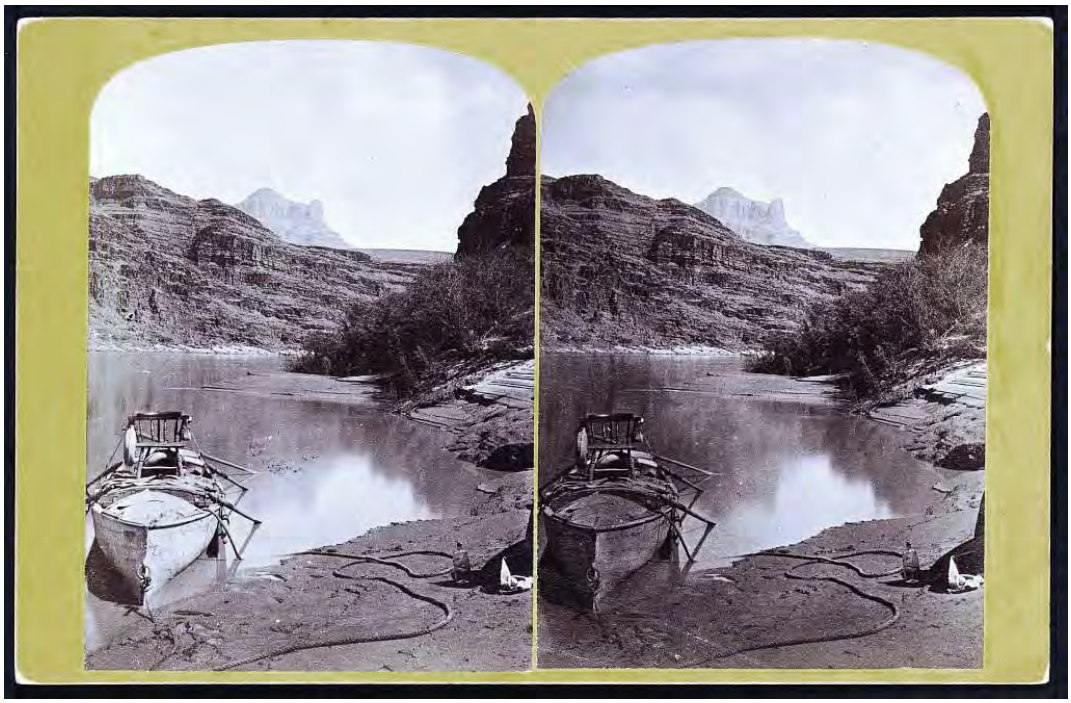

Figure 97: Stereographic photograph of the dory used by John Wesley Powell on second expedition through the Grand Canyon in 1871-1872. Note that strapped to top of the dory is an arm chair, where Powell sat. Source: U.S. Library of Congress, Washington, D.C.

Figure 98: Photograph of one of Powell's boats at rapids in the Grand Canyon, 1871-1872. Source: U.S. National Park Service online photograph collection.

Figure 99: Photograph of Powell's boats tied up near rapids in the Grand Canyon, 1871-1872. Source: U.S. National Park Service online photograph collection.

Figure 100: Photograph of Powell's boats tied up or ashore in the Grand Canyon, 1871-1872. Source: U.S. National Park Service online photograph collection.

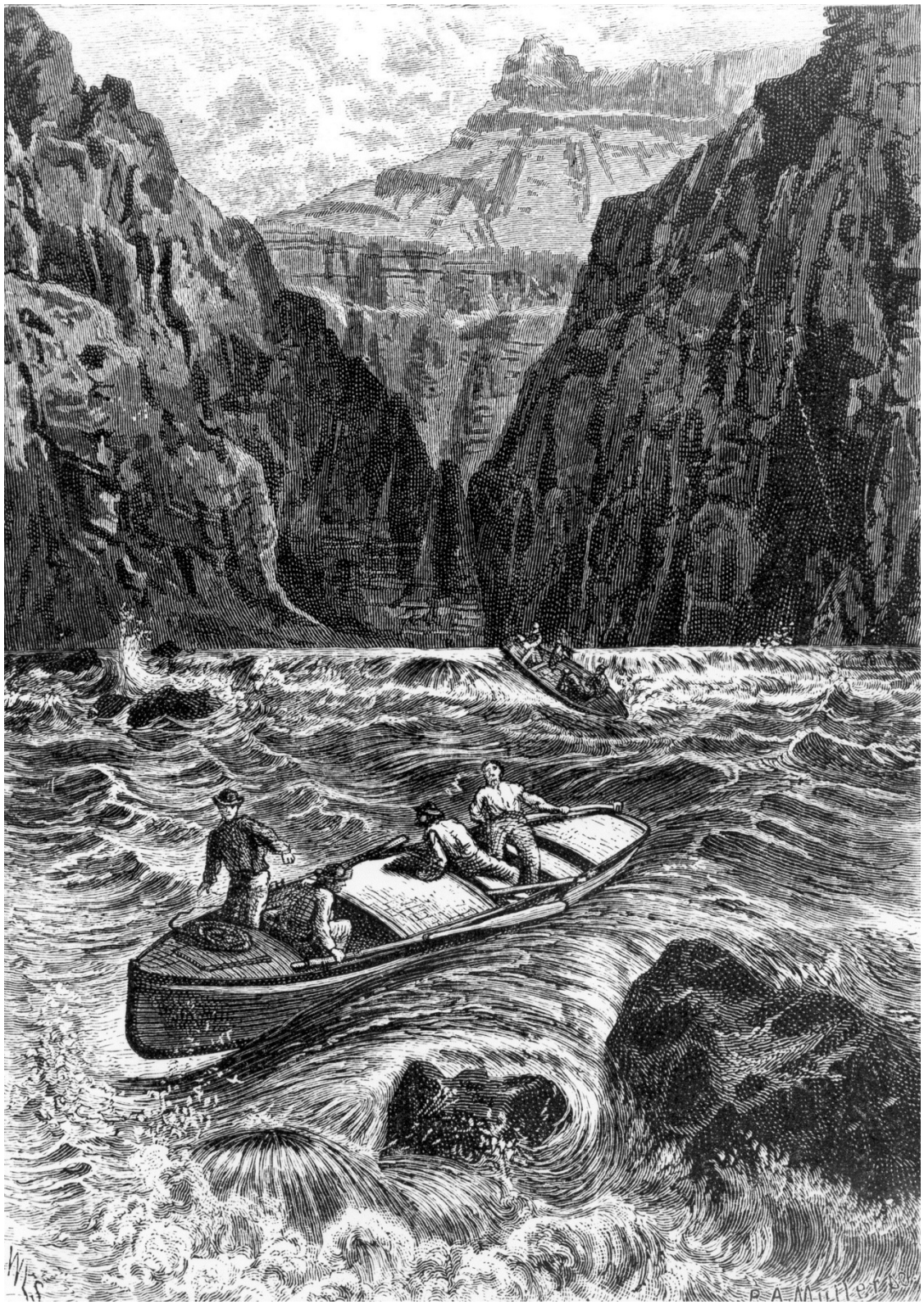

Figure 101: Sketch of the Powell expedition running rapids in the Grand Canyon, 1871-1872. Source: U.S. National Park Service online photograph collection.

Figure 102: "Our First Camp," Powell expedition through the Grand Canyon, 1871-1872. Source: U.S. National Park Service online photograph collection.

Figure 103: 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.

Figure 104: Stereographic photograph of Wheeler expedition up the Colorado River at Black Canyon, 1871. Source: U.S. Library of Congress, Washington, D.C.

Figure 105: 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.

APPENDIX C: FIGURES FROM 2014 LITTLEFIELD UPPER SALT RIVER REPORT CITED IN THIS DECLARATION

(NOTE: ALL FIGURE NUMBERS ARE FROM 2014 REPORT)

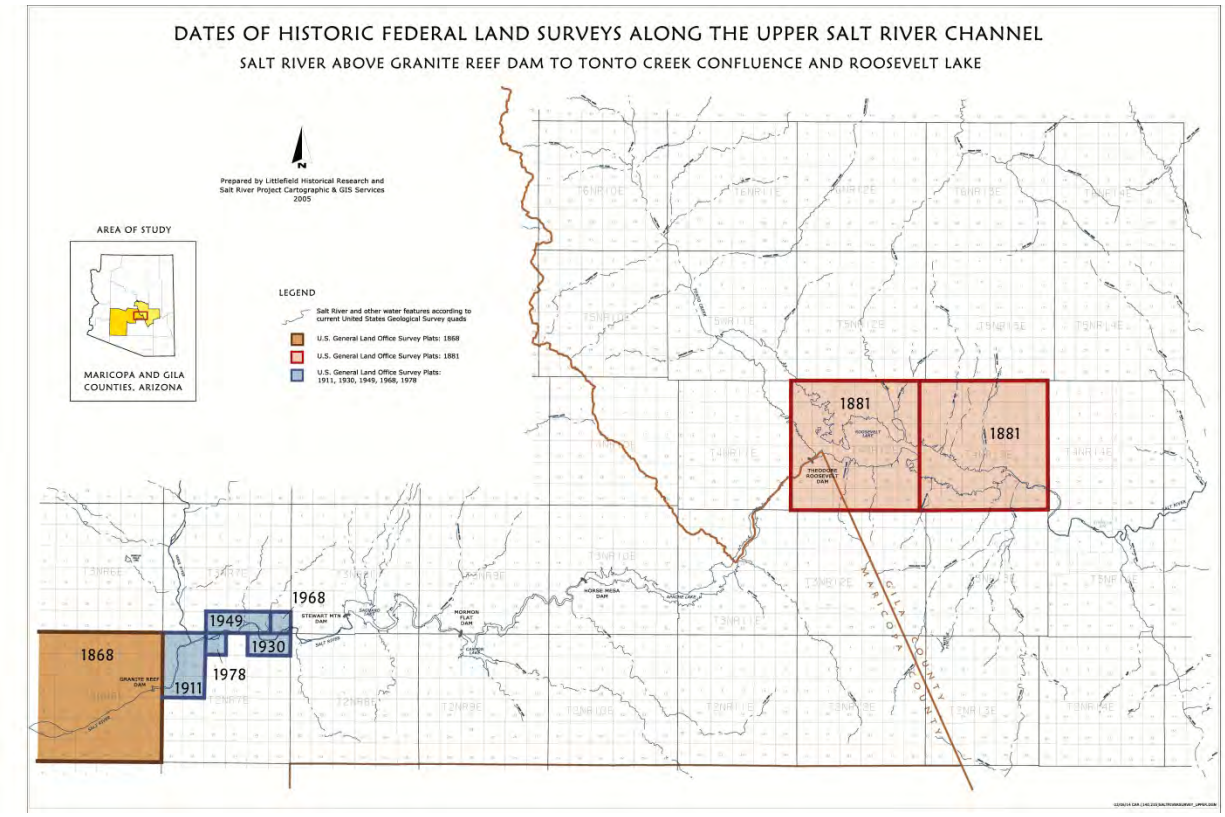

Figure 2: Map Showing Dates of Federal Surveys along the upper Salt River above Granite Reef Dam. Source: Littlefield Historical Research and Salt River Cartographies & GIS Services, 2005.

