Santa Cruz River Opening Memorandums

Received 6/13/14 gdm

L. William Staudenmaier (#012365)
SNELL & WILMER L.L.P.
One Arizona Center, Suite 1900
400 E. Van Buren Street
Phoenix, AZ 85004-2202
Telephone: (602) 382-6000
Email: wstaudenmaier@swlaw.com

Attorneys for Freeport Minerals Corporation

FENNEMORE CRAIG, P.C.
Sean T. Hood (No. 022789)
2394 East Camelback Road
Suite 600
Phoenix, AZ 85016-3429
Telephone: (602) 916-5000
Email: shood@fclaw.com

Attorneys for Freeport Minerals Corporation

BEFORE THE ARIZONA NAVIGABLE STREAM ADJUDICATION COMMISSION

IN RE: DETERMINATION OF NAVIGABILITY OF THE SANTA CRUZ RIVER	Case No. 03-002-NAV

FREEPORT MINERALS CORPORATION'S OPENING POST-HEARING MEMORANDUM CONCERNING THE NON-NAVIGABILITY OF THE SANTA CRUZ RIVER

INTRODUCTION

Freeport Minerals Corporation (Freeport) respectfully submits its Opening Post-Hearing Memorandum Concerning the Non-Navigability of the Santa Cruz River. Standing in stark contrast to the Colorado River, which is exceptional in this region, the Santa Cruz is a typical southwest desert river, bearing the hallmarks of a non-navigable stream: it is shallow, highly variable, and has low discharge. Moreover, in its ordinary and natural condition, the Santa Cruz was typified by repeated gaps in flow, including extended ephemeral reaches. The Santa Cruz ceases to even qualify as a river in certain locations, where it is instead referred to as Santa Cruz Flats and Santa Cruz Wash, respectively.

In light of these characteristics, it is not surprising that, despite centuries of inhabitance of the Santa Cruz River valley and strong needs for commercial navigation, there is absolutely no historical evidence of any commercial navigation of the Santa Cruz River in its ordinary and natural condition. Indeed, even recreational navigation has occurred only sporadically, and only during flood events (not ordinary), behind man-made lakes (not natural), or in effluent dominant stretches (not natural).

Given these circumstances, the proponents of navigability largely ignore the Santa Cruz in this latest round of hearings. The Arizona Center for Law in the Public Interest (Center) submitted a report by Hjalmar W. Hjalmarson, but neither the Center nor the Arizona State Land Department presented any witness at the hearing. Accordingly, Freeport's expert witness, Rich Burtell, was the only witness to testify before the Commission during the hearing held in Tucson on March 28, 2014.

The proponents of navigability bear the burden in these proceedings, and yet it is the evidence of non-navigability that is conclusive. The historical accounts and stream flow data reveal a small, shallow, and discontinuous stream that missionaries, military personnel, surveyors, and 49ers traveled alongside but could not navigate, despite a significant need. Applying the standard for navigability that is well-established through longstanding United States Supreme Court precedent, the evidence requires a determination that the Santa Cruz was neither navigable nor susceptible to navigation in its ordinary and natural condition.

I. THE APPLICABLE LEGAL STANDARD MANDATES A FINDING THAT THE SANTA CRUZ IS NOT NAVIGABLE.

The proponents of navigability for the Santa Cruz River bear the burden of proof and must demonstrate by a preponderance of the evidence that specific segments of the river were navigable in their ordinary and natural condition. *State of Arizona v. Arizona Navigable Stream Adjudication Comm.*, 224 Ariz. 230, 239, 229 P.3d 242, 251, ¶ 17 (App. 2010).

The test of navigability for title is a federal test based on more than 150 years of case law. *PPL Montana v. Montana*, 132 S.Ct. 1215, 1227 (2012). The most important of these cases were decided by the United States Supreme Court, beginning with *The Daniel Ball*, 77 U.S. 557 (1870). Although *The Daniel Ball* addressed federal power to regulate navigation, its statement of the test of navigability has become the standard test for purposes of navigability for title. *See PPL Montana*, 132 S.Ct. at 1228. In fact, Arizona's statutory definition of a navigable waterway paraphrases *The Daniel Ball* test:

> "Navigable" or "navigable watercourse" means 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).

During the long history of Supreme Court consideration of this issue, several important legal principles have become well-established. First, this test is one of "navigability in fact." *PPL Montana*, 132 S.Ct. at 1227. Accordingly, the focus is on "'rivers really navigable.'" *Id.* (quoting *Shively v. Bowlby*, 152 U.S. 1, 31 (1894)). Furthermore, it is "not every small creek in which a fishing skiff or gunning canoe can be made to float at high water which is deemed navigable, but, in order to give it the character of a navigable stream, it must be generally and commonly useful to some purpose of trade or agriculture." *United States v. Rio Grande Dam & Irrigation Co.*, 174 U.S. 690, 698-99 (1898) (quoting *The Montello*, 20 Wall. 430, 442). On this basis, the Supreme Court concluded that

> [o]bviously, the Rio Grande within the limits of New Mexico is not a stream over which in its ordinary condition trade and travel can be conducted in the customary modes of trade and travel on water. Its use for any purposes of

> transportation has been and is exceptional, and only in times of temporary high water.

Id. at 699. The Rio Grande is the largest and longest river in New Mexico, flowing from the northern border with Colorado to the southern border with Texas. Yet, because it is a desert river with insufficiently reliable flows, the Supreme Court held that the entire river in New Mexico is non-navigable.

Similarly, the Supreme Court concluded that the entire length of the Red River in the State of Oklahoma, more than 500 miles in all, was non-navigable due to variable water flows and river bed conditions, such that

> trade and travel neither do nor can move over that part of the river, in its natural and ordinary condition, according to the modes of trade and travel customary on water; in other words, that it is neither used, nor susceptible of being used, in its natural and ordinary condition as a highway for commerce. Its characteristics are such that its use for transportation has been and must be exceptional, and confined to the irregular and short periods of temporary high water. A greater capacity for practical and beneficial use in commerce is essential to establish navigability.

Id. at 591.

Most recently, the Supreme Court has reconfirmed that evidence of navigability "must be confined to that which shows the river could sustain the kinds of commercial use that, as a realistic matter, might have occurred at the time of statehood." *PPL Montana*, 132 S.Ct. at 1233. Moreover, "[n]avigability must be assessed as of the time of statehood, and it concerns the river's usefulness for 'trade and travel,' rather than for other purposes." *Id.* For these reasons, "[m]ere use by initial explorers or trappers, who may have dragged their boats in or alongside the river despite its nonnavigability in order to avoid getting lost, or to provide water for their horses and themselves, is not itself enough." *Id.* Finally, the Court stated that a finding of navigability must be founded on the kind of trade and travel on water that constitutes "a ***commercial*** reality." *PPL Montana*, 132 S.Ct. at 1234.[1]

Based on these standards, the Supreme Court rejected a lower court ruling that the Madison River in Montana was navigable because the lower court had relied primarily on

[1] Unless otherwise noted, emphasis is added.

evidence of modern-day boating. While the Supreme Court noted that such evidence could be considered, it would only support a finding of navigability if "[a]t a minimum, ... the party seeking to use present-day evidence for title purposes" can show that "(1) the watercraft are meaningfully similar to those in customary use for trade and travel at the time of statehood; and (2) the river's post-statehood condition is not materially different from its physical condition at statehood." *Id.* The Court noted that these requirements are critical because "[m]odern recreational fishing boats, including inflatable rafts and lightweight canoes or kayaks, may be able to navigate water much more shallow or with rockier beds than the boats customarily used for trade and travel at statehood." *Id.*

II. MR. BURTELL HAS SIGNIFICANT EXPERTISE EVALUATING THE NATURE AND OCCURRENCE OF SURFACE WATER IN ARIZONA STREAMS.

Freeport retained Rich Burtell, PG, to identify and compile available evidence concerning the Santa Cruz and evaluate whether it was navigable or susceptible to navigation in its ordinary and natural state. Mr. Burtell prepared a declaration (Declaration)[2] and testified in support of his findings that the Santa Cruz was not navigable in its ordinary and natural condition on or before statehood. Mr. Burtell was the only witness to testify before the Commission at the hearing on March 28, 2014.

Mr. Burtell's *Curriculum Vitae* is Attachment A to his Declaration. Mr. Burtell is a Registered Geologist with a Masters of Science in Hydrology. Mr. Burtell has over twenty-five years of experience as an environmental scientist dealing with a host of water and environmental matters, and his experience and expertise extend to matters involving geology, hydrology, and hydrogeology. Mr. Burtell worked at the Arizona Department of Water Resources (ADWR) for twelve years. For the majority of his tenure Mr. Burtell served as the Manager of the Adjudications Section at ADWR. As Manager of the Adjudications Section,

[2] *See* Declaration of Rich Burtell on the Non-Navigability of the Santa Cruz River at and Prior to Statehood, dated October 2013, Item No. X004, Freeport 1, (Declaration). Attached as Exhibit A is the Index of Exhibits Submitted by Freeport, which lists Freeport's twenty-two exhibits, Freeport 1 through Freeport 22.

Mr. Burtell was extensively involved in evaluating the nature and occurrence of surface water in Arizona streams.

III. THE UPPER SANTA CRUZ WAS NOT NAVIGABLE IN ITS ORDINARY AND NATURAL CONDITION AT OR BEFORE STATEHOOD.

Mr. Burtell divided the Santa Cruz into three segments for purposes of assessing navigability in the context of different stream characteristics:

- Headwaters to Mexican Border (Upper)
- Mexican Border to Santa Cruz Flats (Middle)
- Santa Cruz Flats to Gila River Confluence (Lower)[3]

In his report, Mr. Hjalmarson does not opine that either the Upper Santa Cruz or the Lower Santa Cruz was navigable, only the Middle Santa Cruz.[4] Accordingly, it is uncontested that the Upper Santa Cruz was not navigable in its ordinary and natural condition at or before statehood, and Freeport therefore only briefly summarizes the unrefuted evidence that demonstrates that the Upper Santa Cruz was not navigable.

