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BEFORE THE ARIZONA NAVIGABLE STREAM ADJUDICATION COMMISSION

In The Matter Of The Navigability Of The Gila River From The New Mexico Border To The Confluence With The Colorado River, Greenlee, Graham, Gila, Pinal, Maricopa, And Yuma Counties, Arizona	**No. 03-007-NAV** **Maricopa County and The Flood Control District of Maricopa County's Proposed Findings of Fact and Conclusions of Law**

Maricopa County and the Flood Control District of Maricopa County ("FCD" and together as "respondents") hereby submit their proposed findings of fact and conclusions of law regarding navigability of the lower Gila River from its confluence with the Salt River to the Colorado River. This submittal is organized by stating the requested finding of fact or conclusion of law, the legal basis for that finding, and listing the facts in the record that support each finding or conclusion. This memorandum is intended only to express facts affecting the lower Gila River, which respondents maintain is navigable under its ordinary and natural condition on the date of statehood. The law expressed herein, unless otherwise noted, is applicable to determinations of navigability of any river or portion thereof.

A. The Lower Gila River from the confluence with the Salt River to the Colorado River is an appropriate segment for a determination of navigability in accordance with *PPL v. Montana.*

1. In *PPL Montana LLC v. Montana*, 132 S. Ct. 1215, 1229 (2012), the Court held that when making a determination of navigability of an entire river for title purposes under the equal footing doctrine, the Court must consider the various appropriate segments of the river and determine whether each segment is navigable or not.

2. The Supreme Court stated that segments must be discrete and substantial, and evaluated based upon their administrability. *Id.*, at 1230-31.

3. The segments must have appropriate beginnings and endings. *See Id.*, at 1230.

4. When determining segmentation, the *PPL Montana* court stated that physical conditions (*e.g.*, terrain, flow rates, topography, and geography) provide a practical means of identifying starting and ending points for segments. *Id.*

5. The Court reiterated, however, that the "navigability in fact" requirement set forth in *The Daniel Ball* (*i.e.*, whether navigation had occurred or the segment was susceptible of navigation in its natural and ordinary condition, if navigation had not occurred), still applied to determinations of navigability for title. *Id,* at 1228.

6. The Court further stated that evidence of recreational (*i.e.*, non-commercial) boating should be considered as bearing on navigability for title purposes if it "shows the river could sustain the kinds of commercial use that, as a realistic matter, might have occurred at the time of statehood." *Id.*, at 1233. Susceptibility to

navigation at the time of statehood is the applicable test, not whether actual use for commercial purposes occurred. *Id.*

7. In his PowerPoint presentation to the Commission in 2014, Jon Fuller on behalf of the State Land Department proposed dividing the Gila River from New Mexico to the Colorado River into eight segments. The two segments comprising the lower Gila are Segments 7 & 8. [Evidence Log ("EL") X020, ARIZONA STATE LAND DEPARTMENT PRESENTATION TO ANSAC: GILA RIVER NAVIGABILITY ("JE Fuller PowerPoint re: Gila Navigability"), 56-63 (June 11, 2014)] Segment 7 runs from the Gila confluence with the Salt to Dome, AZ, and Segment 8 runs from Dome to the Colorado River confluence. [*Id.*]

While respondents do not suggest the State erred in dividing the lower Gila at Dome, there is no evidence in the record that mandates splitting the river there based upon changes in flow, hydraulics, or geologic conditions.

8. In its ordinary and natural condition, the lower Gila was perennial downstream from the Salt River all the way to the Colorado River. [*Id.*, at VII-6, see also EL #023 at 6, 12, 15, 20] In addition, there is evidence of successful boating on the entire lower Gila during the 1800's. [*Id.*]

9. The JE Fuller PowerPoint re: Gila Navigability identifies the primary difference between Segment 7 & 8 is that Segment 7 has three significant tributaries (*i.e.*, Salt River, Hassayampa River, Agua Fria River), while Segment 8 has "none." [EL X020, at 57, 60]

10. There are no significant hydrological, flow rate, terrain or geographical elements in Segment 8 that dictate further segmentation of the river and it is respondents position that Segment 8 is simply an extension of Segment 7, presenting no additional administrative issues requiring additional segmentation

11. Contrary to opponents of navigability that argue the river is uniformly not navigable and therefore no segmentation analysis need be done, the Gila is not a uniform river—quite the contrary. The ASLD report states that historical changes on the Gila River "are not the same along all reaches of the river." [EL #004, at VII-1; *see also*, EL #X020, JE Fuller PowerPoint re: Gila River Navigability, 30-31] The Hjalmarson work clearly indicates that the lower Gila is deeper than others have testified regarding the lower Gila or other segments of the river under any ordinary and natural condition. [see EL #23 at 6, 12, 15, 20] Further, the mouths of the Salt and the Colorado are certainly clear topographic/geographic areas that can serve as markers for defining the beginning and end of the segment.

12. The ASLD report states further:

> [B]ecause of physiographic variability and a climatic gradient across the Gila River watershed, different reaches have unique hydrologic characteristics (Hirschboek, 1985), and thus as one might expect, channel transformation along separate reaches are not synchronous or uniform. In addition, dams and irrigation diversion have altered different reaches of the Gila River. [EL #004, at VII-1]

13. "From the confluence of the Salt River near Phoenix, the lower Gila River flows southwestward towards the Colorado River near Yuma." [*Id.*, at 5]

The lower Gila flows "mostly over deep alluvium within the Basin and Range physiographic province. In a few places the river is confined by bedrock (*e.g.*, near Arlington and below Painted Rock Dam), but elsewhere the river contains a wide, unconfined flood plain" (generally >2 miles). [*Id.*]

14. Before Anglo settlement in the Phoenix Basin, stream flow on the Salt River was greater than that on the Gila River at the confluence with the Salt. [*Id.* at VII-6]

15. "Reinvigorated by the Salt River watershed (38,850 km2 (6,600 mi2) in area), most of the lower Gila River was perennial reaching all the way to the Colorado River." [*Id.*]

16. The lower Gila River is a clearly definable, discrete, administrable segment, which, as described in more detail below, has ample evidence of navigability for title purposes.