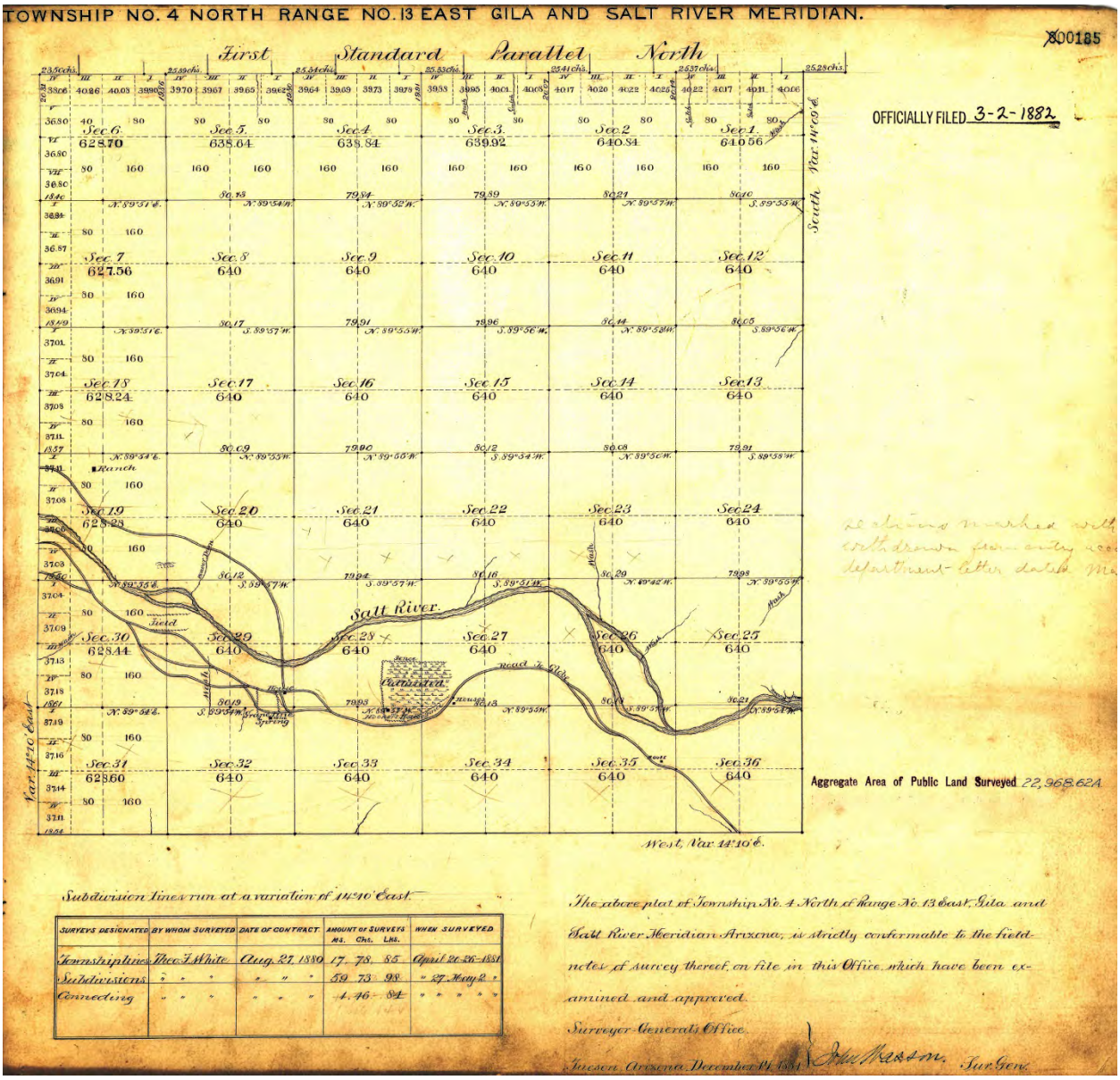

Figure 3: U.S. General Land Office survey plat of township 4 north, range 13 east (1881). Source: U.S. Bureau of Land Management, Phoenix, Arizona.

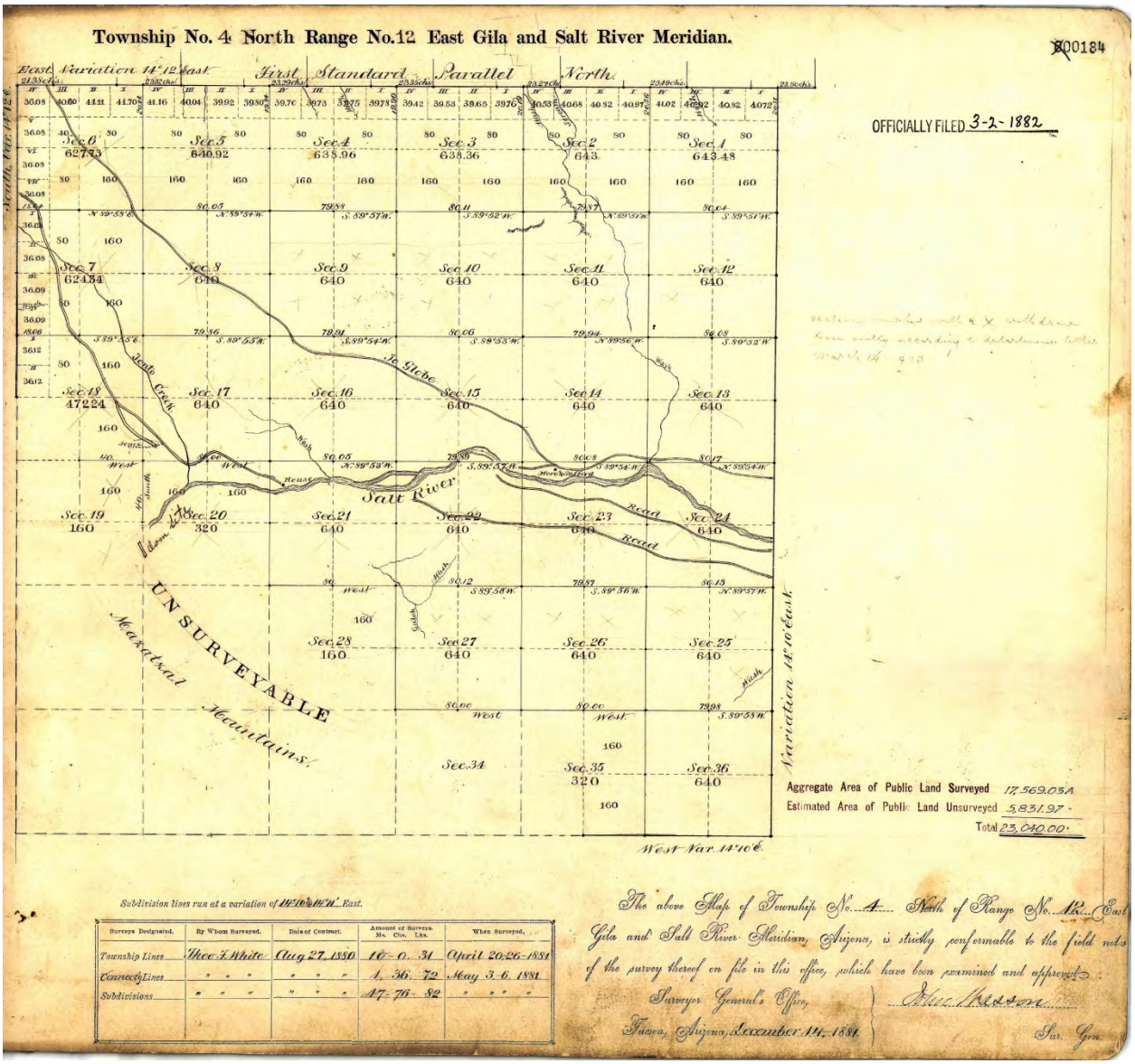

Figure 4: U.S. General Land Office survey plat of township 4 north, range 12 east (1881). Source: U.S. Bureau of Land Management, Phoenix, Arizona.