A. Historical Accounts Demonstrate that the Upper was Non-Navigable.

As Mr. Burtell recounts in his Declaration and testified about during the hearing, two residents of the area surrounding the Upper Santa Cruz provided testimony in the 1880s concerning the occurrence of water in the Upper Santa Cruz during the 1830s and 1840s.[5] Their testimony demonstrated that during this time, during a period of Apache unrest when diversions in the area, if any, were only minor, the stream's flow was extremely sporadic, with repeated gaps in flow, and consisted of only a mile or two of perennial flow.[6]

---

[3] Declaration ¶¶ 12-14; Transcription of audio tape 1 of 4, Item No. X008, ("Trans. 1 of 4") pp. 9-10.

[4] Trans. 1 of 4 p. 11. Mr. Hjalmarson's middle reach is approximately 20 miles shorter than Mr. Burtell's Middle Reach. *Id.* at 9-11. Whereas Mr. Burtell extended his Middle Reach to Santa Cruz Flats on the basis of streambed characteristics, Mr. Hjalmarson ended his middle in the Picacho Peak area, approximately 20 miles south of Santa Cruz Flats. *Id.*

[5] Declaration ¶¶ 17-20; Trans. 1 of 4 pp. 11-12.

[6] Declaration ¶¶ 17-20; Trans. 1 of 4 pp. 11-12, 15.

B. Stream Flow Records Demonstrate that the Upper was Non-Navigable.

Mr. Burtell also compiled stream flow data collected between 1948 and 2012 at the U.S. Geological Survey (USGS) gage near Lochiel along the Upper Santa Cruz. The Lochiel gage data is representative of the Upper Santa Cruz in its ordinary and natural condition because upstream diversions were extremely limited. As reported by the USGS, only a couple of hundred acres in the vicinity were being irrigated.

It cannot be emphasized enough how minor the median discharges were for the Upper Santa Cruz in its ordinary and natural condition. As Mr. Burtell compiled in Table 1 to his Declaration, the median discharge was ***less than one cubic foot per second*** (CFS) for each month, which corresponds to less than one foot of depth. Mr. Burtell noted during the hearing that the diversions associated with irrigation of the couple of hundred acres reported by the USGS only amount to a couple of CFS, meaning that predevelopment flows would still have been less than 5 CFS. During the hearing, Mr. Burtell put this minuscule discharge rate in context relative to rivers that actually are navigable:

> ... I have been to the gauge site. When you look at the actual stream it's not much wider than this desk, at Lochiel...at the Lochiel gauge, and half a foot at most depth. In fact, often less than that. You compare to that to the streams that have been deemed navigable, let's say the Green River or the Grande River in Utah, those rivers ... the average or typical flow is on the order of thousands of CFS, 2,000, 5,000 CFS. We are talking a stream here that is less than 10 CFS. So, ***we are talking two orders of magnitude lower flow.***[7]

C. There Is No History of Commercial Navigation of the Upper Reach.

As is to be expected for a discontinuous reach consisting of such low discharge rates and such shallow depths, there is no history of commercial navigation of the Upper Santa Cruz, or any other navigation for that matter.[8] That is because the Upper reach was non-navigable in its ordinary and natural condition.

[7] Trans. 1 of 4 p. 13.
[8] Trans. 1 of 4 p. 16.

IV. THE MIDDLE SANTA CRUZ WAS NOT NAVIGABLE IN ITS ORDINARY AND NATURAL CONDITION AT OR BEFORE STATEHOOD.

A. Historical Accounts Demonstrate that the Middle was Non-Navigable.

As Mr. Burtell noted during the hearing, we are fortunate again, as we were with the San Pedro, to have a wealth of historic accounts of the Santa Cruz at a time when the stream remained in its ordinary and natural condition.[9] These accounts were made by missionaries, military personnel, surveyors, and 49ers[10] and are tabulated in Table 2 to Mr. Burtell's Declaration. Mindful of the need to assess the navigability of the stream in its ordinary and natural condition,[11] Mr. Burtell "was very particular" about identifying accounts made during the autumn harvest or during the winter, "when there was little or no irrigation going on."[12] Mr. Burtell also relied upon accounts made from 1849 through the late 1850s and during the Civil War, because these were periods of significant Apache unrest during which travelers noted that the region was essentially abandoned.[13] Because these periods involved little if any agricultural or other cultural diversions, these historic accounts provide an invaluable record of the Middle Santa Cruz in its ordinary and natural condition.[14]

The historic accounts of the Middle Santa Cruz in its ordinary and natural condition demonstrate that the stream included multiple discontinuous stretches.[15] For instance, the stream flowed through Calabasas and went dry a few miles north of Tubac.[16] From that point, the Middle went "underground all the way to San Xavier del Bac. Only during years of exceptionally heavy rainfall does it water the flat land between Tubac and San Xavier."[17] This ephemeral stretch of the Middle reach is approximately 20 miles in distance, meaning

---

[9] Trans. 1 of 4 pp. 17-18.
[10] Trans. 1 of 4 p. 18.
[11] *See, e.g., State v. ANSAC*, 224 Ariz. at 239, 229 P.3d at 251, ¶ 17.
[12] Trans. 1 of 4 p. 18.
[13] Trans. 1 of 4 pp. 18-19; Declaration ¶¶ 26-31 and Table 2.
[14] Trans. 1 of 4 pp. 18-19; Declaration ¶¶ 26-31 and Table 2.
[15] Figure 1 to the Declaration is a General Location Map that is useful in identifying locations and landmarks along the Santa Cruz.
[16] Trans. 1 of 4 pp. 18-19; Declaration ¶ 29 and Table 2.
[17] Declaration Table 2 at account by Zuniga in 1804; Trans. 1 of 4 p. 19; Declaration ¶ 29.

that travel north from the Tubac area would, under ordinary and natural conditions, require an onerous 20 mile portage. This factor alone demonstrates that navigation of the Middle Reach was not "a commercial reality."[18]

The historic accounts describe additional gaps in flow throughout the Middle Santa Cruz in its ordinary and natural condition. While preparing his dissertation on the Santa Cruz, J.L. Bentacourt, like Mr. Burtell, became a student of the available historic accounts, from which he summarized the Middle Santa Cruz's repetitive discontinuity as follows:

> All accounts agree that the ***flow of the Santa Cruz first disappeared not far north of Tubac***, near the ford at La Canoa...The ***flows from the Punta de Agua and Agua de la Mision springs disappeared at San Xavier and the eastern base of Martinez Hill***, respectively. Permanent water reappeared 3.5 km (about 2 miles) north of Martinez Hill, ***quitting again in less than 2 km.*** Another ***brief stretch of perennial flow existed half way to Tucson*** in the northern half of Section 2, T15S, R13E[19]..The evidence for where the flow disappeared north of Tucson is less clear.

In addition to a series of gaps in flow, the historic accounts that Mr. Burtell excerpts in Table 2 demonstrate that, even where flow did exist in the absence of heavy rainfall, the stream was small and very shallow, typically one foot or less.[20] Indeed, J.E. Fuller concluded in his 2004 report that "[t]he river was much too shallow most of the time for small boats, even in the perennial stretches."[21] In the Calabasas area, for instance, it was noted that the Santa Cruz was a mere twelve inches deep.[22] Once water reappeared in the San Xavier area after the long twenty mile ephemeral reach beginning north of Tubac, the stretch between San Xavier to Tucson was a small stream unfit for commercial navigation.[23] For example, in October 1849, during the fall harvest, Powell noted when traveling from San Xavier to Tucson that "[t]he river has divided to a mere brook, the grassy banks of which are not more

---

[18] *PPL Montana*, 132 S. Ct. at 1234.
[19] Declaration ¶ 29 and References; Transcription of audio tape 2 of 4, Item No. X008, ("Trans. 2 of 4") pp. 1-2.
[20] Declaration ¶ 29 and Table 2.
[21] Arizona Stream Navigability Study for the Santa Cruz River, J.E. Fuller, dated January 12, 2004, Exhibit 19, (Fuller Report) p. 12.
[22] Declaration Table 2 at account by Reid in February 1857.
[23] Declaration Table 2 at account by Powell in October 1849.

than two yards apart."[24] In the Tucson area, the stream was described by Parke in February 1854 as being merely a foot in depth.[25] North of Tucson, the series of repeated gaps in flow continued through the end of the Middle at Santa Cruz Flats.[26]

These accounts are consistent with the stream flow data summarized below.

B. Stream Flow Records Demonstrate that the Middle was Non-Navigable.

Mr. Burtell evaluated stream flow records from the USGS gage near Nogales, which included flow data for over 150 months from 1913 to 1920 and from 1930 to 1939.[27] Cognizant again of the need to account for any diversions that might have impacted these stream flows, Mr. Burtell was able to establish that the USGS had determined the number of acres being irrigated upstream of the gage during these periods and had measured the other diversions that were made through an irrigation canal.[28] Mr. Burtell determined that these upstream diversions reduced the stream flow at the Nogales gage by only about five CFS, and he was therefore able to account for the diversions to ensure that his analysis applied to the Middle reach in its ordinary and natural condition.[29]

Using a rating curve developed based upon 200 empirical field measurements by the USGS, Mr. Burtell was able to calculate average stream depths based upon the median flows. Mr. Burtell compiled the median monthly stream flow data and the associated stream depths in Table 4 to his Declaration.[30]

Based upon this measured, empirical data, Mr. Burtell concluded that there were only four months – out of more than 150 months – during which the average stream depths were greater than a foot: January and February 1915, August 1914, and August 1922. During the hearing, Mr. Burtell summarized his findings as follows:

---

[24] Declaration Table 2 at account by Powell in October 1849.
[25] Declaration Table 2 at account by Parke in February 1854.
[26] Declaration Table 2 at accounts by Cook, Manje, and Font in December 1846, November 1697, and October 1775, respectively.
[27] Declaration ¶ 32; Trans. 2 of 4 pp. 3-4.
[28] Declaration ¶ 35; Trans. 2 of 4 pp. 3-4, 9.
[29] Trans. 2 of 4 pp. 3-4, 9.
[30] Declaration ¶ 33 and Table 4; Trans. 2 of 4 pp. 3-4.