B. Proponents must prove a segment is navigable by only a preponderance of the evidence

17. Consistent with federal law, Arizona Revised Statutes ("A.R.S.") section 37-1128(A) (Supp. 2014) provides the standard of proof for navigability determinations. That section states:

> After the commission completes the public hearing with respect to a watercourse, the commission shall again review all available evidence and render its determination as to whether the particular watercourse was navigable as of February 14, 1912. If the preponderance of the evidence establishes that the watercourse was navigable, the commission shall issue its determination confirming that the watercourse was navigable. If the preponderance of the evidence fails to establish that the watercourse was navigable, the commission shall issue its determination confirming that the watercourse was nonnavigable.

18. The preponderance of evidence of navigability described *infra* establishes that the lower Gila River was navigable.

C. Navigability for title purposes is determined using federal law.

19. The standard of navigability for equal footing claims is established by federal law. *United States v. Utah*, 283 U.S. at 67, 75; *Ariz. Ctr. For Law In The Pub. Interest v. Hassell*, 172 Ariz. 356, 362, 837 P.2d 158, 164 (App. 1991). Evidence that will not support a navigability or non-navigability decision in a federal court should not be relied on by the Commission to make its determination.

20. In accordance with the federal definition, Arizona law defines a navigable watercourse as:

> [A] watercourse that was in existence on February 14, 1912, and at that time was used or was susceptible to being used, in its ordinary and natural condition, as a highway for commerce, over which trade and travel were or could have been conducted in the customary modes of trade and travel on water.

A.R.S. § 37-1101(5) (2003).

D. Under applicable law, a watercourse is navigable for title purposes if watercraft in use at the time of statehood could have navigated the watercourse as it was in its natural and ordinary condition.

21. A river is navigable, or not, based on its natural and ordinary conditions. *State ex rel. Winkleman v. Ariz. Navigable Stream Adjudication Comm'n*, 224 Ariz. 230, 229 P.3d 242 (App. 2010); *Defenders of Wildlife*, 199 Ariz. at 423 ¶ 38, 18 P.3d at 744; *see e.g. The Montello*, 87 U.S. (20 Wall) 430, 440-443 (1874); *United States v. Utah*, 283 U.S. at 76.

22. The Federal test for navigability in fact only requires that the Gila River be susceptible to navigation in its natural and ordinary condition, not that navigation

actually have occurred. *See The Daniel Ball*, 77 U.S. (10 Wall.) at 563. Determination of navigability to fix ownership of the riverbed is decided as of the date a state enters the Union. *United States v. Appalachian Elec. Power Co.*, 311 U.S. 377, 408 (1940); *United States v. Utah*, 283 U.S. at 75.

It should be noted, this does not necessarily mean that the determination is based on the physical condition of the river, but only that the determination is made as of that date. *See United States v. Utah*, 283 U.S. at 82.

23. In *The Montello*, the Supreme Court held that the Fox River in Wisconsin was a navigable water of the United States even though it had been significantly improved from its natural condition. 87 U.S. (20 Wall) at 443. The Court held that although early efforts to navigate the Fox River proceeded with difficulty,

> [T]he true test of the navigability of a stream does not depend on the mode by which commerce is, or may be, conducted, nor the difficulties attending navigation. If this were so, the public would be deprived of the use of many of the large rivers of the country over which rafts of lumber of great value are constantly taken to market.
>
> It would be a narrow rule to hold that in this country, unless a river was capable of being navigated by steam or sail vessels, it could not be treated as a public highway. The capability of use by the public for purposes of transportation and commerce affords the true criterion of the navigability of a river, rather than the extent and manner of that use. If it be capable in its natural state of being used for purposes of commerce, no matter in what mode the commerce may be conduct, it is navigable in fact, and becomes in law a public river or highway.

Id. at 441-42 (emphasis added).

24. The federal navigability test requires using a pre-diversion natural and ordinary flow rate. *Economy Light & Power Co. v. United States*, 256 U.S. 113 (1921)

E. The natural and ordinary condition of the lower Gila River was a single thread, meandering stream that did not start becoming significantly braided until 1890, 1891 and 1905 flooding, and was then prohibited from returning to its character by the massive diversion of its flow.

25. Differences in descriptions of the river pre-1890 may be caused by observers describing the same reach during different times of the year, or under different stream flow conditions. They may also be due to changes in channel configuration through time but also spatial variability in channel geometry at any one time due to local hydrological conditions. [EL #004, at VII-6]

26. "Before 1890, the lower Gila River had a distinct main flow channel within a larger braided, flood-flow channel. Every winter and spring, flow would exceed channel capacity of the main flow channel and extend into the adjacent flood channels." [EL #004, VII-7]. This is the recognized description of a compound channel.

27. Two large floods in 1890 and 1891 caused major changes to the lower Gila. In February 1890, flooding damaged settlements and eroded terraces along the lower Gila River. In 1891, another large flood passed down the lower Gila River. This flood was generated by the largest estimated peak discharge on the Salt River (300,000 cfs). [EL #004, VII-7]

28. "The disastrous floods of 1890 and 1891 did much to break down the river's confining banks, partly filled the channel with sediment, and in general interfered with the equilibrium that had been established." [EL #X025, at 67]

29. Dr. Gary Huckleberry, Ph.D., opined that major changes did not occur until after 1890 and "that the floods of 1890 and 1891 were the driving force behind the change in channel configuration." [EL #004, VII-7]

30. "It was not until the floods of 1905 that the middle Gila River changed from a single, slightly sinuous, narrow channel to a wide, straight, braided channel. [EL #X034, at 1083]

31. Many of the witnesses on channel condition acknowledged that rivers like the Gila will heal themselves and return to their single channel compound nature after severe flooding causes braiding if their natural and ordinary flows are resumed. [TR T11/17/05 T279:12-17, Id at 13:9-14, TR 8/19/14 1659:22-1660:9]

32. The lower Gila River did not resume its single channel nature after the floods of late 1800's and early 1900's because, by that time, the natural and ordinary flows had been substantially diverted. As Mr. Mussetter testified, the reason the river did not heal itself was that it did not have the water to do so. [TR 8/20/2014 1819:2-13]

33. In 1923, Ross noted that the lower Gila River from the confluence with the Salt to the Colorado "changed materially since it was first seen by white men." [EL#X025, at 64]

F. The Preponderance of Evidence Of Navigation On The Lower Gila River Proves That Not Only Was The Lower Gila Susceptible To Navigation In Its Natural And Ordinary Condition, It Was Actually Navigated While Major Diversions Were Occurring, Establishing That Under Either Circumstance It Was Navigable For Title Purposes.