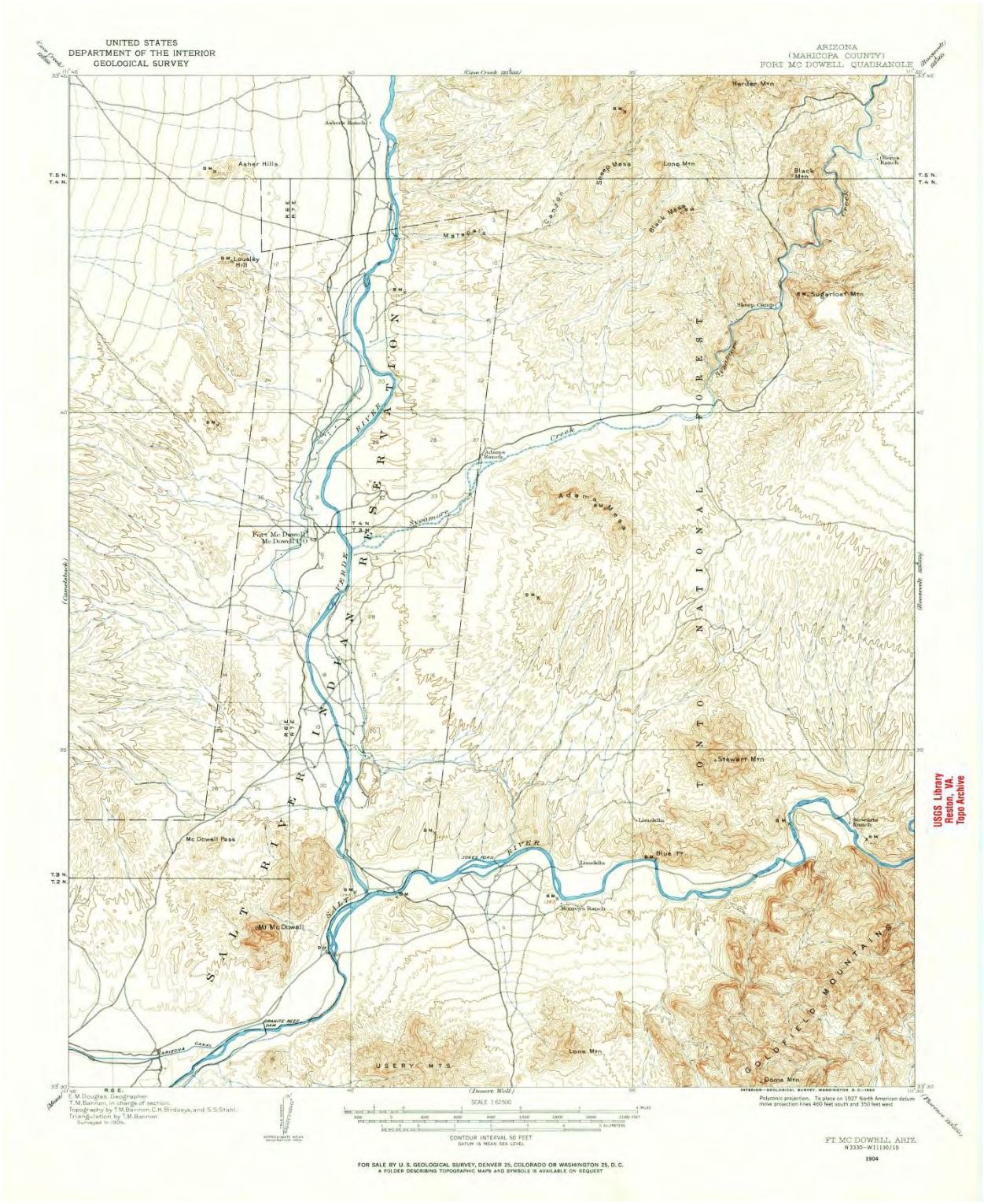

Figure 5: U.S. Geological Survey topo map, Ft. McDowell, Ariz., 1904. Source: U.S. Geological Survey historical topographic map collection.

Figure 6: U.S. Geological Survey topo map, Roosevelt, Ariz., 1907. Source: U.S. Geological Survey historical topographic map collection.

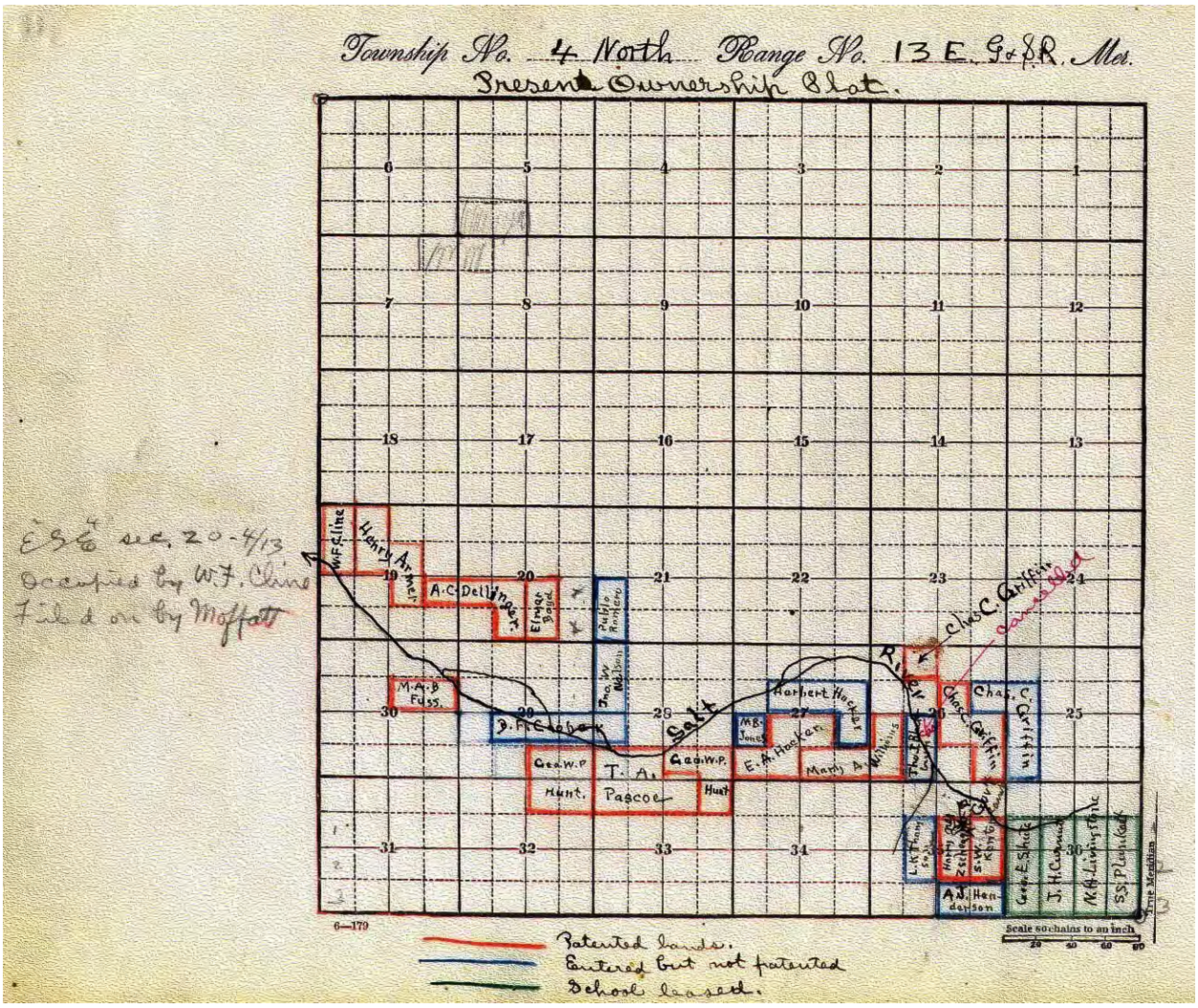

Figure 7: U.S. Geological Survey map, land claims, 1903-04, along upper Salt River, T4N, R13E. Source: Salt River Project Archives, Phoenix, Arizona.