> The point to take home here and I go on longwinded is that, for a period of time when there was no ground water pumpage, when there was very minor diversions using actual data from the stream. This is not a simulation, this is not a hypothetical of what a channel looks like, this is the actual channel conditions. You only have a couple of months out of over 150 months where the flow was greater than a foot. Obviously ...even I think Mr. Hjalmarson would admit that flow less than a foot would not be conducive as a highway of commerce.
>
> Mr. Hood: He did admit that on the San Pedro.
>
> Mr. Burtell: And in the San Pedro I do believe he did admit that.[31]

Mr. Burtell went on to explain that hypothetically adding in tens, or even hundreds, of additional CFS of flow into the river would not have resulted in depths sufficient to support commercial navigation:

> Getting back to Mr. Hood's comment: if you take the actual median flows that were measured at that gauge and add back in the 5 CFS, and quite frankly add 10 CFS, it really doesn't matter, and you then take that flow 50, 60, 70, 100 CFS, and you walk across and see what the associated depths are with over 30 years of field measurements, they are all still less than a foot.
>
> * * *
>
> Mr. Hood: Adding 200 CFS, you are still talking about a stream that pales in comparison to the San Juan which was deemed non-navigable, is that right?
>
> Mr. Burtell: In fact if you put in 200 CFS in my figure 4 and you walk across and look all the field measurements that the USGS took when there was 200 CFS is fairly more than 1.2, 1.3 average depth in a stream. So, it just simply...it just simply would not be conducive to be a highway of commerce, even if you put the diversions back in.
>
> Mr. Hood: In terms of depth...a depth comparison, the San Juan was over 2-1/2 feet in terms of average depth and here we are talking about a stream on the middle that is clearly under foot.
>
> Mr. Burtell: When you look at the Special Master's findings in the Utah case, he actually compiled the number of days that the average depth of the San Juan River was in different categories. And as I recall, I believe over 150 days out of the year, it was greater than 2 feet.
>
> Mr. Hood: And the typical CFS was 1000 or greater, is that right?
>
> Mr. Burtell: Yes. A couple of 1000 as I recall. And again, we are talking a stream here where you've got 10's of CFS versus a stream with 1000's of CFS's, and the San Juan is deemed nonnavigable. So, we are talking a stream of orders of magnitude difference of flow.[32]

[31] Trans. 2 of 4 pp. 8-9; *see also* Declaration ¶¶ 33-36 and Table 4.
[32] Trans. 2 of 4 pp. 9-10.

The stream flow data from the Nogales gage are consistent with spring discharge measurements taken in the Tucson area by the Tucson City Engineer in the early 1880s. These measurements were taken upstream of potential points of diversion for the Tucson area and the flows were therefore unaltered by diversions. Mr. Burtell tabulated this data in Table 5 of his Declaration and testified about these flows during the hearing as follows:

> But so 25-35 CFS of flow in the Tucson area along the Santa Cruz River, I will just ask the Commission again, to consider: we are talking about streams like the San Juan with several thousand of CFS being deemed unnavigable, and we are talking here about streams with less than 50 CFS on the order of 20 or 30 CFS its...we are talking orders of magnitude difference of flow, um, it just does not seem reasonable to me based on these very minor amounts of flow that the Santa Cruz River could have been used for a highway for commerce, it is just hard for me to imagine.[33]

In summary, consistent with the historic accounts, the Nogales and Tucson flow data confirm that the Middle Santa Cruz was not susceptible to commercial navigation in its ordinary and natural condition.

C. There Is No History of Commercial Navigation of the Middle Reach.

Neither the Upper, the Middle, nor the Lower has any history of commercial navigation. While the absence of commercial navigation is not dispositive "where conditions of exploration and settlement explain the infrequency or limited nature of such use," *United States v. Utah*, 283 U.S. 64, 82, 51 S. Ct. 438, 443 (1931), Mr. Burtell described the reasons that this "argument cannot be made for the Santa Cruz River," namely the existence of mining operations and military bases, including the Tucson Presidio, Fort Buchanan, and a base in the Tubac area, that were all forced to obtain supplies by wagon train from Guaymus or Yuma. In summary,

> [t]here was a need for a highway for commerce. If there was ever a need to bring in supplies, either equipment for the mines, supplies for the troops, there was a need. That need was talked about. But the river was not used to meet that need, at any time of the year.[34]

---

[33] Trans. 2 of 4 pp. 13; *see also* Declaration ¶¶ 37-40 and Table 5.

[34] Trans. 2 of 4 p. 11; *see also* Navigability of the Santa Cruz River by T.A.J. Gookin, P.E., R.L.S., P.H., S.W.R.S., Item No. X007, (Gookin Report) Ch. III pp. 1-2. ("We know that a fortified area (Presidio) called Tucson and another fortified area called Tubac were established in the 1700s. Yet the records indicate that, not only did commercial navigation not

As Fuller stated in his 2004 Report, the Santa Cruz was "a ***very important transportation corridor*** for travelers going from the eastern United States to the west, or from Mexico to the Gila River," yet "[t]here is ***no evidence of commercial trade on the river***."[35]

Despite thousands of years of occupation of the Santa Cruz River valley there is no evidence of commercial navigation. It is clear that the Santa Cruz would have been used to transport personnel and supplies if the stream were susceptible to navigation. It was not used for these purposes, and that is because the Santa Cruz was not navigable in its ordinary and natural condition.

V. THE LOWER SANTA CRUZ WAS NOT NAVIGABLE IN ITS ORDINARY AND NATURAL CONDITION AT OR BEFORE STATEHOOD.

Neither the Center nor any other navigability proponent has presented a case that the Lower Santa Cruz was navigable. In fact, the non-navigability of the Lower Santa Cruz is aptly summarized in a comment by the Center, which Mr. Burtell quoted during the hearing: "the lower Santa Cruz River in Pinal County, never support[ed] perennial flows. ***It is only during flood times that the river flows continuously to the Gila River***. There are no reported instances of boating at any times on the lower Santa Cruz."[36]

Not only is the Lower Santa Cruz merely ephemeral, but the majority of this reach is not even considered a river. The Lower is instead referred to at its point of beginning as Santa Cruz Flats and, farther north, as Santa Cruz Wash.[37]

The dryness of this reach is underscored by the travels of Father Kino. In an effort to stay near water, Father Kino and his companions retreated from the Lower Santa Cruz and charted a course towards the Gila River, which was the nearest source of water. This same course was later followed by all of the subsequent explorers, up through the 49ers' travel

---

occur, there was no use of the river for military navigation to provide supplies to the outposts. The United States established forts in the Santa Cruz River area in the 1800s. Again, there is no historical mention of commercial navigation or military navigation. These facts were decided in ANSAC's last Santa Cruz Decision.") (citation omitted).

[35] Fuller Report p. 12.

[36] Trans. 2 of 4 p. 16 (quoting the Center's Memorandum regarding the Navigability of the Santa Cruz River, filed on September 7, 2012 (Center's September 2012 Memorandum)).

[37] Figure 1 to Declaration; Trans. 1 of 4 p. 10.

towards California. The reason for parting from the Lower is simple, it did not contain any water.[38] It therefore clearly was not susceptible to commercial navigation in its ordinary and natural condition, and no party contends otherwise.

VI. THE CENTER CANNOT SATISFY ITS BURDEN OF PROOF REGARDING NAVIGABILITY OF THE MIDDLE SANTA CRUZ.

A. Reliance upon Man-Made Lakes and Effluent Is Misplaced.

The Center has made reference to boating in man-made lakes, Silver Lake and Warner Lake, which existed along the Santa Cruz in the late 1800s and early 1900s, as well as to modern tubing, kayaking, and rafting in effluent dominated reaches downstream of wastewater treatment plants or during storm events.[39] These isolated excursions are irrelevant for purposes of *The Daniel Ball* test for two reasons. First, these excursions were recreational nature and have no bearing on "the kinds of commercial use that, as a realistic matter, might have occurred at the time of statehood."[40] Second, as the Arizona Supreme Court provided in *State v. ANSAC*, "[t]he crucial question" is whether a river "was navigable in its ***ordinary*** and ***natural*** condition," 224 Ariz. at 234, 229 P.3d at 246, ¶ 1, and neither man-made lakes nor the introduction of effluent to the streambed represent the Santa Cruz in its natural condition, and storm events do not represent the Santa Cruz in its ordinary condition. The Santa Cruz's natural condition is absent man-made alterations to a river, and its ordinary condition is absent unusually high flow during a storm event. *Id.* at 241, 229 P.3d at 254, ¶ 28 (construing "ordinary" to mean "usual, absent major flooding or drought" and "natural" to mean "without man-made dams, canals, or other diversions.").