34. In *PPL Montana,* the Supreme Court recognized that "'extensive and continued [historical] use for commercial purposes' may be the 'most persuasive' form of evidence, but the 'crucial question' is the potential for such use at the time of statehood, rather than 'the mere manner or extent of actual use.'" *PPL Montana, LLC,* 132 S. Ct. at 1233 (*quoting United States v. Utah,* 283 U.S. at 82–83).

35. "[N]avigability does not depend on the particular mode in which such use is or may be had—whether by steamboats, sailing vessels or flatboats." *United States v. Holt State Bank,* 270 U.S. 49, 56 (1926).

36. Evidence of current boating is probative of the susceptibility of the Gila River's navigability at statehood. *See Alaska v. Ahtna, Inc.,* 891 F.2d 1401 (9th Cir. 1989).

37. In the ASLD Report, the authors list many accounts of the river that support the conclusion that the Lower Gila River segment was susceptible to navigation before its water was significantly diverted. The first such account describes a Spanish exploration party passing through the Gila River basin in November 1697. [EL #004, at IV-1] In that account, Juan Bautista de Escalante was forced to swim across the river in order to investigate ruins on the other side. [*Id.*]

38. Spanish explorers during the 1700's described the native peoples living along the lower Gila River as fishermen, and large galleries of cottonwood trees lined the banks as recently as the late 1800's. [EL #004, at VII-6]

39. A later account by James Ohio Pattie states that while trapping along the lower Gila during December 1827, his party constructed a canoe so that they could trap beaver along the river which he stated was too deep to be forded on horseback. [*See* EL

#X030-121, Goode P. Davis, Jr., Man and Wildlife in Arizona: The Pre-Settlement Era, 1824–1865, 13 (Thesis submitted to Faculty of the Dept. of Biological Sciences in the Graduate College of the University of Arizona, 1973)]

40. Another account by John S. Griffin, an army surgeon who traveled with the 1846 Kearny (Emory) expedition, described the Gila below the Salt as about 80 yards wide, three feet deep, and rapid. [*Id.* at 53 (quoting J.S. Griffin, A Doctor Comes to California) (California Historic Soc., San Francisco 1943)]

41. Another member of the expedition, Henry Smith Turner, noted that the river was from 100 to 150 yards wide, with an average depth of four feet–"**quite deep enough to float a steamboat.**" [*Id.* (quoting H.S. Turner, The Original Journals of H.S. Turner) (D.L. Clarke, ed. Univ. of Oklahoma Press 1966) (emphasis added)]

42. Lieutenant William Emory of the Kearny Expedition in 1846 described the lower Gila River as "wide, rich, and thickly overgrown with willow and a tall aromatic weed," and flowing "gently over a sandy bottom...." [*Id.*]After significant upstream irrigation diversions had already occurred, John Montgomery, a rancher residing in Arlington described the river near Powers Butte (between Buckeye and Gillespie Dam) in 1889, as having a "well-defined channel with hard, sloping banks lined with cottonwood and bushes. The water was clear, was 5 or 6 feet deep, and contained many fish." [EL #X025, Clyde P. Ross, The Lower Gila Region, Arizona: A Geographic, Geologic, and Hydrologic, Reconnaissance with a Guide to Desert Watering Places, 66–67, Department of Interior Water Supply Paper 498 (1923)]

43. Before 1913, there were several types of boats in use in Arizona on the Gila River, all of which were susceptible to commercial use. The list of boats includes basket boats (3'-5' long), wooden rafts (5'-25' long), canoes (8'-25' long), rowboats (6'-22' long), canvas boats (5'-12' long), scows (8'-32' long), flat boats (8'-30' long), ferry boats (6'-35' long), and at least one steam boat (25' and up). [EL #016-Papers submitted by Barbara Tellman, 31; EL #012-Douglas R. Littlefield, ASSESSMENT OF THE NAVIGABILITY OF THE GILA RIVER BETWEEN THE MOUTH OF THE SALT RIVER AND THE CONFLUENCE WITH THE COLORADO RIVER PRIOR TO AND ON THE DATE OF ARIZONA'S STATEHOOD FEBRUARY 14, 1912 ("Littlefield Report"), at 120 (Nov. 3, 2005)]

44. An 1853-54 army expedition reports the river could probably be used to deliver logs from the Mogoyon [sic.] Mountains. [*Id.*, at IV-3]. That same army expedition reported the lower segment of the river was approximately nine feet deep for 35 miles up from the mouth during "low water period." [*Id.*]

45. Although Dr. Lingenfelter denied steamboats ever plied the waters of the Gila, Dr. Littlefield acknowledged that historical records established that the steamboat Explorer had navigated the lower Gila for seven years before it was destroyed in a flood on the Colorado [EL #012, at 120]

46. The evidence presented in the ASLD Report and by Dr. D.C. Jackson at the hearing demonstrates that even under unnatural, diverted conditions the river contained enough water to use boats, including a steamboat. Had the water remained in the river and not been unnaturally diverted, it would have remained so.

47. The Treaty of Guadalupe Hidalgo in 1848 recognized the potential navigability of the Gila.

48. In addition to the evidence presented by the parties of historical boating on the river, at the 2005 and the 2014 hearings persons have testified about their own modern navigation. For example, Mr. Jon Colby testified that he was employed as an outfitter and guide on the Upper Gila. He stated that he guided groups of people via kayaks, rubber rafts, and canoes through the Gila Box Riparian National Conservation Area managed by the Bureau of Land Management near Safford, AZ. [TR 11/17/2005, 331:1-15--339:12] Mr. Donald Farmer testified in 2014 that he has navigated the upper segments of the Gila at various flows using a canoe. [TR 6/18/2014,546:14-21] in addition, Mr. Dave Weedman, a biologist with Arizona Game & Fish Department, testified at the hearing that he had floated the river for his work gathering information on fish populations. [TR 11/16/2005 211:8-13]

49. Jon Fuller and Donald Farmer's 2014 testimonies to the Commission demonstrated that even today, large sections of the Gila, albeit upstream from the lower Gila segments 7 & 8, continue to be navigable. This kind of testimony regarding recreational use, while not directly applying to the lower Gila, leads to the logical conclusion that, if other segments of the Gila which have less water in them then the lower Gila can still be boated today, the lower Gila with a greater water supply would still be navigable absent the complete diversion of all its water.