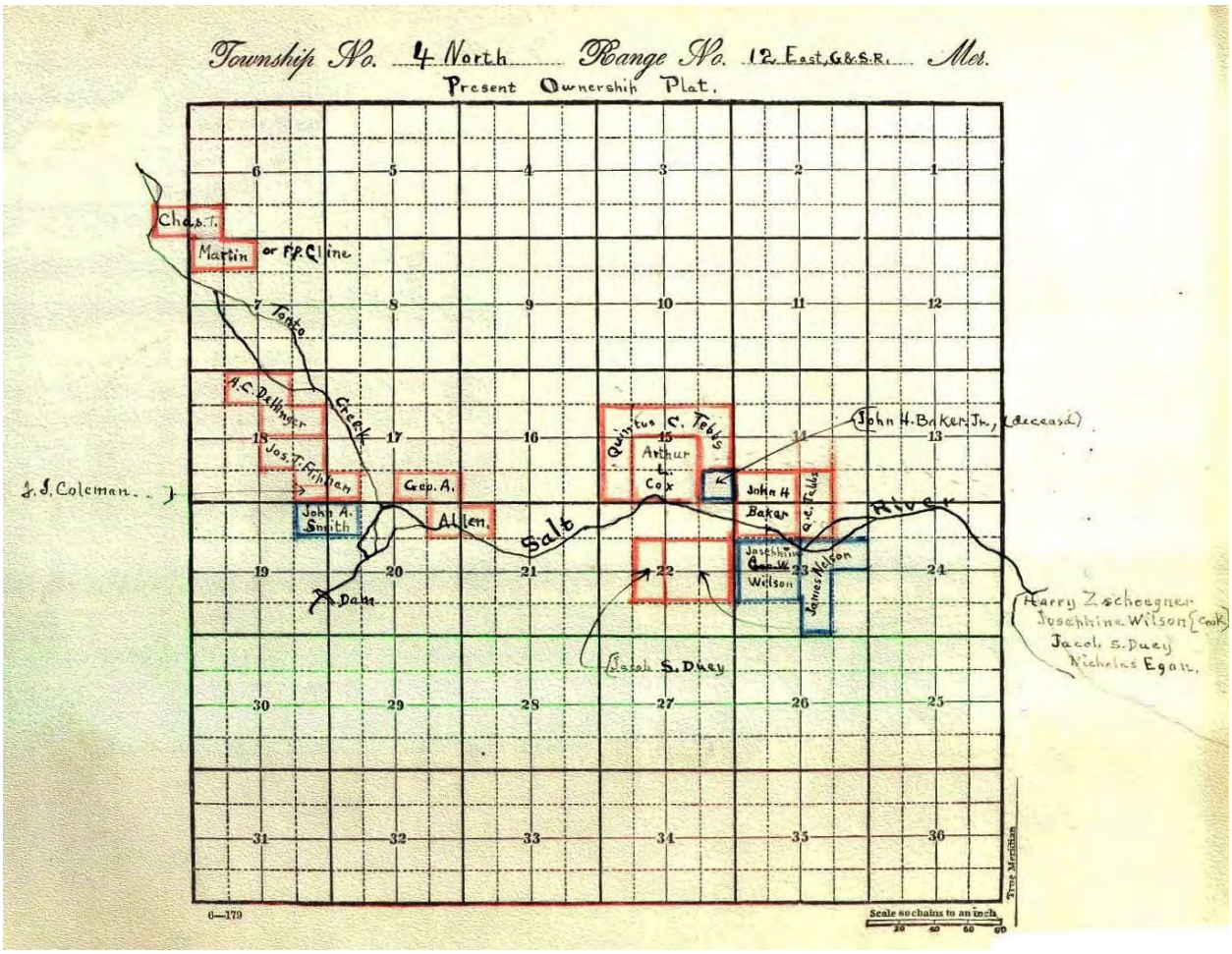

Figure 8: U.S. Geological Survey map, land claims, 1903-04, along upper Salt River, T4N, R12E. Source: Salt River Project Archives, Phoenix, Arizona.

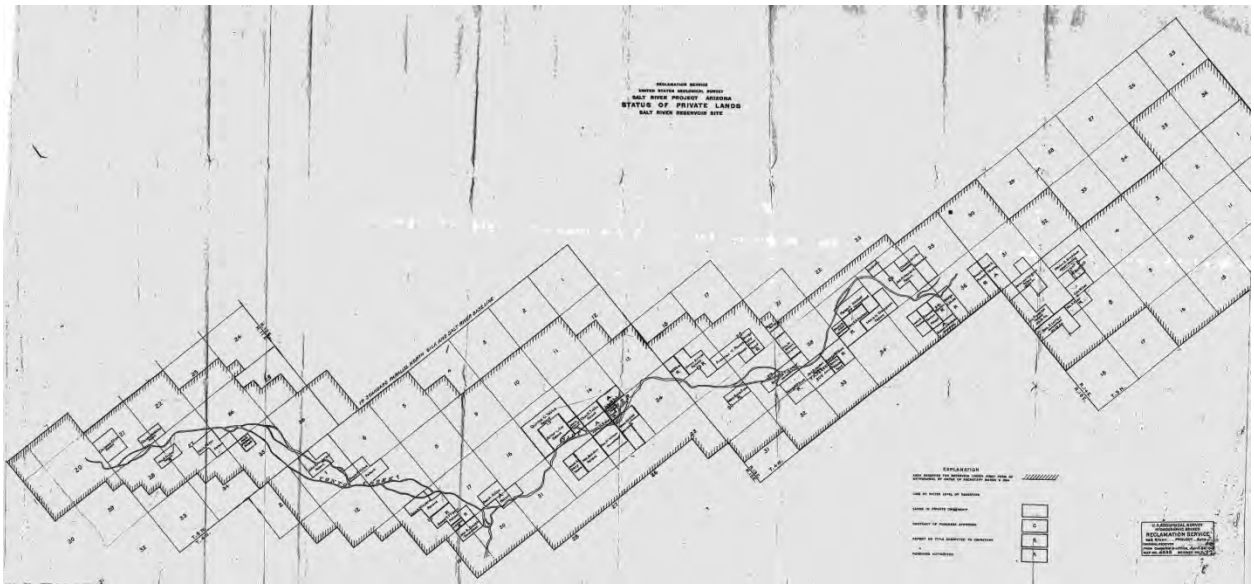

Figure 9: U.S. Geological Survey map, land claims, 1903-04, along upper Salt River. Source: Salt River Project Archives, Phoenix, Arizona.

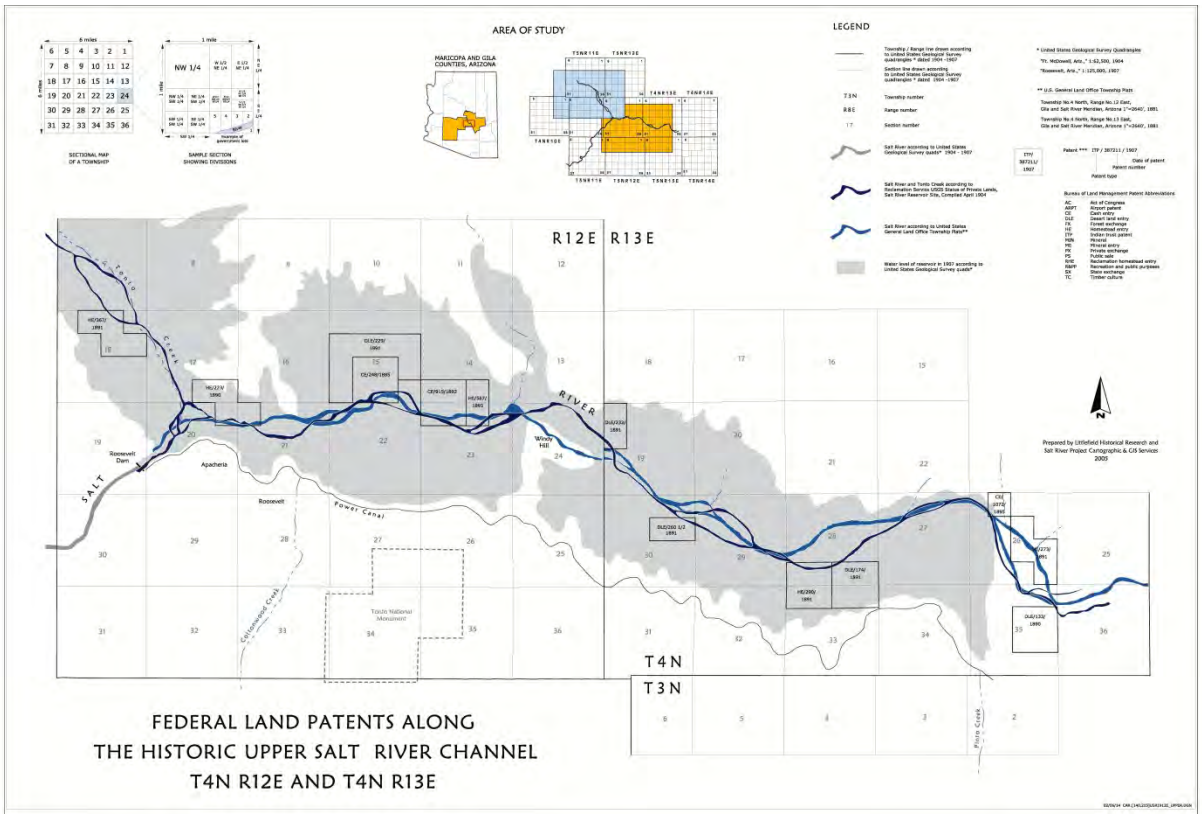

Figure 10: Map of federal land patents along the historical Salt River channel, T4N, R12E, and T4N, R13E. Source: Littlefield Historical Research and Salt River Project Cartographics & GIS Services, 2005.

Figure 11: Upper Salt River, circa 1904. Source: Arizona Historical Society, Tempe, Arizona.

Figure 12: Salt River (Roosevelt) dam site, circa 1904. Source: Arizona Historical Society, Tempe, Arizona.