B. The Army Corps' Traditional Navigable Waters Determination Is at Odds with *The Daniel Ball* Test.

The Center submitted information concerning the Army Corp of Engineers' determination that, despite a complete absence of any "tradition" of navigation, portions of

---

[38] Trans. 2 of 4 p. 16-17; Declaration ¶¶ 55-56.
[39] Declaration ¶¶ 46-52 (referring to the Center's September 2012 Memorandum).
[40] *PPL Montana*, 132 S. Ct. at 1233; *see also id.* at 1243.

the Santa Cruz River constitute traditional navigable waters for purposes of administering the Clean Water Act (TNW Determination).[41] The record demonstrates that the TNW Determination was result-oriented in order to support expansion of the Corps' jurisdiction to regulate waters of the United States under the Clean Water Act, and that the TNW determination did not comply with *The Daniel Ball* test, as the Corp relied on the introduction of non-natural effluent flows into the streambed. *See, e.g., State v. ANSAC*, 224 Ariz. at 241, 229 P.3d at 254, ¶ 28.

The TNW Determination was authored by Colonel Thomas H. Magness in May of 2008, and his analysis spans less than six pages, most of which has little if any relevance in the context of evaluating navigability for title under *The Daniel Ball* test.[42] As Col. Magness alludes to in an e-mail to a superior in June of that year, the TNW Determination resulted in significant controversy, which is unsurprising given the stream characteristics discussed above.[43] While careful to state that this consideration was "not a factor in the decision," Col. Magness reveals the motivation behind the Corps' decision to designate portions of the Santa Cruz as a traditional navigable water:

> [W]ithout this TNW, the closest TNW may be the Colorado River, several hundred miles away. Using the [Colorado River] as a basis for [Jurisdictional Determinations] would likely mean that ***we would lose most of our jurisdiction in the state***. I do not believe this was the intent of the Rapanos decision, even under the most conservative interpretations.[44]

Colonel Magness was referring to the United States Supreme Court's decision in *Rapanos v. United States*, 547 U.S. 715, 739 (2006), in which the Court clarified that the term "waters of the United States" does not extend to waters beyond "those relatively permanent, standing or continuously flowing bodies of water 'forming geographic features' that are described in ordinary parlance as 'streams[,] ... oceans, rivers, [and] lakes.'" The result of the *Rapanos*

---

[41] *See* Memorandum for the Record regarding Determination of Two Reaches of the Santa Cruz River as Traditional Navigable Waters, Item No. X003, (TNW Determination).

[42] TNW Determination.

[43] E-mail from Thomas Magness to Steven Stockton dated June 30, 2008, Item No. X008, Freeport 8 (E-mail from Thomas Magness).

[44] E-mail from Thomas Magness.

decision was to significantly reign-in the Corps' expansive interpretation of its own jurisdiction. *Id* at 738 (rejecting the Corps' interpretation of its own jurisdiction).

Based on the record, the Corps' Santa Cruz TNW Determination was a result-oriented agency decision aimed at maintaining or extending its jurisdiction in the face of a United States Supreme Court decision that ran contrary to the Corps' expansive view of the reach of its own jurisdiction.

Moreover, the TNW Determination relied upon evidence that has no place in a determination of navigability under *The Daniel Ball* test. In his same June 2008 e-mail to his superior, Col. Magness openly acknowledges that his TNW Determination rested largely upon the introduction of effluent in the stream:

> ***The flow in these reaches*** is sufficient year-round to support our navigability decision. While it ***is mostly***, but not exclusively, ***effluent from a wastewater treatment plant***, we believe that case law does allow for this source in decisions of navigability.[45]

Significantly, Col. Magness does not reveal any case law that supports his TNW Determination. Regardless, the case law that governs these proceedings before the Commission does not support a finding of navigability based on non-natural stream conditions. *See, e.g., State v. ANSAC*, 224 Ariz. at 241, 229 P.3d at 254, ¶ 28; *PPL Montana*, 132 S.Ct. at 1233.

In sum, the Army Corps' TNW determination does not in any way support a finding that the Santa Cruz was navigable in its ordinary and natural condition at the time of statehood. To the contrary, the TNW Determination and its reliance on modern recreational boating in wastewater plant effluent discharge underscores the absence of any viable evidence that the Santa Cruz was susceptible to navigation in its ordinary and natural condition.

C. Mr. Hjalmarson's Methodology and Conclusions Are Flawed.

Mr. Hjalmarson employed essentially the same methodology that he used to support his previous testimony before the Commission that the San Pedro was navigable. Mr.

[45] E-mail from Thomas Magness.

Hjalmarson derived predevelopment discharge figures; he used an equation to calculate width based on discharge; he used an equation to determine depth based upon discharge and width; and he developed a flow duration curve that purports to reveal the percentage of days each year that the stream had a certain amount of flow and depth. He then applied his findings to the same modern day recreational boating standard, known as the Hyra method.[46]

As set forth below, Mr. Hjalmarson's methodology and conclusions suffer from serious flaws, and his ultimate conclusion that the Middle Santa Cruz was navigable in its ordinary and natural condition simply cannot be reconciled with the facts or the law.

1. Mr. Hjalmarson Focused Solely on Modern Day Recreational Craft and Failed to Evaluate Susceptibility to Navigation for Commercial Uses.

Mr. Hjalmarson's methodologies and conclusions are flawed in several respects. First, and most fundamentally, Mr. Hjalmarson continues to disregard the applicable legal standard. Mr. Hjalmarson again relied upon the Hyra method, a set of recreational boating standards specifying the minimum depths required for modern recreational canoes.[47] Using these inapplicable standards as justification, Mr. Hjalmarson once again employed the assumption that any stream with a maximum depth of one foot for most of the year is navigable.[48] Mr. Hjalmarson then constructed a mathematical model from which he concluded that "[d]uring ordinary years the river was susceptible to navigation 75% of the time."[49]

Of course, *The Daniel Ball* test does not turn on whether the river has enough water to float a modern recreational canoe, yet Mr. Hjalmarson made no effort to apply the conclusions that he derived from his model to commercial uses or commercial watercraft that were commonly used at statehood.[50]

---

[46] *See, generally,* Hjalmarson Report pp. 21-29; Trans. 1 of 4 pp. 2-4.
[47] Hjalmarson Report pp. 26-27 (chart showing required depths for ***recreational craft***) (relying on Hyra, R., 1978, Methods of assessing instream flows for recreation: Instream Flow Information Paper No. 6, U.S. Fish and Wildlife Service and others); Trans. 1 of 4 p. 2.
[48] Hjalmarson Report pp. 26-27.
[49] Hjalmarson Report p. 30.
[50] *See, generally,* Hjalmarson Report; *see* Gookin Report Ch. VII pp. 1-2.

Mr. Hjalmarson's analysis is inconsistent with binding United States Supreme Court precedent, including the Supreme Court's recent decision in *PPL Montana* in which the Supreme Court soundly rejected the notion that evidence of modern recreational boating is sufficient to demonstrate navigability. 132 S. Ct. at 1234 (holding that "*present day recreational use of the river did not bear on navigability*," and that "*reliance upon* the State's *evidence of present-day, recreational use*, at least without further inquiry, *was wrong as a matter of law*."). The Supreme Court made clear that it is evidence of susceptibility to *commercial* use that must be considered in evaluating navigability. *Id.* at 1233 ("*[E]vidence must be confined to that which shows the river could sustain the kinds of commercial use that, as a realistic matter, might have occurred at the time of statehood.*"). Having disregarded the applicable standard, Mr. Hjalmarson's analysis and opinions provide no basis for a finding that the Santa Cruz River was navigable in its ordinary and natural condition.

2. Mr. Hjalmarson's Width Equation Is Erroneous.

Mr. Hjalmarson input his discharge figures into an equation for determining the width of the active channel. This is the same "width equation" that Mr. Hjalmarson used for the San Pedro.[51] Not surprisingly, therefore, once again Mr. Hjalmarson's width equation significantly underestimates the width of the active channel. We know this because the USGS recorded a number of actual measurements of the stream, and it was therefore easy to calibrate the width equation using real world empirical data.[52] Mr. Burtell performed a series of comparison calculations that demonstrated that Mr. Hjalmarson's width equation significantly underestimates the actual, measured width.[53] By using a methodology that underestimates width – *i.e.* constraining the same amount of discharge to a narrower cross-section – Mr. Hjalmarson artificially forces a conclusion that overstates the depth:

> Mr. Hood: So just in summary: the width equation understates width and forces the same amount of water through a narrower channel thus inflating artificially the depth, you get an inaccurate depth reading.

[51] Trans. 1 of 4 pp. 2-4.
[52] Trans. 1 of 4 pp. 2-4.
[53] Transcription of audio tape 3 of 4, Item No. X008, ("Trans. 3 of 4") pp. 3-4.

Mr. Burtell: That is correct....[54]

3. Mr. Hjalmarson's Depth Equation Is Erroneous.

Mr. Hjalmarson then input his discharge figures and his underestimated widths into an equation to generate a maximum depth. Compounding the significantly understated widths, Mr. Hjalmarson's depth equation inappropriately assumes a smooth parabolic channel.[55] The Santa Cruz does not consist of a smooth parabolic channel.[56] It is instead a highly variable channel, both spatially and temporally. Quite simply, a parabolic depth equation cannot be used to reliably calculate the maximum depth of a variable and non-parabolic stream channel.[57]

Additionally, Mr. Hjalmarson's use of maximum cross-section depths rather than average cross-section depths is a misapplication of his own boating standard. The Hyra method works in tandem with a computer program, the IFG Model, which is used for calculating depths. The IFG Model does not output maximum cross-section depths, but instead outputs average stream depths.[58]

It is clear that Mr. Hjalmarson's approach is the outlier, not the use of average depth by Mr. Burtell (and, indeed, by his own adopted recreational standard, the Hyra method). Mr. Burtell testified in detail why average channel depth is evaluated rather than maximum depth, and he countered Mr. Hjalmarson's strongly-worded critique of Mr. Burtell's use of average stream depths by citing the several examples in which evaluations of stream depths in navigability contexts were based on average, not maximum, stream depths.[59] This includes the Special Master in the *Utah* case, navigability criteria developed by the State of Washington, and Mr. Fuller in proceedings before this Commission.[60]

---

[54] Trans. 3 of 4 pp. 5-6.
[55] Trans. 3 of 4 pp. 2, 4.
[56] Trans. 1 of 4 p. 16; Trans. 2 of 4 pp. 3-5; Trans. 3 of 4 pp. 4.
[57] Gookin Report Ch. VI pp. 1-2.
[58] Trans. 2 of 4 pp. 7-8.
[59] Trans. 2 of 4 pp. 5-8.
[60] Trans. 2 of 4 pp. 5-8.