Mr. Farmer testified that while he has not personally boated the Gila in a wooden canoe similar to those used at statehood, he was on river trips with such boats. [TR

6/18/2014, 550:7-14] Mr. Farmer testified that in his experience wooden canoes had no problem at all navigating the Gila. [TR 6/18/2014, 550:15-21]

50. Summary Table of Historical Navigation Accounts

II. No.	Year(s)	Party	Location	Citation
1	1824–27	James Ohio Pattie	Entire River	ASLD study IV-1
2	1846–47	Mormon Battalion-Captain Phillip George Cooke and Mormon Battalion successfully floated supplies via a raft from Gila Bend to Yuma	Lower Gila-Gila Bend to Yuma	ASLD study IV-2
3	1849	Edward Howard party constructed a boat and floated the Gila River from Gila Bend to Yuma.	Lower Gila-Gila Bend to Yuma	ASLD study IV-2
4	1850	An unsigned letter from a traveler at Camp Salvation reported that the "expedient of lightening down teams by building small boats on the Gila" had been tried and succeeded and that many Gila Trail travelers had thus reached the Colorado River.	Lower Gila	ASLD study IV-3; Transcript ("TR") 11/16/2005 39:9-15; TR 11/17/2005 209:20-210:5
5	1857–64	Lieu., J.C. Ives, Steamboat, "Explorer"	Lower Gila-mouth to Dome	Littlefield Report 118–19; TR 11/16/2005 63:20–22
6	1867–92	Henry Morgan operated ferry 25 years beginning	Maricopa Wells	ASLD study IV-5

II. No.	Year(s)	Party	Location	Citation
		in 1867		
7	1881	Two men, Cotton and Bingham, reported to be planning a trip to Yuma via the Salt and Gila Rivers in an 18-foot skiff, flat-bottom boat.	Lower Gila-Salt River to Yuma	ASLD study IV-7; TR 11/16/2005 39:23-40:1; TR 11/17/2005 210:18-211:3
8	1881	Three men, including William "Buckey" O'Neill, departed Phoenix for Yuma in a 20 foot long, 5 foot wide boat called "Yuma or Bust."	Lower Gila-Phoenix to Yuma	ASLD study IV-7; TR 11/16/2005 39:16-22, 172:23-173:2; TR 11/17/2005 211:4-19
9	1884	A.J. McDonald built large ferry boat for Gila and Salt River Ferry Company to be used on Salt River below town. It will be of the same dimensions as the one sent to the Gila, viz: 16 by 18 feet.	Lower Salt/Gila	ASLD study IV-7
10	1891	R.M. Straus of Aztec, senior partner of Straus, Dallman & Co. has new ferry at work on the Gila River. It is large enough to carry a load 6-horse team in safety.	Lower Gila	ASLD study IV-8
11	1891	Two men navigated Gila from source to Yuma trapping the river after prospecting trip	Entire river	EL X019, at 15, Arizona Republican article from Yuma Times April 18, 1891

II. No.	Year(s)	Party	Location	Citation
12	1891	J.K. & George Day trapped all the way to Yuma. Fifth trip by J.K. Day. Brothers intended to repeat trip the following September.	Verde, Salt, Gila to Yuma	EL X019, at 8-Arizona Sentinel article, April 2, 1892
13	1894	Messrs. Stacy and Tapia operated steamer "Aztec" for excursions up the Gila five miles every Sunday to a park	Lower Gila	EL X019, at 12-Arizona Sentinel article, May 26, 1894.
14	1895	Evans and Amos	Upper/Middle Gila-San Francisco to Yuma (one portage from Sacaton to Phoenix)	ASLD study IV-8: TR 11/16/2005 40:1-5, TR 11/17/2005 212:2-215:9
15	1897	Captain Aspinwall of the Schooner McCord used to transport cargo of wood down lower Gila	Lower Gila to Yuma	EL X019, at 13, Phoenix Weekly Herald article October 28, 1897
16	1905	Jack Shibely	Lower Gila-Phoenix to Gila Bend	ASLD study IV-13; TR 11/16/2005 40:13-14, 116:7-20, 215:12-18.
17	1905	Jack Henness of Florence operates suspended cable-and-cage to transport cargo and people across river. Report looking down on Gila Queen (ferry boat) as he passes over.	Middle Gila	ASLD study IV-12
18	1905	Two new boats enter the thriving ferry business, the Mayflower and the	Not clear	ASLD study IV-13

II. No.	Year(s)	Party	Location	Citation
		Rey del Gila		
19	1905	Gila King ferry enters the ferry business. The boat is 20 feet long, 6 feet wide and capable of carrying a 3000 pound load.	Unknown	ASLD study IV-13
20	1909	Stanley Sykes	Entire River-New Mexico to Yuma	TR 11/16/2005 40:15-16, 106:1-16,
21	1959	Three unknown men entered river near Duncan with intention of traveling to Yuma. Later account reported in Yuma Courier	Entire River	ASLD study IV-21

51. The test of susceptibility to navigation for useful commerce does not require susceptibility to navigation for large-scale commercial activity. *Utah v. United States*, 403 U.S. at 9; *Hassell*, 172 Ariz. at 363, 837 P.2d at 165.

52. In *Utah v. United States*, 403 U.S. 9, the Supreme Court examined historical evidence that in the late 1800s ranchers had used the Great Salt Lake sporadically to carry livestock between islands and the mainland. The Court deemed it irrelevant that "the business of the boats was ranching and not carrying water-borne freight" and that the carriage served only the few ranchers along the lake shores. *Id.* at 11. Because the lake was proven susceptible for usage "as a highway," the court found that the test of navigability was met. *Id.* Clearly the lower Gila has been demonstrated to have similar navigation usage for local commerce.

53. Early observations of the watercourse, and actual use of a river by fur traders, explorers, surveyors, pleasure boaters, travelers, Indians, and use in connection with mining and transporting supplies or lumber are all persuasive evidence of navigability. *Appalachian Elec.*, 311 U.S. at 410-19; *United States v. Utah*, 283 U.S. at 79-82; *Economy Light*, 256 U.S. at 117-18.

54. In *Alaska v. Ahtna, Inc.*, 891 F.2d 1401, 1405 (9th Cir. 1989), the Ninth Circuit Court of Appeals held that the lower 30 miles of the Gulkana River was navigable for title purposes based on evidence that the river was used for guided fishing and sightseeing trips. The court stated that even though the river was frozen for six months each year and only flowed from May to September, the recreational use provided conclusive evidence of the river's susceptibility for commercial use at statehood. *Id.* at 1402, 1405.