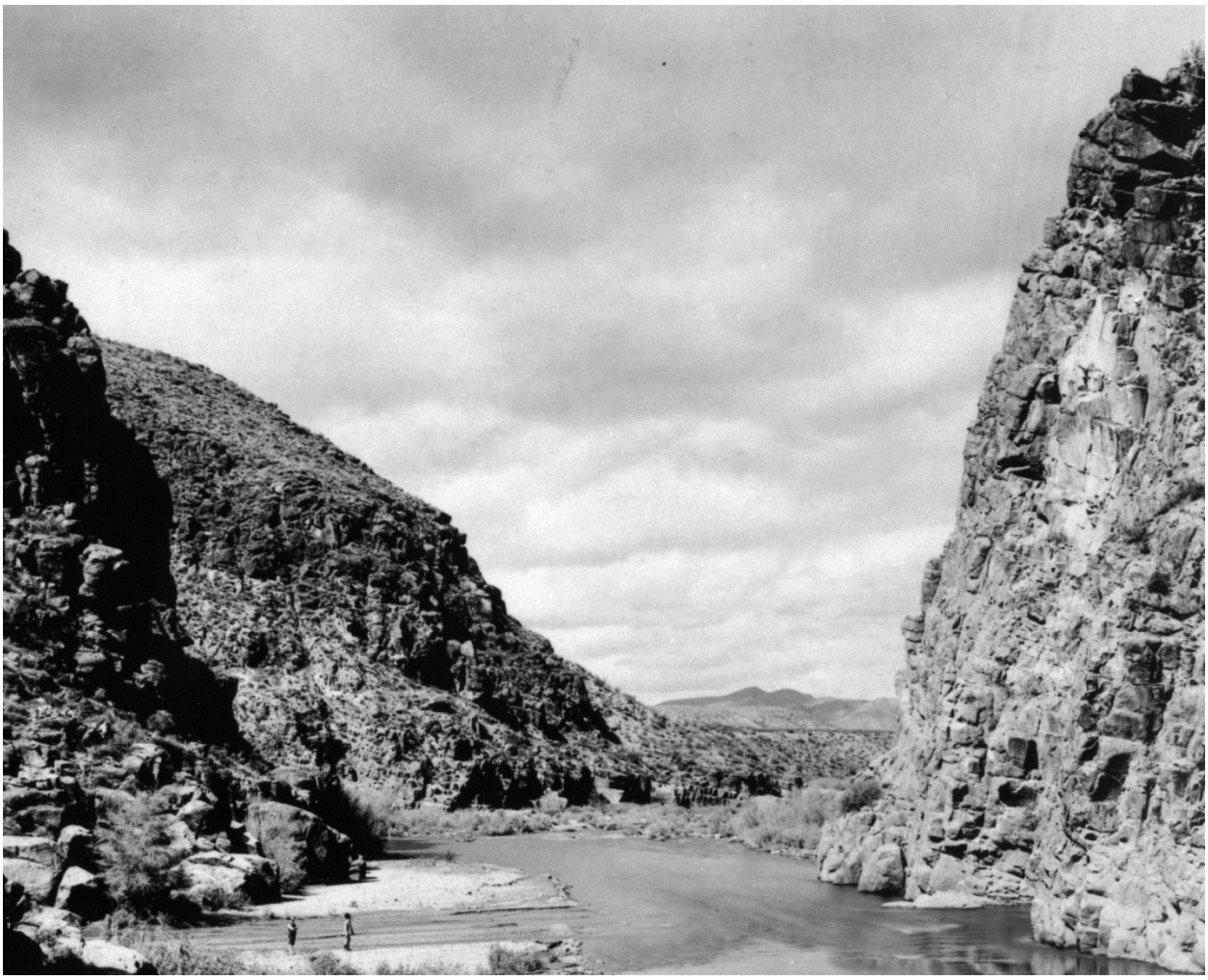

Figure 13: "View of Upper Box Canyon, Tonto Basin, Taken from Point Looking Down River," circa 1904. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 14: "Canyon, showing dam site, Jan. 16, 1904." Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 15: Roosevelt Dam site looking downstream, March 6, 1906. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 16: Upper Salt River, circa 1904. Source: Arizona Historical Society, Tempe, Arizona.

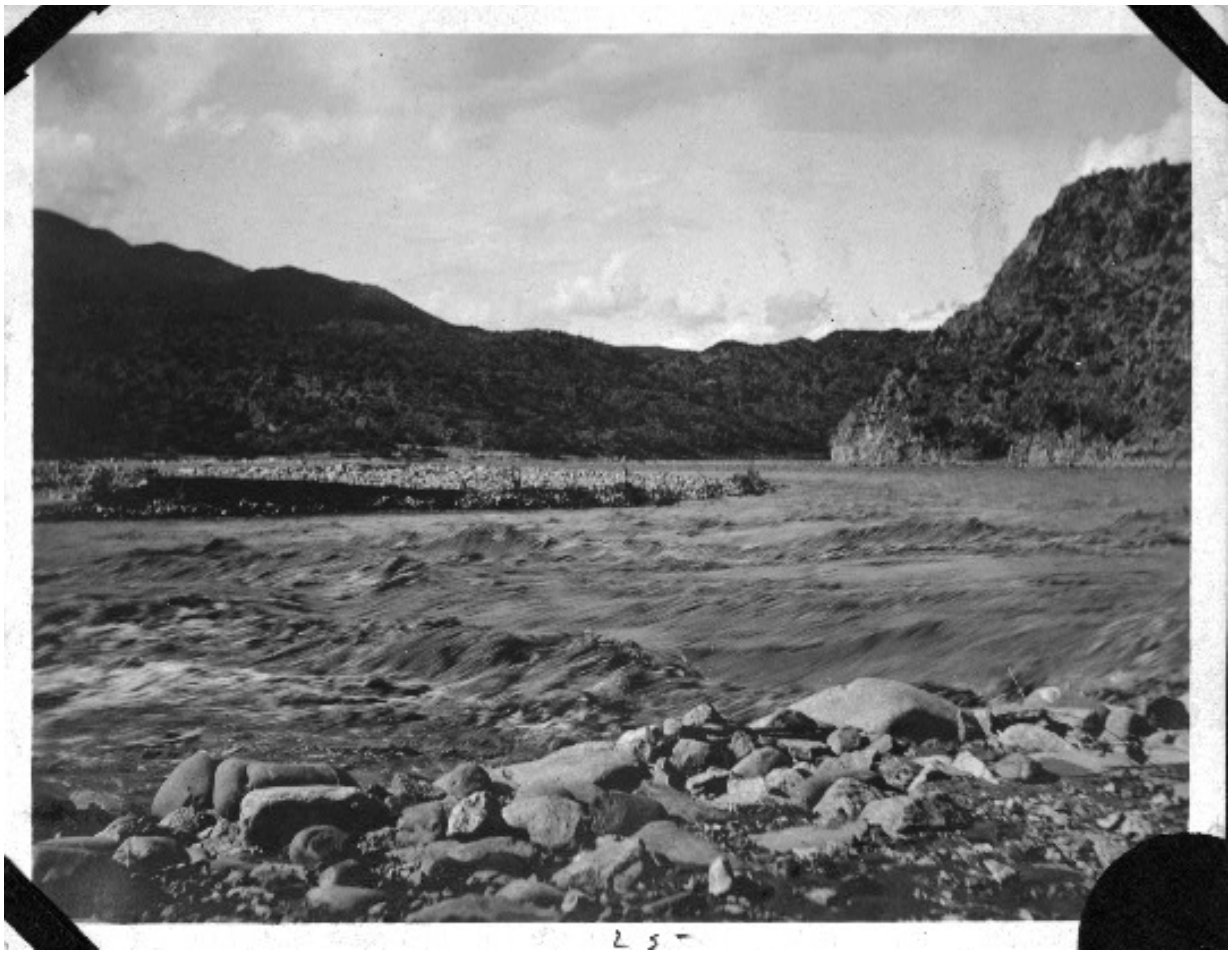

Figure 17: Salt River at Roosevelt Dam site, circa 1908. Source: Phoenix Public Library, Phoenix, Arizona.

Figure 18: Tonto Basin at Roosevelt Dam site, circa 1908. Source: Phoenix Public Library, Phoenix, Arizona.

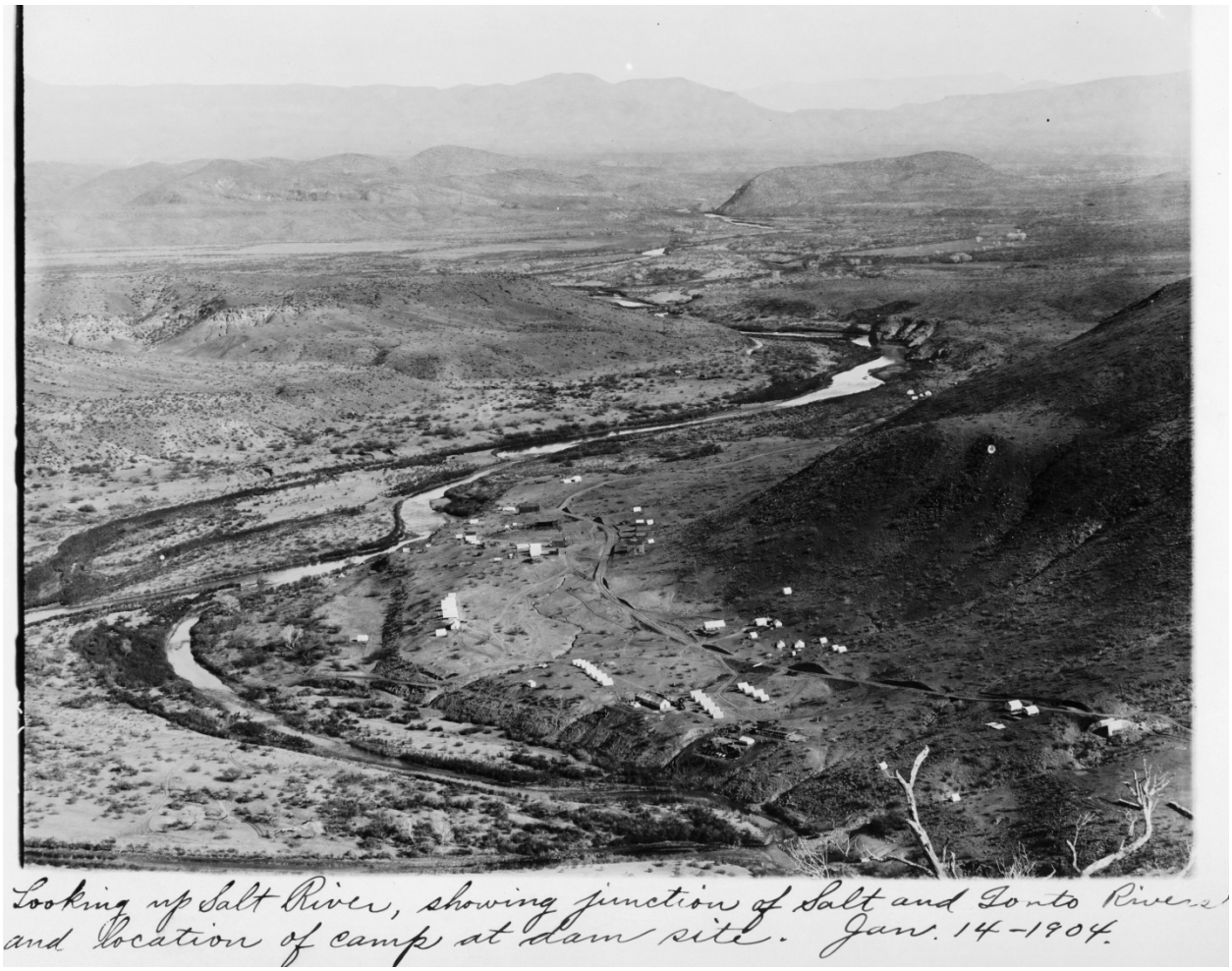

Figure 19: "Looking up Salt River, Showing Junction of Salt and Tonto Rivers and Location of Camp at Dam Site, Jan. 14, 1904." Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 20: Town of Roosevelt, Arizona, looking downstream toward Roosevelt Dam site, circa 1910. Tonto Creek's confluence with the Salt River is at the right. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 21: Interior of headquarters tent at Camp Roosevelt, January 23, 1906. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 22: Roosevelt Dam site looking downstream, circa 1905-1906. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 23: Roosevelt Dam site looking upstream, circa 1905-1906. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 24: Roosevelt Dam site, March 31, 1908. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 25: Roosevelt Dam under construction, February 1, 1909. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 26: Roosevelt Dam under construction, July 31, 1909. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