4. Mr. Hjalmarson Superimposed the Flow Duration Curve from Nogales Data over the Numerous Ephemeral Stretches of the Middle Santa Cruz.

Based upon his flow duration curve, Mr. Hjalmarson concluded that the Middle Santa Cruz was susceptible to navigation 75% of the time from the Mexican border to the Picacho Peak area.[61] This conclusion is entirely irreconcilable with the unrefuted empirical evidence that numerous portions of this reach are ephemeral, meaning they do not have any water flowing the vast majority of the time of the time, much less enough water to support navigation (under even Mr. Hjlamarson's one-foot recreation standard, much less the United States Supreme Court's standard).

Mr. Burtell was able to identify the reason for Mr. Hjalmarson's bizarre flow duration curve. Mr. Hjalmarson developed his flow duration curve based upon the stream flow data at the Nogales gage, which is a location on the river where there is more regular flow, and then ***he superimposed that flow duration curve along his entire middle reach***, including, for instance, the twenty mile stretch between Tubac and San Xavier that has no water and would require a 20 mile portage. Mr. Burtell testified about Mr. Hjalmarson's methodology as follows:

> He is saying the frequency of flow at the Nogales gauge where flow is much more regular down there, I would admit that, is the same as frequency of flow in the Continental area, which is the area between the San Xavier Mission and the Tubac area. Now, those historic accounts that I talked about all were in agreement that there was no flow in that area. It was ephemeral. Mr. Hjalmarson takes a reach, which is [ephemeral] and superimposes on it a flow duration curve from an area which was perennial or maybe intermittent, which was the Nogales gauge. And when you do that you end up with these very unusual findings which Mr. Hjalmarson has in his report.[62]

Mr. Burtell elaborated further, drawing upon an example from Mr. Hjalmarson's flow duration figure:

> This is Page 15 of Mr. Hjalmarson's report and the figure I am referring to is titled *Flow Duration Relationship for the Middle Santa Cruz River*. In the Continental area, which is right in the middle where if you look at my historic accounts, these travelers realized they were going through a dry stretch, and

[61] Mr. Hjalmarson's report concerning Navigability along the Natural Channel of the Santa Cruz River, Item No. X005, (Hjalmarson Report) p. 30.

[62] Trans. 2 of 4 p. 18.

> they all say it, this is a dry stretch. If you believe Mr. Hjalmarson's report, 50% of the time in that area in Continental, you would have 20 CFS. Mr. Hjalmarson in fact says that the river only goes dry 10% of the time at that Continental reach, 10% of the time. So he is saying 90% of the year there is flow in that Continental reach, which is between San Xavier and Tubac and Canoa.
>
> Mr. Hood: [And] all of the empirical evidence demonstrates that that stretch is not perennial, it is not intermittent, it's ephemeral.
>
> Mr. Burtell: It's ephemeral....[63]

By using a flow duration curve from a location with regular flow, and pretending that it is representative of the occurrence of depth and flow along every point on a stream that includes significant ephemeral reaches, Mr. Hjalmarson's findings are entirely unreliable.

5. Mr. Hjalmarson Failed to Calibrate His Model.

From a scientific perspective, when employing a model it is important to calibrate the results to evaluate whether the model renders reliable results. However, Mr. Hjalmarson did not appropriately calibrate his model.[64]

Mr. Burtell performed a number of checks on Mr. Hjalmarson's model, and it calibrates poorly. First, the stream widths that it generates are understated. In addition to comparing Mr. Hjalmarson's calculated widths to actual widths measured by the USGS, Mr. Burtell presented several figures that exhibit the wide channel width in the Nogales area, with which Mr. Hjalmarson's calculated widths cannot be reconciled.[65] Second, Mr. Hjalmarson's model resulted in a flow duration curve that does not comport with reality. Using Nogales flows that are superimposed throughout the Middle Santa Cruz, Mr. Hjalmarson's flow duration curve erroneously portrays the Middle Santa Cruz's several ephemeral stretches to instead be river segments containing active flow 90% of the time.

///

///

---

[63] Trans. 2 of 4 p. 19; *see also* Gookin Report Ch. IV pp. 7-9.
[64] Trans. 3 of 4 pp. 3-4; *see also* Gookin Report Ch. V pp. 1, 14.
[65] U.S. Geological Survey, 2014. Historic Photographs at the Santa Cruz River streamflow gaging station near Nogales, Arizona (No. 09480500), Item No. X008, Freeport 2; Gookin Report Ch. V p. 1.

CONCLUSION

The historic accounts and empirical stream flow data are all in agreement that the Santa Cruz was, in its ordinary and natural condition, a small, shallow stream with repeated gaps in flow. Not only has the Center failed to satisfy its burden of proof, but the overwhelming weight of the evidence clearly demonstrates that the Santa Cruz was neither navigable nor susceptible to navigation in its ordinary and natural condition at or before statehood.

RESPECTFULLY SUBMITTED this 13th day of June, 2014.

SNELL & WILMER L.L.P.

L. William Staudenmaier
Attorneys for Freeport Minerals Corporation

FENNEMORE CRAIG, P.C.

By Sean Hood
Sean T. Hood
Attorneys for Freeport Minerals Corporation

MAILING CERTIFICATE

ORIGINAL AND SIX COPIES of the foregoing
Sent via U.S. mail for filing this 13th day of June, 2014 to:

Arizona Navigable Stream Adjudication Commission
1700 West Washington, Room B-54
Phoenix, AZ 85007

COPY sent via e-mail this 13th day of June, 2014 to each party on the mailing list (see http://www.ansac.az.gov/parties.asp) for *In re Determination of Navigability of the Gila River*

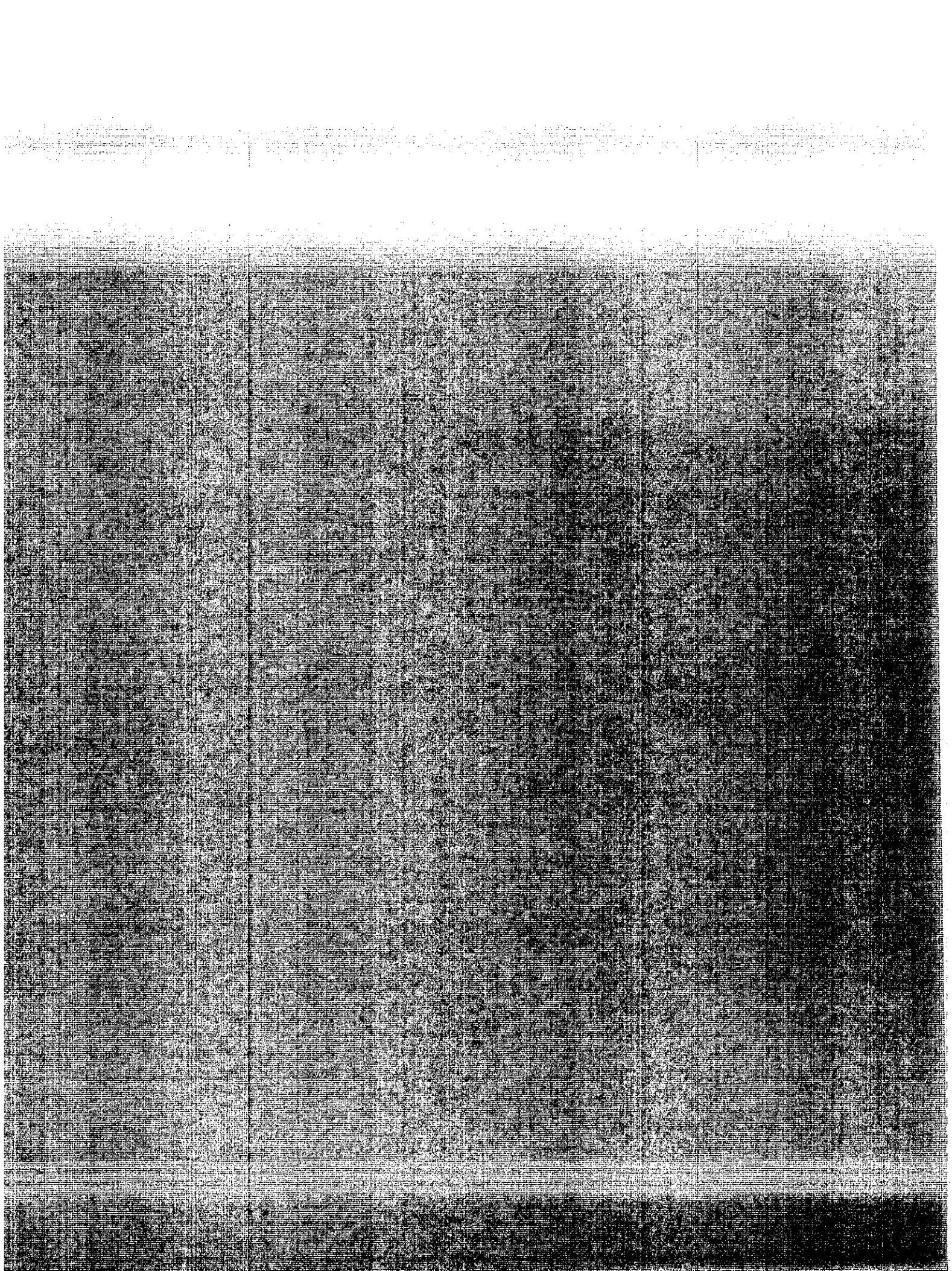
By: Michelle P. Leach

EXHIBIT A

Arizona Navigable Stream Adjudication Commission
In re Determination of Navigability of the Santa Cruz River
(Case No. 03-002-NAV)