55. In an earlier Ninth Circuit case, *Puget Sound Power & Light Co. v. Federal Energy Regulatory Commission*, 644 F.2d 785, 788-89 (9th Cir. 1981), the same court recognized that, although not determinative, use of canoes was relevant to the navigability determination of the White River in Washington before the river was substantially diverted.

56. That same court recognized that navigability is not determined by the weight or size of the articles transported.

> "It is not the size of articles transported in commerce that establishes the navigable character of a waterway. Navigability depends upon the stream's usefulness as a transportation mechanism for commerce. 'It is obvious that the uses to which the streams may be put vary from the carriage of ocean liners to the floating out of logs; that the density of traffic

> varies equally widely from the busy harbors of the seacoast to the sparsely settled regions of the Western mountains. The tests as to navigability must take these variations into consideration.'"

Puget Sound Power & Light Co., 644 F.2d at 789 (*quoting Appalachian, supra,* 311 U.S. at 405-406, 61 S.Ct. at 298).

G. If actual historical use is limited, then susceptibility to navigability can be proven by reconstruction of the natural and ordinary physical conditions of the river.

57. When actual use is limited or infrequent, a river's susceptibility to use as a commercial highway may still be proved by evidence concerning its physical characteristics. *Appalachian Elec. Power Co.*, 311 U.S. at 410-19; *United States v. Utah,* 283 U.S. at 82-83; *Economy Light,* 256 U.S. at 118. Regarding the lower Gila River this is exactly what respondents did via the uncontroverted report and testimony of Hjalmar W. Hjalmarson in this matter.

58. In *Appalachian Electric Power Co.*, 311 U.S. at 407, the Supreme Court stated that "natural and ordinary" condition refers to the "volume of water, the gradients and the regularity of the flow."

59. Evidence from the 1800s before the commencement of modern era settlement and farming is the best evidence of the River's natural condition. Evidence after obstructions have caused significant reduction in the flow is of less significance and has minimal probative value, *Winkleman* supra at 242-243

60. The only evidence that was presented that related to the lower Gila River's susceptibility to navigation in its natural and ordinary condition as called for in *Winkleman, Id.* was Mr. Hjalmar W. Hjalmarson's report and testimony evaluating the

pre-development, pre-diversion physical conditions of the lower Gila River segment from its confluence with the Salt River to its mouth on the Colorado. [EL #023–Hjalmar W. Hjalmarson, NAVIGABILITY ALONG THE NATURAL CHANNEL OF THE GILA RIVER (October 25, 2002)]

61. Mr. Hjalmarson used the hydraulic geometry method to overcome the effects of settler-induced changes to the natural flow and channel morphology. While there are no pre-diversion U.S.G.S. flow records,[1] there are many channel width measurements in GLO survey records and hydrologic studies, including tree-ring analyses that can be used to estimate pre-diversion streamflow. Unlike all other experts providing evidence to the Commission on the lower Gila, Mr. Hjalmarson analyzed the river in its pre-diversion natural and ordinary condition. [ANSAC Hearing Transcript ("TR") 11/17/2005 256:21–25][2] He testified that based on his analysis of the hydraulics, hydrology and geomorphology, the river was navigable. His testimony and report was not refuted.

62. Mr. Hjalmarson's study estimated the amount and temporal distribution of the natural and ordinary flow in the Gila River from the confluence with the Salt to the Colorado. [TR 11/17/2005, 236:14–18] He calculated the pre-development mean

[1] U.S.G.S. data only goes back to 1888. By 1890, there were already thirty-six recorded diversions from the Gila. [EL #004, at IV-54–IV-58]

[2] References to the hearing transcripts are cited by 'page number: line number(s).'

flow rate (2,330 cfs), median flow rate[3] (1,750 cfs), and base flow rate[4] (290 cfs) of the river at the confluence with the Salt River. [EL #023, at 12-14]

63. Mr. Hjalmarson computed the base flow of the lower Gila by applying the Freethey and Anderson (1986) basin accounting method for natural stream base flow for ground-water systems. This method estimates natural conditions that existed before man's activities.[EL #023 at 13]

64. Because of large amount of stored groundwater that supplied base flow, it may not have varied greatly year to year. *Id*

65. The Gila River constructs its own geometry, which is related to water flow and sediment characteristics. Amount of flow affects channel size, while sediment type dictates channel shape. *Id* at 16

66. At the river mouth on the Colorado near Yuma, the mean and median remained the same, but the base flow rate declined to 170 cfs due to evapotranspiration along the reach. [*Id.*, at 13, 15] The base flow did not vary significantly year to year due to the large amount of stored groundwater supplying the base flow. [*Id.*]

67. Based on his analysis, Mr. Hjalmarson concluded that the pre-development river was a perennial stream, with an average width of 300', an average

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[3] Median is defined as "a value in an ordered set of values below and above which there is an equal number of values or which is the arithmetic mean of the two middle values if there is no one middle number." WEBSTER'S NINTH NEW COLLEGIATE DICTIONARY 737 (1987).

[4] Base flow is controlled by the geology of the watershed. [EL #023, at 12] Base flow in the reach was the composite of ground water drainage from many parts of the watershed, which drained into the river under natural conditions. [*Id.*] This is the low end of the flow-duration curve. [*Id.*]

depth of 4.3' in the upper portion of the segment and 5.3' in the lower portion of the segment, and average velocity of 2.5 feet/second. [EL #023, at 20]

68. In addition to calculating the average width, Mr. Hjalmarson collected 122 channel width measurements from the historical Government Land Office ("GLO") survey notes and calculated an average width from those notes after adjusting for unknown angles of incidence. [TR 09/17/05 at 245:19–248:8; EL #023, at 10] Mr. Hjalmarson's calculated width agreed with the GLO measurements from the surveys. [TR 09/17/05 at 248:9–13]

69. Mr. Hjalmarson testified in 2005 that based on the natural conditions (*e.g.*, slope, channel bed material, etc.) the Gila River would return to a single meandering channel after braiding had occurred as the result of an extraordinary flow (flood). [*Id.* at 279:12–17]

70. Mr. Hjalmarson's conclusion that the natural and ordinary condition of the Gila was a single, meandering channel was supported by Dr. Gary Huckleberry. [TR 11/16/05, 57:2–58:7; EL #X034, at 1083]

71. Both Drs. Schumm and Huckleberry acknowledged that the Gila River became a wide-braided river as a result of large floods, [TR 11/16/2005, 59:13–21; EL #006-Stanley A. Schumm, GEOMORPHIC CHARACTER OF THE LOWER GILA RIVER 8–9 (2004) ("Schumm Report")].Dr. Schumm testified that a braided river would revert to a single meandering channel over time if the natural conditions prevailed. [TR 11/17/2005, 13:9–14, 34:13–16]

72. The Commission is required to determine what the river would have looked like absent the effects of major flooding. See *Winkleman*, supra at 241. The primary reason that the Gila River channel was braided at the time of statehood was because floods caused the braiding and the natural flow had been diverted, which interrupted the natural and ordinary process of re-establishing a single meandering channel. [TR 11/17/2005 254:22–255:7; TR 2014 testimony; *see* EL #X034, at 1083-84]

H. Three unrefuted testing methodologies prove that in its ordinary and natural physical condition the lower Gila was navigable by boats in use at Arizona's statehood.

