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BEFORE THE ARIZONA NAVIGABLE STREAM

ADJUDICATION COMMISSION

IN RE THE DETERMINATION OF NAVIGABILITY OF THE LOWER SALT RIVER, FROM GRANITE REEF DAM TO THE GILA RIVER CONFLUENCE	**ARIZONA STATE UNIVERSITY'S MEMORANDUM REGARDING THE LOWER SALT RIVER**

Pursuant to the Arizona Navigable Stream Adjudication Commission's ("Commission") order at its meeting held on June 29, 2012, Arizona State University submits its memorandum explaining the Lower Salt River ("River") was not navigable in its ordinary and natural condition.

I. ISSUE BEFORE THE COMMISSION

Was the River navigable in its ordinary and natural condition?

II. BURDEN OF PROOF

The proponents of navigability have the burden of proof by a preponderance of the evidence that the River was navigable in its ordinary and natural condition. *State ex rel. Winkleman v. Arizona Navigable Stream Adjudication Com'n*, 224 Ariz. 230, 239, 229 P.3d 242, 251 (Ariz.App. Div. 1, 2010); *see* also A.R.S. § 37-1128(A).

III. RIVER HAS NEVER BEEN NAVIGABLE

Was the River navigable in its ordinary and natural condition? Clearly, the answer is no. In its ordinary and natural condition, the River is a shallow, braided stream filled with snags, sand bars, and gravel packs that would ground and tear boats apart. In the

1800s, a few adventurous settlers tried to navigate the River, but these exploits failed miserably. Contemporary leaders unequivocally stated the River was not navigable. In fact, the River "served as a barrier rather than a corridor for transportation." Tr. at p. 113: 11-12. As modern settlement took hold, River flows were diverted for irrigation and dams were built to store the water, rendering the stream even less suitable for navigation. In 1911, Granite Reef Dam and Roosevelt Dam were complete, capturing and diverting most of the stream water. Consequently, there is no question that the River was not navigable at statehood in 1912.

A. Navigability is a Factual Issue

The question of whether the River is navigable is an issue of fact. *Ariz. Ctr. for Law in the Pub. Interest v. Hassell*, 172 Ariz. 356, 363 n. 10, 837 P.2d 158, 165 n. 10 (App.1991). "Rivers must be regarded as public navigable rivers in law which are navigable in fact. And they are navigable in fact when they are used, or are susceptible of being used, in their ordinary condition, as highways for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water." *The Daniel Ball,* 77 U.S. (10 Wall.) 557, 563, 19 L.Ed. 999 (1870); and *see* A.R.S. § 37-1101 (5) (definition of navigability derived from *Daniel Ball*); *see* also *Arizona Center For Law In Public Interest v. Hassell*, 172 Ariz. 356, 363, 837 P.2d 158, 165 (Ariz.App. Div. 1,1991).

B. Appellate Court Declared Best Evidence Appears in 1800s.

The Court of Appeals proclaimed that the best evidence of the River being navigable is its "natural condition." *Winkleman*, 224 Ariz. at 242, 229 P.3d at 254. The obvious problem with this proposition is that the Hohokam Indians diverted the River in prehistoric times, so there is no evidence of the River's natural condition. The Court of Appeals therefore directed the Commission to consider records of events between the time when the Hohokam Indian diversions had ceased and when modern-era settlers began

farming in the River valley as the "best evidence of the River's natural condition". *Winkleman*, 224 Ariz. at 242, 229 P.3d at 254. In other words, the appellate court told the Commission to focus on the River's natural geology and hydrology, giving the evidence arising in the 1800s considerable weight.

C. Geology and Hydrology Prevent Navigation

The River's geology cannot support navigation. In most reaches the River is a continuously shifting, braided stream. Shallow channels intertwine throughout its wide sand and gravel riverbed, creating sandbars and gravel islands altering as the stream ebbed and flowed. Tr. at 7:194-200. In some areas geology forces the braids into very narrow reaches that scour the bank, and create a turbulent, high-velocity flow. *Id.* at 198:5-12. Then the channel widens and braids again. *Id.* at 198:14-16. These braided-to-narrows-to-braided conditions prevent navigation.