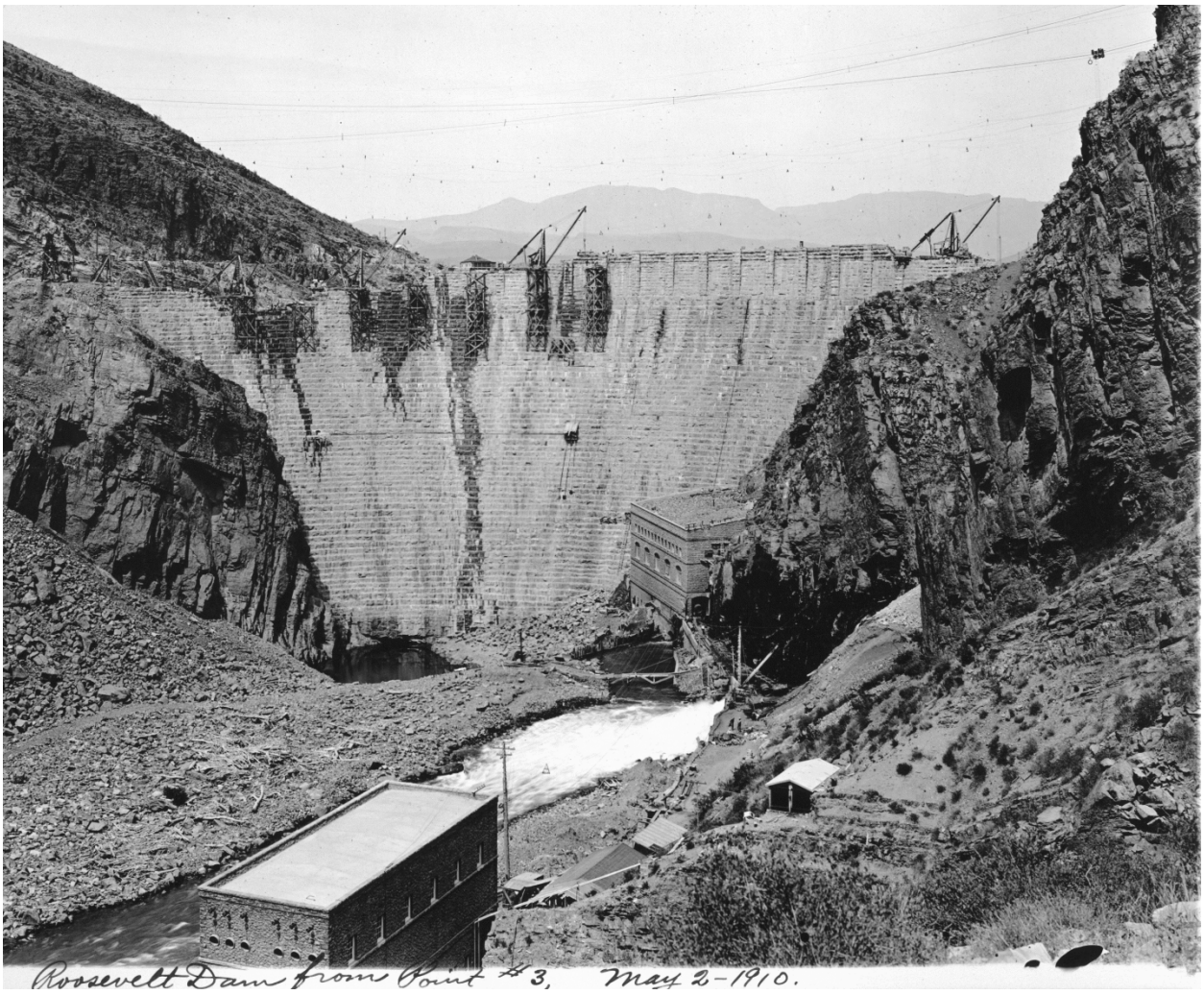

Figure 27: Roosevelt Dam nearing completion, May 2, 1910. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 28: Construction of high-line wagon road directly above Roosevelt Dam site, March 29, 1905. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 29: Cliff before excavation for wagon road above Roosevelt Dam site, 1906. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 30: Completed cut for wagon road above Roosevelt Dam site, circa 1906-1907. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 31: Freighting heavy machinery to Roosevelt Dam site, 1906. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 32: Hauling supplies to Roosevelt Dam site, 1907. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

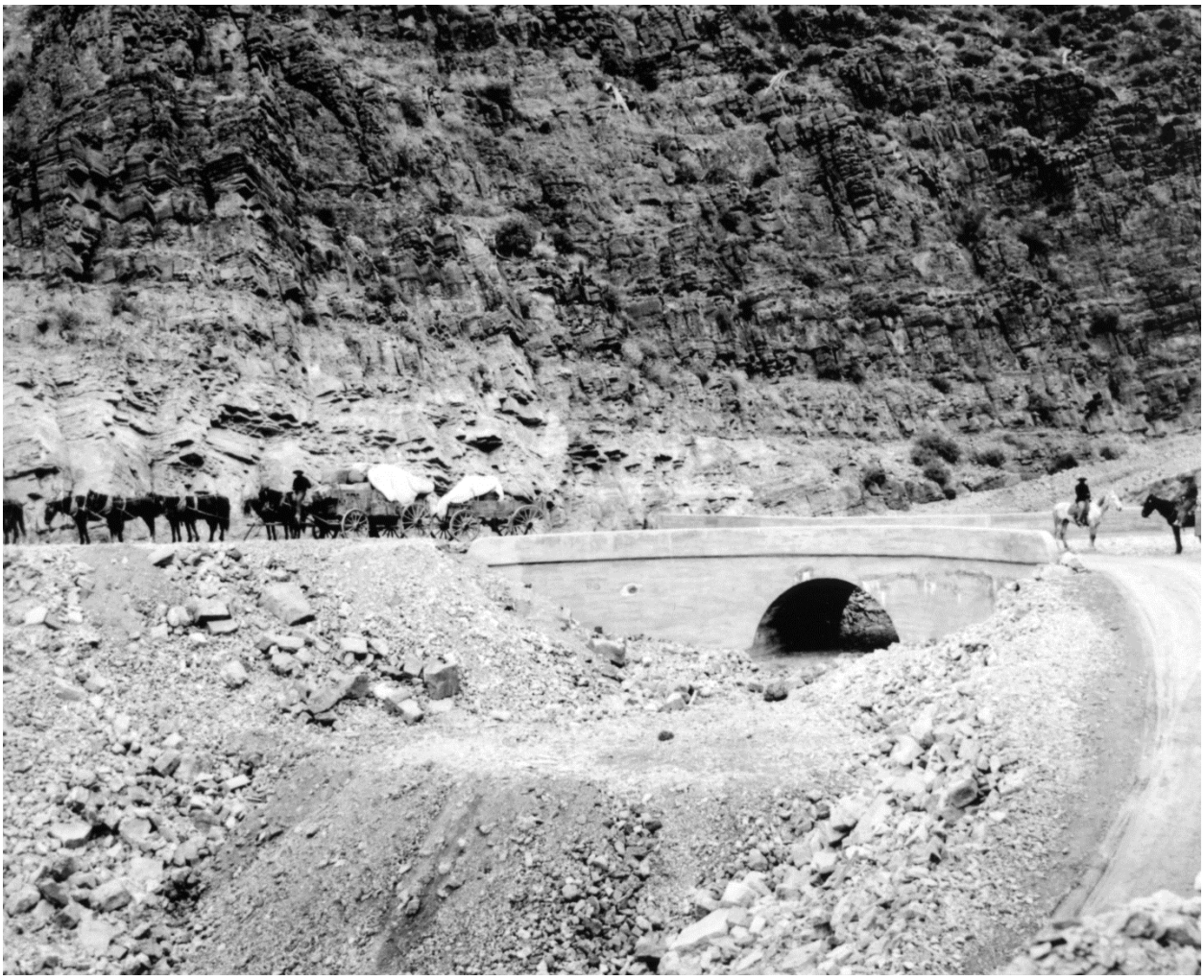

Figure 33: Whitney's Bridge on high line supply road to Roosevelt Dam site, December 1, 1906. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