73. After determining the physical characteristics of the pre-development Gila River, Mr. Hjalmarson then used three federal tests for navigability to determine whether the pre-development physical conditions on the lower Gila were susceptible to navigation. [*Id.* at 252:8–254:15]

74. The three tests are: the Bureau of Outdoor Recreation Method; the Fish and Wildlife Method; and a U.S. Geological Survey engineering method developed by Langbein in 1962 to determine commercial viability.

A. The Bureau of Outdoor Recreation method is used for small watercraft, such as those in use in Arizona at statehood (*e.g.*, canoes, kayaks, drift boats, and rafts). Mr. Hjalmarson determined that the lower Gila segment would have been rated as Class I, or easy, using this method. [EL #023, at 25] Most of the time, the flow of the river was at or near optimum conditions for recreational boating according to this method. [*Id.*] Throughout the studied reach of the Gila, the river

exceeded the minimum depth (*i.e.*, 1 foot) and width (*i.e.*, 6 feet) requirements for these small boats. [*Id.*]

B. The U.S. Fish and Wildlife Service method is another method of assessing stream flow suitability for navigation. [*Id.*, at 26] This method uses cross-sections to determine the minimum stream flow for a particular watercraft activity. [*Id.*] Again, using data for the types of boats present in Arizona at statehood (*e.g.*, canoes, drift boats, and rowboats), the lower Gila River exceeded the minimum requirements for navigation nearly all the time. [*Id.*] The smallest acceptable depth for small watercraft (*i.e.*, 1 foot) is lower than the hypothetical worst-case scenario (multiple channels) for the Gila River. [*Id.*; EL #023, at 23]

C. The U.S. Geological Survey method is based upon the specific forces required to propel a vessel upstream. [*Id.*] This determination is affected by such natural characteristics as discharge, gradient, depth, and velocity. [*Id.*] This method evaluates natural conditions to assess two-way navigability of a watercourse by commercial shallow-draft watercraft. [*Id.*] Using this method, the lower segment of the Gila River is navigable for commercial use both downstream and upstream. [*Id.*, at 29]

D. Using these three models, Mr. Hjalmarson concluded that under ordinary and natural conditions, the lower Gila segment would have been navigable. [*Id.* at 27-29; TR 11/17/2005 at 256:5-9.] In addition to its scientific veracity, Mr. Hjalmarson's technical analysis of the ordinary and natural conditions agrees

with historical accounts of pre-development navigation on the river discussed *supra*.

75. Mr. Hjalmarson's analysis was scientifically accurate and testable because all of the underlying data necessary to repeat his calculations were either included in his report, or available. Mr. Hjalmarson provided citations to his sources.

76. Mr. Hjalmarson's calculation of the ordinary and natural mean flow amount is consistent with the "virgin flow" figure for the same reach in the REPORT OF WATER SUPPLY OF THE LOWER COLORADO BASIN PROJECT PLANNING REPORT published in November 1952. By the Bureau of Reclamation [EL#X006, at 152]

77. In 1952, the U.S. Department of Interior Bureau of Reclamation estimated the average "virgin flow" for the Gila River at Gillespie Dam, located just down river from the Salt confluence to be 1,792,800 acre-feet/year (2,475 cfs), while they estimated the flow at Dome, AZ to be 1,403,600 acre-feet/year (1,938 cfs). [EL #X006, at 152]

78. The Gila River by the mid-1800s had largely reverted to its natural state. (*See Winkleman* 242, ¶ 30)

79. According to one witness who was recorded in the Special Master's Report on the Green, Grand, Colorado, and San Juan Rivers for the U.S. Supreme Court Case, *United States v. Utah*, 283 U.S. 64, the depth necessary for low-draft boats in use in Utah in 1896 was 2.5 to 3.0 feet. [EL#X009, Report of the Special Master, 102]. That depth is at least 1.3 feet less than Mr. Hjalmarson's estimated mean depth of flow in the lower section of the lower Gila (4.31 ft.). [EL #023, at 20, Table 3.2]. In the upstream

section near the Salt confluence, the mean depth is 5.3 feet, quite enough to float "light draft boats suitable" to the Gila River. [*Id.*; -see also, EL #X009, at 102]

I. Minor impediments to navigation do not prevent a watercourse from being determined to be navigable under the equal footing doctrine.

80. The Arizona Court of Appeals, in *Defenders of Wildlife*, stated that "[t]he fact, however, that artificial obstructions exist capable of being abated by due exercise of the public authority, does not prevent the stream from being regarded as navigable in law, if, supposing them to be abated, it be navigable in fact in its natural state. 199 Ariz. at 424 ¶ 46, 18 P.3d at 735 (*quoting Economy Light*, 256 U.S. at 118).

81. The mere presence of occasional difficulties in navigation does not render non-navigable an otherwise navigable river. *Id.*; *United States v. Utah*, 283 U.S. at 76.

82. Applying this rule, *The Montello Court* held that the district court had erred by holding that the Fox River was not navigable because various obstacles to navigation had to be removed before it was usable for navigation. *Id.* The Court stated:

> Indeed, there are but few of our fresh water rivers which did not originally present serious obstructions to an uninterrupted navigation. In some cases, . . . they may be so great while they last as to prevent the use of the best instrumentalities for carrying on commerce, but the vital and essential point is whether the natural navigation of the river is such that it affords a channel for useful commerce. If this be so the river is navigable in fact, although its navigation may be encompassed with difficulties by reason of natural barriers, such as rapids and sand-bars.

Id. at 443 (emphasis added); *accord Holt State Bank*, 270 U.S. at 56.

There are no waterfalls, rapids, riffles, beaver dams, sand bars, artificial obstructions, or other obstacles to navigation that have been specifically identified in the lower Gila River by any of the opponents of navigability in that segment.