INDEX OF EXHIBITS SUBMITTED BY FREEPORT-MCMORAN CORPORATION

Freeport 13	Excerpt from, *Methods of Assessing Instream Flows for Recreation,* Instream Flow Information Paper No. 6, by Ronald Hyra, June 1978
Freeport 14	Excerpt from *Hydraulic Simulation in Instream Flow Studies: Theory and Techniques,* Instream Flow Information Paper No. 5, June 1978
Freeport 15	*The Hydraulic Geometry of Stream Channels and Some Physiographic Implications*, by Luna B. Leopold and Thomas Maddock, Jr., 1953
Freeport 16	*State of the Santa Cruz River – Conservation Inventor*, the Sonoran Institute
Freeport 17	Santa Cruz River, Northern Sonora, Mexico, Time Series of Landsat "False Color" Images, 2008-2011
Freeport 18	*The Vanishing Santa Cruz River,* Information Brief, Sonoran Desert Network, 2013
Freeport 19	Excerpt from *Preparation of Average Annual Runoff Map of the United States, 1951-80*, by William R. Krug, Warren A. Gebert and David J. Graczyk
Freeport 20	Excerpt from *Hydrology for Engineers,* 3rd Ed., by Ray K. Linsley, Jr.; Max A. Kohler and Joseph L.H. Paulhus
Freeport 21	1930 Special Master Report
Freeport 22	Transcripts of the hearings from *In re Determination of Navigability of the San Pedro River* held on June 7, 2013, August 1, 2013, and August 2, 2013



6/13/14
gmm

ARIZONA CENTER FOR LAW IN THE PUBLIC INTEREST
2205 E. SPEEDWAY BLVD.
TUCSON, ARIZONA 85719
(520) 529-1798
(520) 529-2927 (FAX)

Joy E. Herr-Cardillo (State Bar #09718)

Attorneys for Defenders of Wildlife, Donald Steuter, Jerry Van Gasse, and Jim Vaaler

BEFORE THE ARIZONA NAVIGABLE STREAM ADJUDICATION COMMISSION

In re Determination of Navigability of the Santa Cruz River	Case No. 03-002-NAV Closing Memorandum regarding the Navigability of the Santa Cruz River

Defenders of Wildlife, Donald Steuter, Jerry Van Gasse, and Jim Vaaler (collectively, "Defenders") hereby submit their memorandum regarding the navigability of the Santa Cruz River. For the reasons set forth herein, Defenders request that the Arizona Navigable Stream Adjudication Commission ("ANSAC") apply the correct legal standard to the evidence in the existing record and the supplemental evidence submitted upon the reopening of the evidentiary record, and find that from the U.S./Mexico border (river mile 180) to the Picacho-Redrock area (river mile 78) in its ordinary and natural condition, the Santa Cruz River was navigable when Arizona entered the Union on February 14, 1912.

I. Statement of Facts.

A. The Santa Cruz River Watershed.

The Santa Cruz River starts at the southern base of the Canelo Hills, travels south through the San Rafael Valley and then crosses into Mexico. In Mexico it makes a loop of about 30 miles before re-entering the United States six miles east of Nogales. It continues north toward Tucson to the Gila River for a distance of about 225 miles. EIN 6(9); Arizona Stream Navigability Study for the Santa Cruz River, Final Report prepared by SFC Engineering, George V. Sabol, SWCA, Inc. and J. E. Fuller, dated November 1996, Report revised by JE Fuller, January 12, 2004, Section 4, p. 1 (hereinafter "State Report").

The channel from the headwaters to the border is shallow. *Id.* Section 4, p. 2. Along the upper Santa Cruz River, the channel is located in an inner valley that was created within broad, dissected pediments and alluvial basin deposits, and flanked by mountains. The channel is well defined, often entrenched. *Id.* at Section 4, Executive Summary, p. i. Near the Santa Cruz/Pima County line, the geology changes from a high bedrock situation to a deep alluvial system and the river would usually sink below the surface, going underground just north of Tubac and resuming perennial surface flow again when it reached the San Xavier Mission. *Id.* at Section 3, p. 7-8. The important hydrological characteristics of the Santa Cruz River that have existed since the predevelopment era are:

- The Santa Cruz River drained about 533 square miles at the upper end of the study reach and about 8,581 square miles at the lower end. EIN No. X0005 "Navigability Along the Natural Channel of the Santa Cruz River, an assessment based on history, hydrology, hydraulics and morphology" by Hjalmar W. Hjalmarson, PE dated Mar. 20, 2014 ("Hjalmarson Report") at p. 3-4.

- The watershed was hydrologically diverse because of the diversity of climate, geology and topography. The mountainous areas of the south and central parts of the watershed typically received more than 20 inches of precipitation per year. The hot-dry northern areas typically received less than 8 inches of precipitation per year. *Id.*
- Precipitation fell during two distinct periods--late summer and midwinter. Some snow accumulated in the higher mountains and typically melted and ran off in the spring. *Id.*
- When rain fell onto the land in the Santa Cruz River watershed it started moving according to basic principles of hydrology. A portion of the precipitation seeped into the ground to replenish ground water. Some of the water flowed downhill on the land surface as direct runoff and appeared in surface streams that were unaffected by artificial diversions, storage, or other works of man in or on the stream channels. *Id.* at 4.
- In the Santa Cruz River watershed, most of the runoff from storms reached the river channel directly on the land surface via overland flow, flow in rills, creeks and streams. Direct runoff was seasonal because the storms were seasonal and provided runoff for navigation for part of each year. *Id.*

B. The Santa Cruz River Pre-Development

The evidence suggests that before development, ground-water discharge was mainly by evapotranspiration ("ET"), with lesser discharge to streams as base flow. The principal water-bearing sediments consisted of stream-alluvium deposits, where saturated, and upper basin fill. Ground water generally occurred under unconfined conditions, although head differences with depth may have occurred because of the presence of clay lenses in the heterogeneous basin fill. *Id.* at 12. Before development, water levels ranged from at land surface near perennial streams to as much as a few hundred feet below land surface in places near mountain fronts. Ground

water flowed from the perimeter of a basin and from the up gradient end toward the basin center and then down valley to the mouth at the Santa Cruz River. Some ground water probably flowed through the entire length of the basins. *Id.*

Under natural conditions, groundwater flowed toward the Santa Cruz River and encountered geologic constrictions and at these places rose above the river bed and became base runoff. In the Marana area (below Rillito Creek and Canada Del Oro) the groundwater basin became large and any groundwater recharge was offset by ET along the river. Below the Picacho Peak area, the groundwater basin became very large and the relatively little amount of recharge was offset by large amounts of ET. The depth to water below Picacho Peak area was shallow and there were large areas of mesquite that transpired great quantities of water. *Id.*

Runoff from storms (direct runoff) entered the Santa Cruz River through tributary stream channels all along the watershed. Direct runoff was confined to the Santa Cruz channel and floodplain to the Marana area where high flows would spill onto the floodplain and become separated from the river. Further downstream floodwater entered distributary channels a couple of miles to the south and east of Picacho Peak and spread over a wide area (Santa Cruz Flats). *Id.* Thus, direct runoff was not confined to a single channel between the Picacho Peak area and the mouth at the Santa Cruz River. See *id*, Appendix B, T8S R7E Santa Cruz Flats and Appendix A.

C. Human Impacts on the Santa Cruz River.

As the State Report describes, the Santa Cruz River has been the site of settlements since prehistoric times. State Report, Executive Summary, p. 2. The State Report, however, also documents that the river underwent significant change during the territorial period, from 1850 to 1912. *Id.*, Section 3, pp. 32 – 49. The livestock industry moved into to southern Arizona in the 1880s, and cattle and sheep grazed until much of the valley was denuded. *Id.* at 35. Agriculture also expanded and along the river was characterized by the diversion of surface flows. *Id.* p. 37.

When the groundwater table began to drop, cross-cut ditches were dug across the river to intercept shallow subsurface flows. *Id.* According to the Report, groundwater pumping arrived in Southern Arizona by 1890, and with its advent, the water table began to drop significantly. *Id.*

In the 1860s a diversion dam across the Santa Cruz a mile south of "A" mountain created "Silver Lake." *Id.* at 40. The lake was used for milling flour and recreation. Several years later, a second dam was built north of Silver Lake to create Walker Lake. Local residents used the lakes for recreation and boating. *Id.* During this period, however, drought and flood cycles periodically washed out the dams. *Id* at 43. The dams were rebuilt until February 1890 when flooding washed out the dams and created such entrenchment that neither the dams nor the lakes were rebuilt. *Id.*

The entrenchment caused by the combination of factors, cattle, pumping, and diversions, had radically changed the Santa Cruz River. *Id.* at 44-45. Moreover, the groundwater pumping had become so prevalent that it was virtually impossible for the river to return to its natural condition. *Id.* By the time of statehood, then, the river had been significantly altered from its "natural and ordinary condition." According to the State Report, "[a]t the time of statehood, the river was probably still perennial – flowing year round – in some of the reaches that had historic surface flow, but intermittent – flowing only during portions of the year – in more areas than previously." State Report, Executive Summary, p. 4. Moreover, according to the U.S. Geological Survey, essentially the entire flow of surface waters from the river were diverted both at the Nogales and Tucson gaging stations by irrigation ditches. *Id.* Agricultural water use used most of the available surface water and also intercepted groundwater and subsurface flow. *Id.* Diversions and pumping were also impacting tributaries, especially the Rillito River, further diminishing the Santa Cruz River's flow. *Id.*

Even though damage from groundwater pumping continued past statehood to modern day, many sections of the Santa Cruz River continued to have perennial flow well after statehood. *Id.* at 7. Even the section of the river near Tucson probably had some perennial flow in 1912, although the river was deeply entrenched. *Id.* Parts of the river remain perennial to this day. *Id.* For further documentation regarding the degradation of the Santa Cruz River, see EIN 15, Glennon, WATER FOLLIES, How Does a River Go Dry? (2002) and EIN12, Logan, THE LESSENING STREAM (2002).