Typical of a braided stream, the River's hydrology lacks the consistently high flows needed to support navigation. The River's flow is a product of precipitation runoff, which is erratic as the Arizona weather. During most of a typical year, low flows cut through the sandy braided riverbed until the winter storms and summer monsoons cause flooding leaving debris, rocks and new channels. *See* Tr. at p. 62: 9-16; and p. 194-200. Over decades the River alternates between prolonged severe droughts and devastating floods. Hence, during drought periods the stream cuts through the sand and gravel and divides into undefined braids until floods scour the streambed leaving debris, snags, and new gravel piles changing the River braid courses and impeding navigation. Tr. at p. 194-200.

Dr. Schumm, an expert on physical river conditions, vividly described what a typical boating attempt of the River would be like. Floating into the River valley, a boater first encounters a shallow braided river. The River spreads into mile-wide braided stream filled with surface rocks and gravel, snags, and sand bars. Tr. at p. 197:13 - 198:5. Next,

"the river bangs into a terrace, and we have got a very, very narrow reach" that confines two channels, scouring the bank, and creating a highly turbulent, high-velocity reach. *Id.* at 198:5-12. Then the channel widens and braids again. *Id.* at 198:14-16. A little further downstream bedrock forces groundwater to the surface and constricts the river into another hazardous stretch. *Id.* at 198:17-23. Dr. Schumm described boating through the narrows as a harrowing experience: "Suppose you had a boat coming down here, you would reach very high velocities coming through this narrow reach. It would be pretty hazardous. Then, bang, you would be out into this reach of ground of a sandbar or an island." *Id.* at 195:5-9.

Dr. August, a leading historian on territorial waters and politics, confirmed the accuracy of Dr. Schumm's account based on the historical records describing the stream as dangerous, erratic, unreliable, and "blocked by obstruction – sandbars, gravel pits, boulders, you name it." *Id.* at 129:1-3. This repeated pattern of a shallow stream braided within a mile-wide floodplain riddled with sandbars and gravel and then being pinched into a perilous narrow with raging rapids prevented navigation of the River.

D. River Was Not Navigable in 1800s.

1. Attempts to navigate the River failed.

When the early settlers tried to navigate the River, they failed. In 1873, Charles Trumbull Hayden made a disastrous effort to float logs down the river. *Hill Report* at B-2; Tr. at p. 126:14-16 and 43:2-17. The *Weekly Arizona Miner* reported, "[T]he Hayden party, left up Salt River to come down in a canoe and drive some logs with them, have returned, and pronounce the scheme a failure. With much toil and difficulty, on account of rapids and boulders in the river, they descended a long way, when, having lost their arms, ammunition, and provisions, excepting flour, they arrived in a [canyon] so narrow as not to admit of the passage of a log, and were compelled to abandon their boat and foot it." *Hill Report* at 3-19.

Eight years later, Bucky O'Neill's "Yuma or Bust" boat busted before reaching Gila Bend. *Id.* at 3-20. In 1888, Major Spaulding died of an accidental gunshot wound inflicted as he and Captain Hatfield tried to lift their canoe over Mesa Dam. *Id.* at 3-18. A year later, during a major flood period, Vol Gentry and W. Cox tried to float a ferry downstream to Gila Bend, but "[s]he was cut in two parts as if she had come across a buzz saw." *Hill Report* at 3-22 (*citing Tombstone Daily Prospector* (Jan 24, 1889)). During another flood event, John Tisler drowned when his boat struck a barbed-wire fence and capsized. Tr. at p. 59:6-16; *Hill Report* at 3-23.

Even the most "successful" of these ventures do not prove the River sustained trade or travel. Supposedly Vandemarke and Kilgore floated goods less than two miles from Hayden's Ferry to the Swilling Canal, but this occurred during a high flood period and they never attempted it again. Tr. at pp. 39:12 – 42:10. The alleged "successful" trip by Burch et al., confronted "rapids with numerous projecting boulders making the trip a hazardous one." *Hill Report* 3-21 (*citing Arizona Gazette* (June 3, 1885)). This "party of daring adventurers" on one occasion wrecked and lost their provisions, firearms, etc. *Id.* (*citing Arizona Gazette*, June 5, 1885). The only logical conclusion to be gathered from these events is that the River was not a navigable stream susceptible to use for commerce.