J. Government Land Office surveyor's observations or actions are not determinative, or particularly relevant, to determining whether a river is navigable.

83. The U.S. Supreme Court held that the surveyors' actions regarding meandering have little significance because surveyors were known to meander both navigable and non-navigable streams and because they were not "clothed with power to settle questions of navigability." *Oklahoma v. Texas*, 258 U.S. 574, 585 (1922).

84. Most of surveys took place after the lower Gila River was already subject to substantial if not complete diversion and thus do not reflect the surveyor viewing the river in its ordinary and natural condition. [EL #02 at 37-42], Exhibit A attached hereto.

K. Federal land patent evidence is not determinative of navigability for title purposes.

85. In *Choctaw Nation v. Oklahoma*, 397 U.S. 620, 648 (1970), the U.S. Supreme Court stated that "[c]onveyance of a river bed would not be implied and would not be found unless the grant 'in terms embraces the land under the water of the stream.' Such disposals by the United States 'during the territorial period are not lightly to be inferred, and should not be regarded as intended unless the intention was definitely declared or otherwise made very plain.'" (internal citations omitted). Dr Littlefield has not pointed to one grant which had a specific statement in it that it intended to convey title to land under the Gila River and under the forgoing federal law such inference will not be made.

86. Although the Federal Government could dispose of lands pre-statehood, if the grant was not explicit it did not include the land underlying a navigable waterway

and that land was transferred to the state upon admission to the Union under the 'equal footing' doctrine. *Defenders of Wildlife*, 199 Ariz. at 415 ¶ 2, 18 P.3d at 726.

87. Like the surveys discussed earlier, the vast majority of the patents considered by Dr Littlefield happened well after diversions were commonplace and well into times when the river was completely diverted. [EL #02 at 37-42], Exhibit B attached hereto.

I. Conclusion

The substantial evidence in the record, more than just the required preponderance, compels the Commission to find that the lower Gila River is navigable from the confluence with the Salt to its mouth on the Colorado. Mr. Hjalmarson's testimony and report evaluating the physical conditions of the natural and ordinary condition of the lower Gila, along with historical evidence of actual navigation on the river, support a finding under either scenario that the river was susceptible to navigation and therefore navigable for title purposes in its "natural and ordinary" condition, at least from the confluence with the Salt to the Colorado River. Maricopa County and The Flood Control District of Maricopa County request the Commission to find that the lower Gila River from the confluence of the Salt River to its mouth at the Colorado River was navigable for title purposes.

Respectfully Submitted this 23rd day of January 2015.

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Arizona Navigable Stream Adjudication Commission
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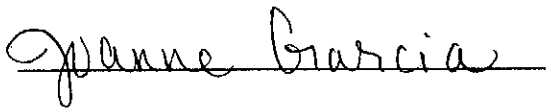

EXHIBIT A

Survyes on Figures 6-15				
Description	**Year**	**Year Filed**	**Source**	**Exhibit Reference**
T1N R1W Gila and Salt River Meridian	1868	1870	U.S. Bureau of Land Management Phx, AZ	Exhibit 2
T4S R4W Gila and Salt River Meridian	1871	1871	U.S. Bureau of Land Management Phx, AZ	Exhibit 3
T5S R4W Gila and Salt River Meridian	1871	1872	U.S. Bureau of Land Management Phx, AZ	Exhibit 3
T8S R22W Gila and Salt River Meridian	1874	1875	U.S. Bureau of Land Management Phx, AZ	Exhibit 5
*T7S R16W Gila and Salt River Meridian		1877	U.S. Bureau of Land Management Phx, AZ	Exhibit 4
T8S R16W Gila and Salt River Meridian	1877, 1878	1878	U.S. Bureau of Land Management Phx, AZ	Exhibit 4
T8S R17W Gila and Salt River Meridian	1878	1878	U.S. Bureau of Land Management Phx, AZ	Exhibit 4
T1S R2W Gila and Salt River Meridian	1882, 1883	1883	U.S. Bureau of Land Management Phx, AZ	Exhibit 2
T1N R2W Gila and Salt River Meridian (Resurveyed in 1907)	1883	1883	U.S. Bureau of Land Management Phx, AZ	Exhibit 2
T8S R21W Gila and Salt River Meridian	1890	1891	U.S. Bureau of Land Management Phx, AZ	Exhibit 5
T1N R2W Gila and Salt River Meridian (Resurveyed)	1907	1907	U.S. Bureau of Land Management Phx, AZ	Exhibit 2
**T1S R1W Gila and Salt River Meridian		1914	U.S. Bureau of Land Management Phx, AZ	Exhibit 2
***T3S R4W Gila and Salt River Meridian				Exhibit 3
*T8S R18W Gila and Salt River Meridian				Exhibit 4
*Survey not shown on Figures 6-15. Located on Exhibit 4.				
**Survey not shown on Figures 6-15. Located on Exhibit 2.				
***Survey not shown on Figures 6-15. Located on Exhibit 3.				