D. Historic Descriptions of the Santa Cruz River Prior to and Around 1912

According to the State Report, "In the early days of exploration and settlement, the upper and middle Santa Cruz River valleys were consistently described as lush or fertile valleys with excellent grazing grounds, abundant grass, occasional forests of huge mesquite trees, and a river lined with giant cottonwoods, walnuts, willows and other riparian species." State Report, Section 3, p. 11. The Treaty of Guadalupe Hidalgo mandated a boundary commission survey to mark the border between the U.S. and Mexico. The Army Corps of Topographical Engineers, under the direction of William H. Emory, did the surveying from 1848 to 1855. In 1852, Emory made numerous observations about the Santa Cruz River that were published in 1857:

> The Santa Cruz River rises in a broad valley, or rather plain, north of the town of the same name. ...Flowing south nine miles to San Lorenzo, a deserted rancho it soon after takes a northerly course, winding its way through a beautiful valley, until it is lost in the desert plain or sands, some ten or fifteen miles north of Tucson. Its entire length in a direct line, without reckoning its sinuosities, is about a hundred miles. Its width varies from 20 to 100 feet, and during very dry seasons portions of it disappear.

Hjalmarson Report, Appendix C, item 5.

> In 1857, John Reid described the Upper Santa Cruz as follows:
>
> If you will portray in your imagination a bottom covered with tall, golden colored grass, hedged by mountains whose sand glitter like metal, divided by a

> meandering stream a dozen yards wide and as many inches deep, this shaded by cotton-woods, willows, and musquites....

State Report, Section 3, pg. 12.

Appendix A of the Hjalmarson Report presents the original Federal Land Survey maps (plats) with information, such as channel widths, from selected associated survey field notes for the reach of Santa Cruz River near Picacho to the Mexican border. The maps and survey notes, when used together, provide valuable morphology, hydrology and hydraulic information for the assessment of navigability for ANSAC. Mr. Hjalmarson obtained these maps and field notes from the Bureau of Land Management (BLM) in 2013.

The maps and notes reveal that at least as early as the 1870s, there were substantial irrigation diversions from the Santa Cruz River, however, there was still water in the river. For example, the notes from an 1871 river state that there was "plenty" of water in the Santa Cruz, and "the lands along stream are mostly settled upon." Hjalmarson Report, Appendix A at p. 11. Similarly, the federal surveys of 1871-76 describe the width of the river in the Tubac area as between 13 and 33 feet with 3 ditch diversions for irrigation. *Id.* at p. 25. Surveys conducted in late October, early November 1876 in the Tucson area where 1752 acres of fields were surveyed show that water was plentiful and irrigating ditches were found throughout the fields. There was water to support growing two crops each year. *Id.* at p. 13.

By March 30-31, 1915, the channel of the Santa Cruz River was incised 12-20 ft .and the "trench" was from 154 ft. to 317 ft. wide. According to the surveyor, "[t]he Santa Cruz River flows northerly through secs. 22, 23, 26, 35 and 36, and from one-half to one mile on each side is level bottom land; soil 1st rate. The river in this township is from 2.20 to 4.0 chs. wide.[1] The banks at present are well defined – cut banks from 12 to 20 feet high." *Id.* at p. 20.

[1] A chain is 66 feet.

E. Actual Condition of the Santa Cruz River in 1912

By the time of statehood, the river had been significantly altered from its "natural and ordinary condition." According to the State Report, "[a]t the time of statehood, the river was probably still perennial – flowing year round – in some of the reaches that had historic surface flow, but intermittent – flowing only during portions of the year – in more areas than previously." State Report, Executive Summary, p. 4. The gage record indicates that by 1912, the Santa Cruz River at Nogales was no longer perennial but instead had continuous flow during the winter and occasional flow during the spring, summer and fall. Winter discharge averaged about 15 cfs. *Id.*, Section 4 at p. 20. The section near Tucson, however, probably had some perennial flow in 1912 although the river was deeply entrenched. *Id.* Section 3 at p. 5. In fact, the perennial waters near San Xavier persisted until 1949 and supported native fish at least until 1937. *Id.* at 57. There was a deep channel, perhaps more than 20 feet deep, well into what is now the San Xavier Indian Reservation. *Id.* Section 3 at p. 60.

F. Evidence of Navigation on the Santa Cruz River

There are numerous documented instances of navigation on the middle segment of the Santa Cruz River. During the 1880's there was boating, fishing and swimming on Silver Lake as well as upstream. *Id.* at 63. Describing the Silver Lake resort, the 1881 City of Tucson Directory advised that the resort offered "several boats for sailing and rowing up the river beyond the lake." *Id.* at 43. Similarly, flat bottomed boats launched on Warner's Lake for recreation both on the lake and "up the river." *Id.* at 41. Notably, Warner received legal notice that he was interfering with the water in the Santa Cruz and obstructing the "free and continuous passage of the same." *Id.* at 42. There were a few attempts at boating in 1914 during flood conditions, but those were unsuccessful. *Id.* at 63.

There are also several accounts of boating using canoes in the middle segment during modern times. *Id.* at 63-64. Although some of these trips have been during high water, not all. Wayne Van Vorhees and his wife traveled the river during the winter of 1989-90 and again in the summer. *Id.* There are no reported instances of boating at any time on the lower Santa Cruz, although during one high flood event, Tucsonan Sam Hughes opined that the river was "big enough to float a steamboat all the way to the sea." *Id.* at 64.

G. The Santa Cruz River in its Ordinary and Natural Condition.

As discussed above, at the time of statehood, and well before, both the natural hydrology and morphology of the Santa Cruz River had been significantly altered by human activity. Groundwater and surface water removals had resulted in lower flow rates in the Santa Cruz River than there would be if the River had remained in its ordinary and natural condition. *Id.* Therefore, in order to determine the "ordinary and natural condition" of the river, it is necessary to eliminate the effect of those impacts.

Win Hjalmarson, a retired river engineer from the USGS with 52 years of experience with rivers in the Southwestern United States, undertook such an analysis for the Santa Cruz. See Hjalmarson Report. Mr. Hjalmarson examined available published information and recognized the study could be performed in two basic steps: 1) estimate the amount and temporal distribution of natural flow for the Santa Cruz River; and 2) estimate the natural hydraulic characteristics of the river channel that are related to navigation and apply that to the estimated flow.

For the first step, determining the natural hydrology of the river, Mr. Hjalmarson based his analysis largely on two published reports. First, the base runoff was given for groundwater basins along the Santa Cruz in U. S. Geological Survey Hydrologic Investigations Atlas HA-664, 3 sheets. *Id.* at Appendix C, Item 1. Second, the mean annual runoff was defined at key

locations by using USBR, 1952, Report on Water Supply of the Lower Colorado River Basin: US Department of Interior, Bureau of Reclamation Project Planning Report, (p. 152), 444 p.; *Id.* at Appendix C, Item 2. Mr. Hjalmarson used these two independent data sources to estimate predevelopment base flow and annual average runoff at 6 separate points on the river: Nogales, Tubac, Continental, Tucson, Cortaro and at river mile 78; *Id.* at 15, Figure 5.[2]

Mr. Hjalmarson examined other supportive information that provided hydrologic and hydraulic evidence including field notes for surveys along the Santa Cruz River in the late 1800s and early 1900s by the predecessor agencies of the U. S. Bureau of Land Management. *See id.* at Appendix A. Along with the natural hydrology defined by the USGS and USBR, these original federal land surveys with channel widths at surveyed section boundaries throughout the study reach and general description of hydrologic and geomorphic conditions provided the basis for his conclusion that the lower 78 miles of the Santa Cruz River did not have the streamflow and channel to support navigability. Downstream from Basin 48 (*id.* at Appendix C Item 1 and Figure 6) the flow in the Santa Cruz River became unconfined (See for example *id.* at Appendix B Item 5 and Appendix C Item 1) and large amounts of streamflow entered the ground. Conversely, the evidence of the Federal Land Surveys, USGS reports, the USBR report and other reports (for example *id.* at Appendix C, Item 4) shows a defined river channel with perennial/intermittent flow between river mile 78 and 180. Thus, according to his analysis, navigability ceased at the north end of Basin 48 and the flow in the single channel of the Santa Cruz River is defined by the flow duration curve ("FDC") at river mile 78 (*Id.* at 15, Figure 5).

---

[2] Although not necessary for this analysis, he independently computed the average annual runoff at the mouth of the river using runoff data for other river sites given in the USBR report. He also used transpiration and evaporation published in the same USBR report. This computation was performed because the report by the USBR did not include the runoff at the mouth of the Santa Cruz River and provided useful information for this analysis.