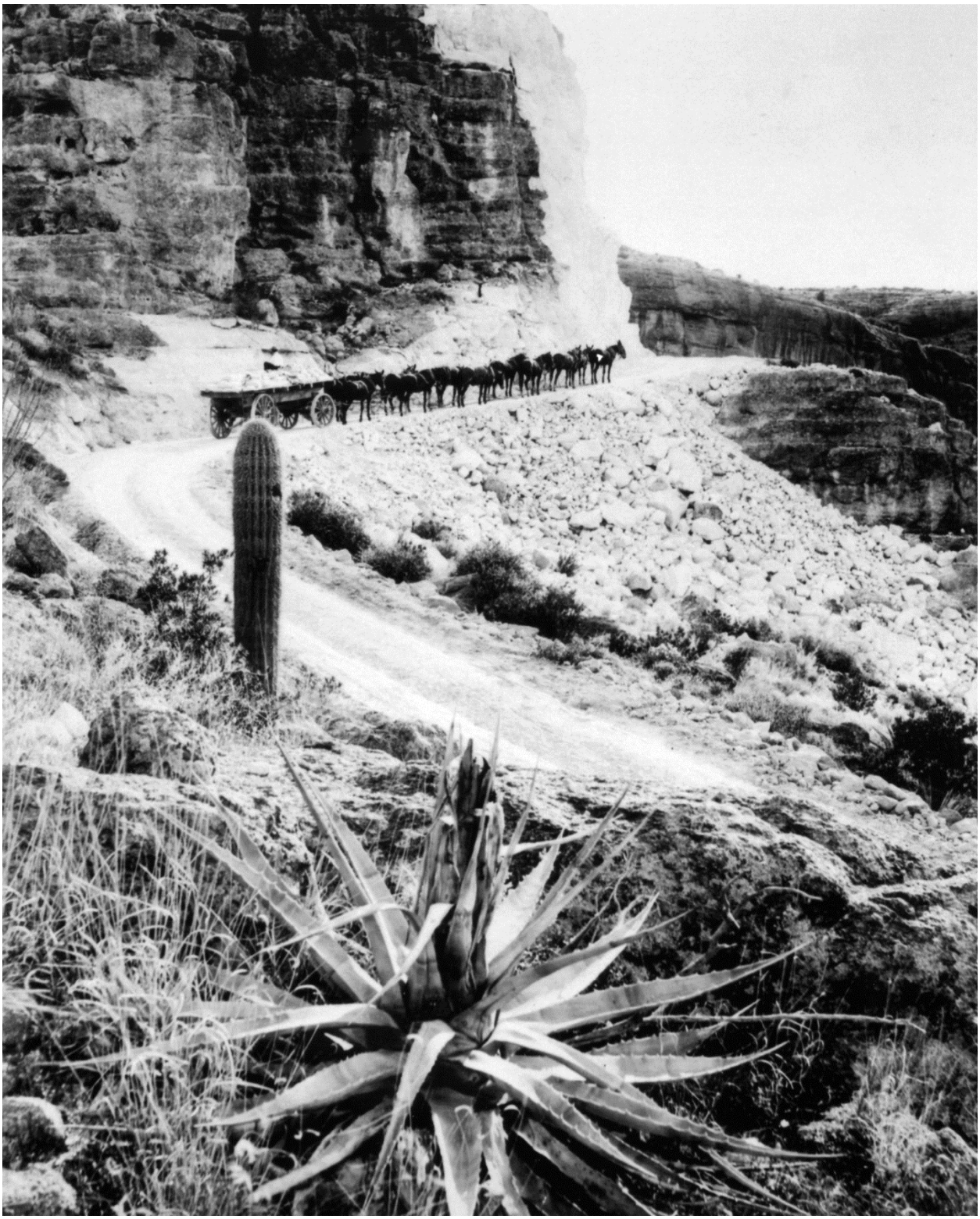

Figure 34: Top of Fish Creek Hill on wagon road to Roosevelt Dam site, March 1907. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 35: Looking up Fish Creek Hill on wagon road to Roosevelt Dam site, 1914. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 36: "Will Sanders Freighting to Roosevelt Dam, 1905." Source: Salt River Project Archives, Phoenix, Arizona.

Figure 37: Granite Reef Dam site, October 31, 1907. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

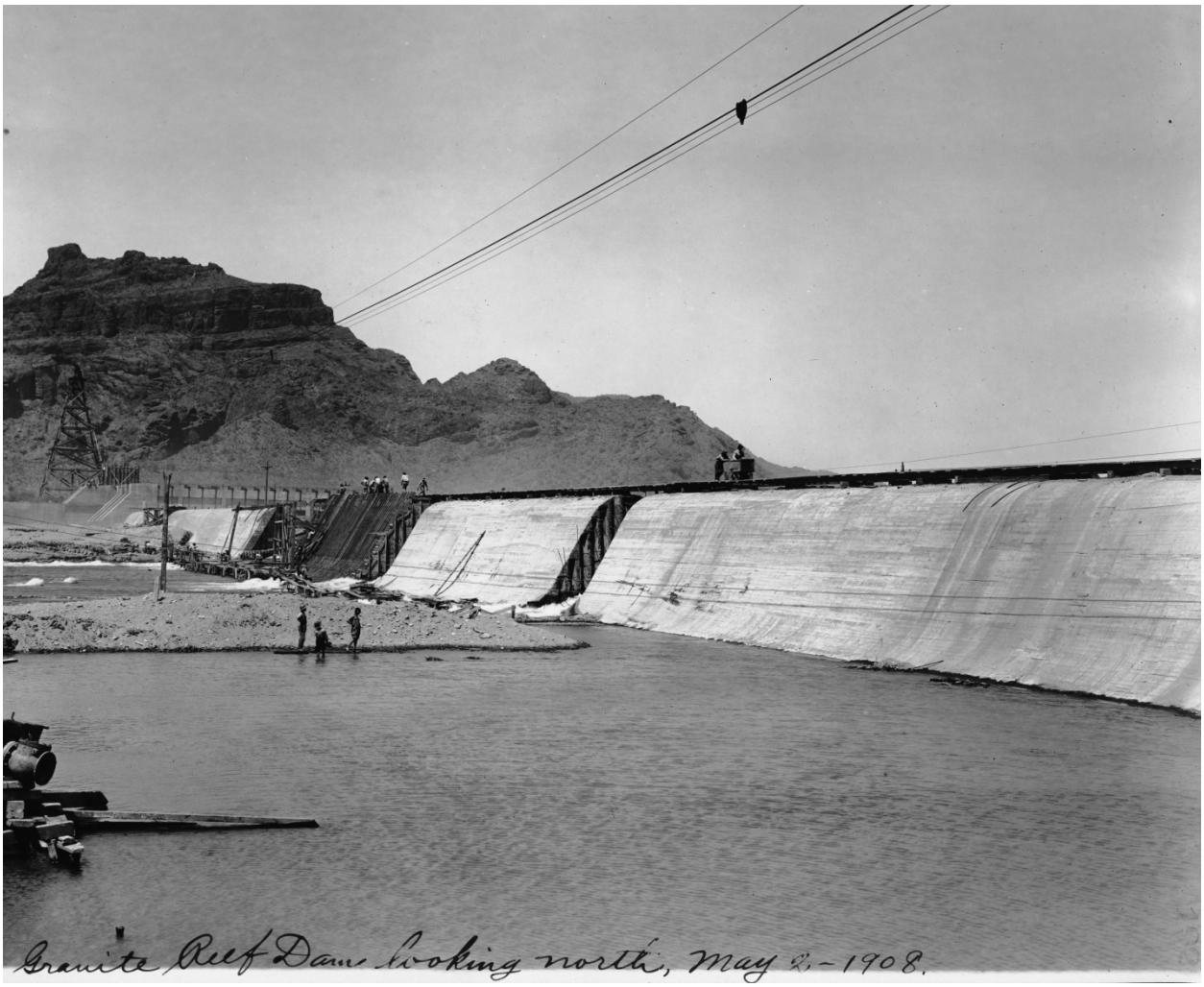

Figure 38: Granite Reef Dam under construction, May 2, 1908. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