2. Ferries were used during floods when the River impeded travel.

In the 1800s, as noted historian Jack August testified, the River "served as a barrier rather than a corridor for transportation." Tr. at p. 113: 11-12. When the River flooded, troops could not be moved or supplied, mail service was interrupted, and interstate commerce was interrupted. *Id.* at p. 119:19-24. Therefore, a few short-lived ferries were built. Dr. August explained the few ferries that ever operated were short-lived, curious anomalies in the desert. Tr. at p. 113:13 – 114:23. Even the most famous Hayden's Ferry was used only during flooding and high flow periods when the River could not be crossed by foot, horse, or wagon. *Id.* at p. 113:23 – 114:5. The ferries essentially served as

bridges to cross the River when flooding prevented the early settlers from fording the stream. The fact that Mill Avenue Bridge now stands where Hayden's Ferry once operated makes this point clear. *Id.* at p. 145:1-9.

3. Contemporaries knew the River was not navigable.

Nobody knew the River better than Carl Hayden, the son of the owner of Hayden Ferries. As an Arizona Senator, the younger Hayden called upon his personal childhood knowledge of the river's ebb and flow, flood and drought, and grew to become the country's "Legislative Water Master" of the 20th Century. Tr. at p. 108: 17-25. Early in his political career, Hayden sought federal funding to control the River under House Bill 221, addressing nonnavigable streams. *Id.* at p. 118:6-24. Hayden explained to Congress, "I come from a state where we have dry rivers and no harbors. And I want to see a committee established that will give consideration to the flood problems on nonnavigable streams." *Id.* at p. 119:7-11. And knowing the River's history, Hayden wholeheartedly supported building Roosevelt Dam and the Apache Trail, a wagon road to transport men and materials from Phoenix to the dam site. *Id.* at pp. 124:20 - 125:5; and 126:1-8. Likewise, Director of the Reclamation Service Author Davis Powell agreed that the River was not navigable and supported building the Apache Trial. *Id.* at pp. 125:4 - 126:7. Arizona Governor Raleigh Stanford was so confident that the River was nonnavigable, and consequently the state could not own the streambed, that he bought 20 acres of streambed. *Id.* at p. 121:8-24. The fact that these contemporary leaders and experts on water and navigation believed the River was not navigable in fact is compelling.

The courts of this era also found that the River was nonnavigable. In 1892, Judge Kibbey found that the Lower Salt River was "unnavigable", and accordingly applied Arizona law rather than federal law when dividing the stream's water for irrigation. *See Wormser v. Salt River Valley Canal Co.*, No. 708, 2nd Judicial Dist., Terr. of Ariz., Maricopa County (March 31, 1892) ("Kibbey Decree"). This decision was affirmed

eighteen years later. *Hurley v. Abbott*, No. 4564, 3rd Judicial Dist., Terr. of Ariz., Maricopa County (March 1, 1910)("Kent Decree").

E. River was not navigable at Statehood.

Navigability is determined at the date of statehood, February 14, 1912. *See* A.R.S. § 37-1101(5); *Utah v United States*, 403 U.S. 9, 10 (1971). At the date of statehood, Roosevelt Dam and Granite Reef Diversion Dam had been completed by 1911 and were capturing, storing, and diverting water from the River. *See, e.g.* Tr. at p. 122:14-18; 235:15-22. Knowing these dams capture and divert most of the River stream water, there is no question that the River was not "used or susceptible to being used . . . as a highway for commerce" on February 14, 1912.

IV. CONCLUSION

The River was never navigable. The few attempts at commercial navigation failed. Carl Hayden and other contemporary experts recognized the River could not be navigated. Even when the stream held sufficient water to float a boat, the River's braiding and turbulence prevented navigation. Consequently, the Commission should find that the river was not navigable in fact or in law.

DATED this 7th day of September 2012.

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