EXHIBIT B

FEDERAL LAND PATENTS ALONG THE HISTORIC GILA RIVER CHANNEL (Exhibits 2-5 of Littlefield Report)				
Patent Type/Grant	**Number**	**Year Issued**		**Exhibit Reference**
State Grant		1858		Exhibit 2
State Grant		1871		Exhibit 3
State Grant		1878		Exhibit 4
State Grant		1878		Exhibit 4
State Grant		1883		Exhibit 2
State Grant		1890		Exhibit 5
CE - Cash Entry	284	1891		Exhibit 2
CE - Cash Entry	656	1891		Exhibit 3
CE - Cash Entry	556	1891		Exhibit 3
CE - Cash Entry	645	1891		Exhibit 3
CE - Cash Entry	595	1891		Exhibit 4
CE - Cash Entry	347	1891		Exhibit 4
CE - Cash Entry	869	1891		Exhibit 4
CE - Cash Entry	774	1891		Exhibit 5
CE - Cash Entry	258	1892		Exhibit 2
CE - Cash Entry	173 3/4	1892		Exhibit 2
HE - Homestead Entry	527	1892		Exhibit 2
CE - Cash Entry	876	1892		Exhibit 4
CE - Cash Entry	836	1892		Exhibit 4
HE - Homestead Entry	657	1894		Exhibit 2
CE - Cash Entry	475	1894		Exhibit 2
HE - Homestead Entry	625	1894		Exhibit 2
CE - Cash Entry	1143	1896		Exhibit 2
CE - Cash Entry	581	1898		Exhibit 2
HE - Homestead Entry	942	1899		Exhibit 2
HE - Homestead Entry	947	1899		Exhibit 3
HE - Homestead Entry	1087	1901		Exhibit 3
HE - Homestead Entry	1305	1904		Exhibit 5
HE - Homestead Entry	1411	1905		Exhibit 2
HE - Homestead Entry	1331	1905		Exhibit 2
HE - Homestead Entry	89	1907		Exhibit 5
HE - Homestead Entry	58881	1909		Exhibit 2
CE - Cash Entry	178376	1911		Exhibit 2
CE - Cash Entry	233230	1911		Exhibit 2
Ind. Res. X. Pat	175044	1911		Exhibit 3
CE - Cash Entry	276609	1912		Exhibit 2
CE - Cash Entry	280872	1912		Exhibit 2
CE - Cash Entry	285029	1912		Exhibit 2
HE - Homestead Entry	261568	1912		Exhibit 5
Ind. Res. X Pat.	505219	1915		Exhibit 2
Ind. Res. X Pat.	505219	1915		Exhibit 2
ME - Mineral Entry	467745	1915		Exhibit 2
Ind. Res. X. Pat	505233	1915		Exhibit 3
Ind. Res. X. Pat	505233	1915		Exhibit 4
Ind. Res. X. Pat	505229	1915		Exhibit 4

SS	3	1915		Exhibit 4
SS	3	1915		Exhibit 4
SS	3	1915		Exhibit 4
SS	3	1915		Exhibit 4
SS	3	1915		Exhibit 4
SS	3	1915		Exhibit 4
CE - Cash Entry	513101	1916		Exhibit 2
Ind. Res. X Pat.	522094	1916		Exhibit 2
Ind. Res. X. Pat	507210	1916		Exhibit 4
Ind. Res. X. Pat	507210	1916		Exhibit 4
State Grant		1918		Exhibit 2
SS		1918		Exhibit 4
IL	8	1918		Exhibit 5
IL	10	1918		Exhibit 5
IL	8	1918		Exhibit 5
IL	8	1918		Exhibit 5
IL	8	1918		Exhibit 5
IL	8	1918		Exhibit 5
IL	232	1918		Exhibit 5
IL	8	1918		Exhibit 5
IL	8	1918		Exhibit 5
IL	8	1918		Exhibit 5
SS	18	1919		Exhibit 2
HE - Homestead Entry	695503	1919		Exhibit 2
HE - Homestead Entry	670611	1919		Exhibit 4
CE - Cash Entry	762971	1920		Exhibit 2
CE - Cash Entry	739285	1920		Exhibit 5
IL	40	1920		Exhibit 5
CE - Cash Entry	814694	1921		Exhibit 2
HE - Homestead Entry	830677	1921		Exhibit 2
HE - Homestead Entry	830675	1921		Exhibit 2
HE - Homestead Entry	810317	1921		Exhibit 2
IL	47	1922		Exhibit 2
IL	61	1922		Exhibit 2
HE - Homestead Entry	911357	1923		Exhibit 2
DLE - Desert Land Entry	925887	1923		Exhibit 2
HE - Homestead Entry	942273	1924		Exhibit 2
HE - Homestead Entry	936943	1924		Exhibit 2
IL	80	1924		Exhibit 2
HE - Homestead Entry	941526	1924		Exhibit 5
IL	89	1926		Exhibit 4
DLE - Desert Land Entry	987760	1926		Exhibit 4
TC - Timber Culture	1010386	1927		Exhibit 2
TC - Timber Culture	1010387	1927		Exhibit 2
DLE - Desert Land Entry	1001597	1927		Exhibit 3
DLE - Desert Land Entry	1009161	1927		Exhibit 4
CE - Cash Entry	1009152	1927		Exhibit 4

DLE - Desert Land Entry	1000821	1927		Exhibit 5
HE - Homestead Entry	1017436	1928		Exhibit 4
HE - Homestead Entry	1018585	1928		Exhibit 4
HE - Homestead Entry	1018586	1928		Exhibit 4
CE - Cash Entry	1014044	1928		Exhibit 5
HE - Homestead Entry	1028522	1929		Exhibit 4
HE - Homestead Entry	1027712	1929		Exhibit 4
DLE - Desert Land Entry	1028040	1929		Exhibit 4
DLE - Desert Land Entry	1032755	1929		Exhibit 4
HE - Homestead Entry	1022535	1929		Exhibit 5
CE - Cash Entry	1033448	1930		Exhibit 2
HE - Homestead Entry	1101664	1930		Exhibit 2
HE - Homestead Entry	1036618	1930		Exhibit 2
HE - Homestead Entry	1037198	1930		Exhibit 4
DLE - Desert Land Entry	1043071	1930		Exhibit 4
HE - Homestead Entry	1034203	1930		Exhibit 5
HE - Homestead Entry	1045475	1931		Exhibit 4
CE - Cash Entry	1053257	1932		Exhibit 4
CE - Cash Entry	1066811	1933		Exhibit 3
HE - Homestead Entry	1072938	1934		Exhibit 2
HE - Homestead Entry	1071855	1934		Exhibit 2
CE - Cash Entry	1071005	1934		Exhibit 2
SS	13	1934		Exhibit 2
HE - Homestead Entry	1070902	1934		Exhibit 2
HE - Homestead Entry	1073385	1934		Exhibit 4
DLE - Desert Land Entry	1074012	1935		Exhibit 4
PS - Public Sale	1088399	1937		Exhibit 3
DLE - Desert Land Entry	1104916	1939		Exhibit 4
IL	214	1941		Exhibit 2
DLE - Desert Land Entry	1111509	1941		Exhibit 2
HE - Homestead Entry	1118089	1944		Exhibit 2
CE - Cash Entry	1123764	1948		Exhibit 2
DLE - Desert Land Entry	1134685	1952		Exhibit 2
DLE - Desert Land Entry	1136359	1952		Exhibit 5
PS - Public Sale	1140493	1953		Exhibit 3
DLE - Desert Land Entry	1147922	1954		Exhibit 3
DLE - Desert Land Entry	1154409	1955		Exhibit 2
PS - Public Sale	1151737	1955		Exhibit 2
DLE - Desert Land Entry	1154408	1955		Exhibit 2
DLE - Desert Land Entry	1168161	1957		Exhibit 2