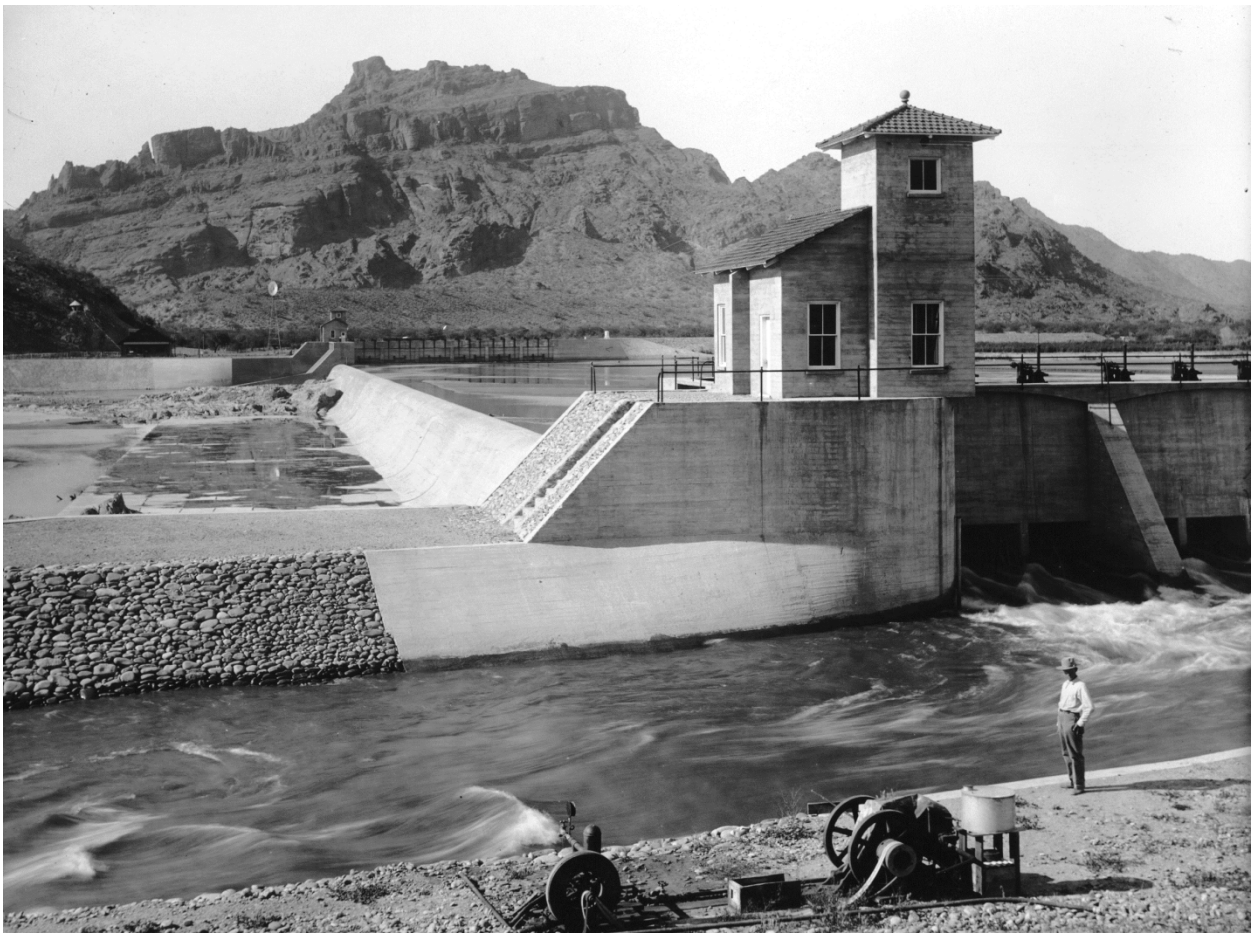

Figure 39: Granite Reef Dam completed, April 29, 1910. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

Figure 40: President Theodore Roosevelt speaks at Roosevelt Dam dedication, March 18, 1911. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

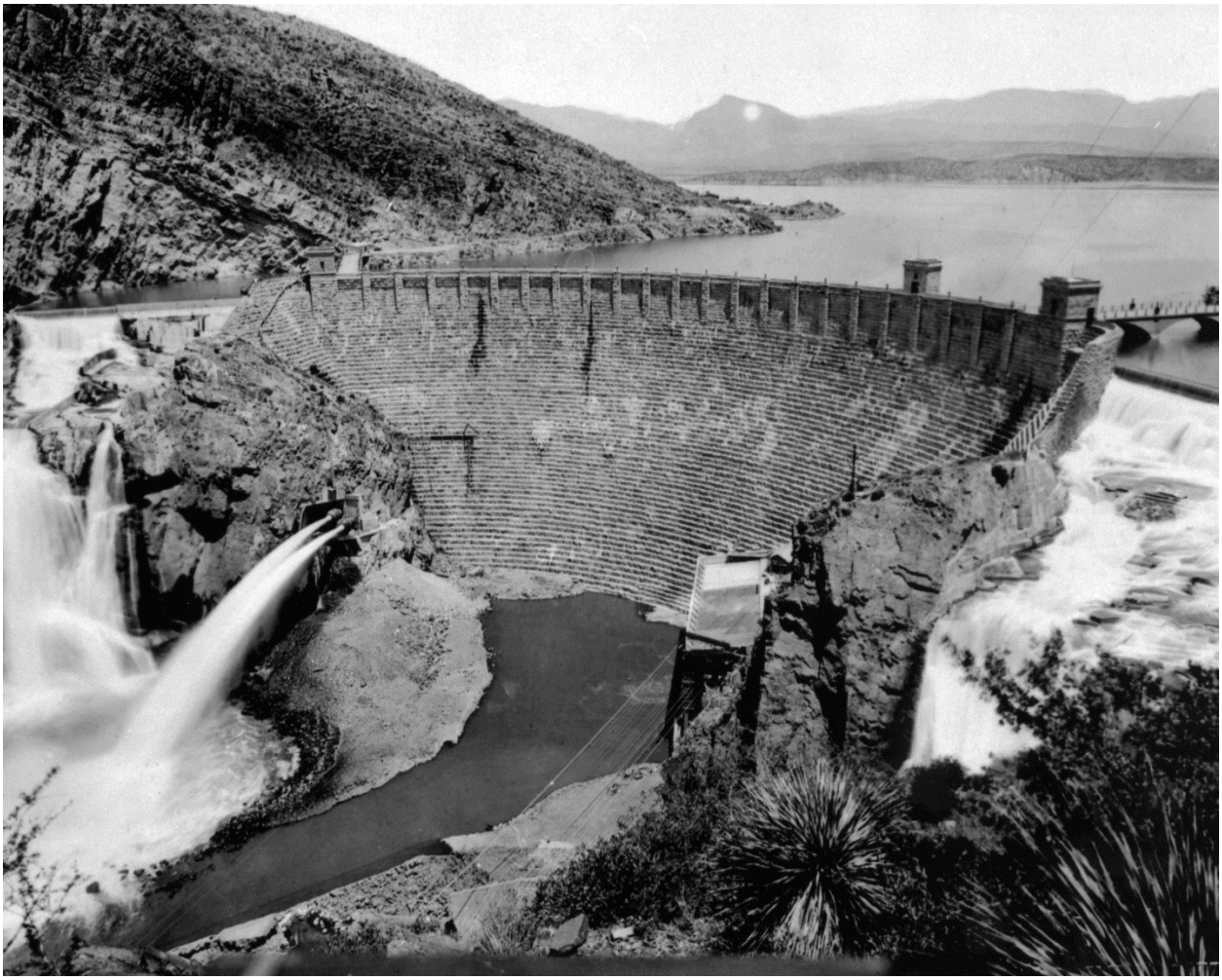

Figure 41: Roosevelt Dam shortly after completion, 1912. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.

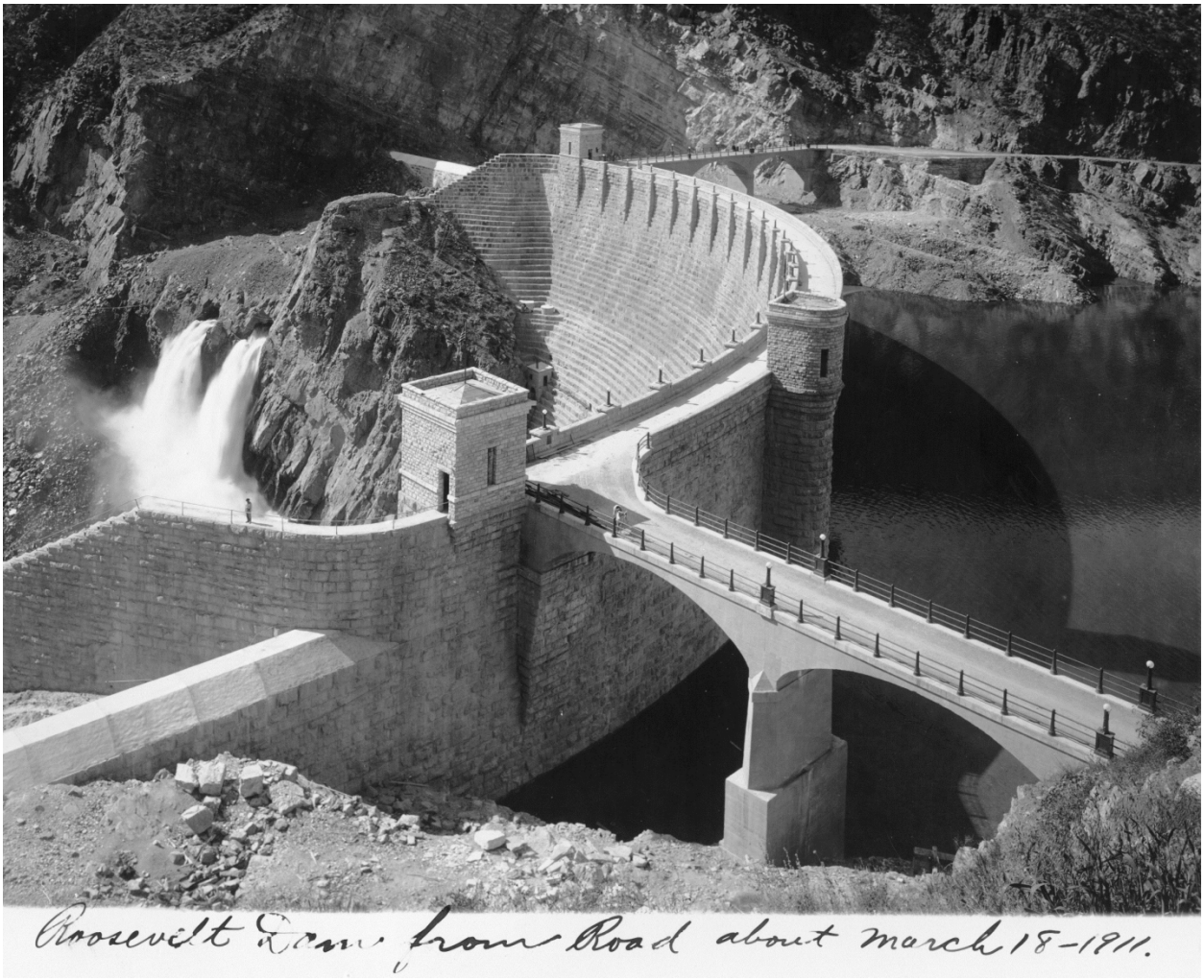

Figure 42: Roosevelt Dam, March 18, 1911. Source: Records of the Bureau of Reclamation, U.S. National Archives Branch, Rocky Mountain Region, Denver, Colorado.