Mr. Hjalmarson utilized the FDC to determine the pattern of the annual flow. FDCs are an excellent means of defining the percent of time the natural mean daily discharge was exceeded during a typical or average year. *Id.* at p. 14-15. In a FDC, stream flow discharges are ranked in decreasing order and plotted on a graph. *Id.* at 17. The FDC shows the full range of stream flow for ordinary conditions in a given river, and also shows the percentage of time that the river's stream flow is at any particular level. *Id.* To determine the general shape of the FDC for the Santa Cruz River, Mr. Hjalmarson used a curve defined by Condes in 1970 using post-development gage data collected at the USGS streamflow gage near Nogales. *Id.* at 15, citing Condes, Streamflow in the Upper Santa Cruz River Basin, USGS WSP 1939-a, 32p. Although post-development discharge data are not an accurate measure of the natural stream flow, Mr. Hjalmarson believed that it sufficiently reflected the range and pattern of the Santa Cruz's stream flow to form the basis of a representative FDC. *Id.* He then applied the FDC to the base runoff and average annual runoff that he calculated for each of the 6 sites, which allowed him to estimate the full range of natural streamflow at each of the identified points in the river. *Id.* at 15, Figure 5; See also Appendix C, Item 3 at p. 7.

Once he had determined the natural streamflow, the next step in the process was to apply the information about the River's hydrology to its morphology. *Id.* at 19-24. Mr. Hjalmarson recognized that rivers with natural alluvial channels like the Santa Cruz River construct their own geometries and the hydraulic geometry of the Santa Cruz River was related to the water flow and sediment characteristics. The natural size and shape of the Santa Cruz River channel were defined using hydraulic geometry relations for deformable alluvial channels published by USGS scientist Osterkamp (1980), Sediment-morphology relations of alluvial channels:

Proceedings of the symposium on watershed management, American Society of Civil Engineers, Boise Idaho, p. 188-199. *Id.* at 19-20.

Once the channel was defined, Mr. Hjalmarson was able to compute channel depth-duration and velocity-duration relations for each of the six sites using a technique based on the standard Manning hydraulics equation for open channel flow. *Id.* at 22. According to these calculations, 75 to 80% of the time, the maximum channel depth at Cortaro ranged from about 2 feet to over 5 feet, with a median depth of 2.5 feet. 80% of the time, the maximum channel depth at Cortaro was 2 feet or greater. At Tucson, the maximum channel depth ranged from two feet to four feet, with a median depth of 2 feet. 100% of the time, the maximum channel depth at Tucson was at least 2 feet. At Continental and Tubac, 75 to 80% of the time, the depths ranged from around 2 feet to almost 4 feet, with a median depth of 2 feet. The maximum channel depth was at least 2 feet 80% of the time at Continental and 100% of the time at Tubac. Finally, at Nogales, the maximum channel depth ranged from around 1.5 feet to 3.5 feet, with a median depth of 2 feet. 100% of the time, the maximum channel depth at Nogales was 1.5 foot or greater. *Id.* at 27, figure 15.

Finally, based on this analysis, Mr. Hjalmarson determined that runoff for five reaches in the upper Santa Cruz River watershed have either perennial or ephemeral flow when the river is in its ordinary and natural condition. *Id.*

II. Legal Analysis

A. Issue 1: In its Ordinary and Natural Condition, Was the Santa Cruz River Navigable at the Time of Statehood?

1. State ex rel. Winkleman v. ANSAC

In determining whether the Santa Cruz River was navigable at the time statehood, it is appropriate to begin with a discussion regarding the Court of Appeals' decision regarding the

Lower Salt River and how the directives set forth by the Court in that Opinion should inform the proceedings for other rivers. *State ex rel. Winkleman v. Ariz. Navigable Stream Adjudication Comm'n,* 224 Ariz. 230, 229 P.3d 242 (App. 2010). Significantly, in the case of the Lower Salt River, the Court remanded the matter back to ANSAC because it found that "although ANSAC considered a great deal of evidence concerning the condition of the River, and reviewed evidence from various times before statehood, ANSAC ultimately failed to apply the proper legal standard to the evidence presented." *Id.* at 242 ¶28, 229 P.3d at 254. The Court held that "[b]ecause the proper legal test was not applied, we must vacate the superior court's judgment and remand for ANSAC to consider whether the River would have been navigable had it been in its ordinary and natural condition on February 14, 1912." *Id.* at ¶29.

In articulating the proper legal test, the Court instructed that ANSAC is "required to determine what the River would have looked like on February 14, 1912, in its ordinary (i.e. usual, absent major flooding or drought) and natural (i.e. without man-made dams, canals, or other diversions) condition." *Id.* at 241 ¶28, 229 P. 3d at 253. The Court also provided specific guidance regarding what constituted the "best evidence" of the Lower Salt's natural condition, and concluded that with respect to that watercourse, "the River could be considered to be in its natural condition after many of the Hohokam's diversions had ceased to affect the River, but before the commencement of modern-era settlement and farming in the Salt River Valley...." *Id.* at 242 ¶30, 229 P. 3d at 254.

Although ANSAC's earlier determination regarding the Santa Cruz River was appealed to the Superior Court, the parties agreed to stay that appeal (as well as several others) pending the resolution of the appeal of the Lower Salt River to the Court of Appeals. After the Court of Appeals remanded the Lower Salt matter, the parties all agreed that the stayed appeals should all

be remanded as well. Consequently, unlike the adjudication of the Lower Salt River, there is no specific instruction in this case as to what constitutes the "best evidence" of the natural and ordinary condition of this river. Therefore, in determining navigability for the Santa Cruz River, the inquiry is two-fold. First, the ANSAC must determine what constitutes the best evidence of the river's "natural condition," and second, whether based on that evidence, the river was "used or susceptible to being used...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)(emphasis added). *See also, Defenders of Wildlife v. Hull,* 199 Ariz. 411, 18 P. 3d 722 (App. 2001).

2. The Santa Cruz River's Natural Condition.

In the case of the Santa Cruz River, the evidence is overwhelming that on the date that Arizona became a state, February 14, 1912, the river was no longer in its natural condition. Thus, the question that follows is: at what point in time was the river free from human impacts? The evidence presented to the Commission establishes that humans have been diverting water from the Santa Cruz for centuries.

Although historic accounts have limited evidentiary value, the sedimentary evidence indicates the river was stable. Consequently, Mr. Hjalmarson was able to use hydraulic geometry and morphology to model what the river looked like in its natural condition—before humans began diverting its water and impacting its banks. The modeling undertaken by Mr. Hjalmarson uses well-established and accepted scientific methods. His analysis demonstrates that in its natural condition, the Santa Cruz River, was largely perennial and from the Mexican border to mile 78, at least 75-80% of the time, it had a depth of at least one foot, with channel widths from 20 to 100 feet. *Id.* at 23.

3. The Santa Cruz's Susceptibility to Navigation.

The definition of navigability does not require that the watercourse actually have been used for trade or travel, but rather, requires only that it was susceptible to such a use. "The question of ... susceptibility in the ordinary condition of the rivers, rather than of the mere manner or extent of actual use, is the crucial test ... The extent of existing commerce is not the test." *United States v. Utah*, 283 U. S. at 82; *see also, Alaska v. Ahtna*, 891 F.2d 1401, 1404-1405 (9th Cir. 1989). The term "highway for commerce" is first found in the definition of "navigable" or "navigable watercourse." The Arizona statute (which codifies federal law) defines both 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.

Ariz. Rev. Stat. §37-1101(5). The statute more specifically defines "highway for commerce" as "a corridor or conduit within which the exchange of goods, commodities or property *or the transportation of persons* may be conducted." Ariz. Rev. Stat. §37-1101(3). Thus, the statutory definition of "highway for commerce" does not require the transport of goods; the transportation of persons alone is sufficient to establish a "highway for commerce."

The term "highway for commerce" can be misleading; as the cases make clear, this requirement is satisfied by either trade or *travel* on the river, even if the travel is noncommercial. As the Arizona Court of Appeals explained in *Defenders,*

> The federal test has been interpreted to neither require both trade and travel together nor that the travel or trade be commercial. *See Utah,* 403 U.S. at 11 (hauling of livestock across lake even though done by owners and "not by a carrier for the purpose of making money" was enough to support a finding of navigability because "the lake was used as a highway and that is the gist of the federal test")

199 Ariz. at 416, 18 P.3d at 727. In *Defenders*, the court also rejected the argument advanced by the Salt River Project and Phelps Dodge that the trade and travel must be both upstream and downstream, or that the travel must be for a profitable commercial enterprise. Rather, the court observed that, "nothing in the *Daniel Ball* test necessitates that the trade or travel sufficient to support a navigability finding need be from a 'profitable commercial enterprise.'" *Id.* at 422, 18 P. 3d at 733. *See also United States v. Hill,* 248 U.S. 420, 423 (1919) ("commerce has been held to include the transportation of persons and property no less than the purchase, sale and exchange of commodities") *citing Gibbons v. Ogden,* 9 Wheat 1, 188 (1824).

As the Oregon Court of Appeals explained in *Northwest Steelheaders Ass'n v. Simantel* 199 Ore. App. 471; 112 P.3d 383 (2005):

> First, with respect to "actual use," it is not necessary that the historic use made of the river have been either widespread or commercially profitable. "The extent of * * * commerce is not the test.". . .. For example, the Court's most recent application of the *The Daniel Ball* test upheld a determination of the navigability of Utah's Great Salt Lake based on evidence that the Court described as "sufficient" but "not extensive."

Id. at 389, *quoting Utah v. United States,* 403 U.S. at 11. Further, as the Oregon Court observed, "qualifying travel and trade is not limited to large-scale commercial or multiple passenger vessels of the sort typically engaged in modern commerce." *Id.* at 390. Navigation by small boats has often been recognized as evidence of navigability. *Block v. North Dakota,* 461 U.S. 273(1983) ("Canoe travel at the time of North Dakota's statehood represented a viable means of transporting persons and goods."); *Puyallup Tribe of Indians v. Port of Tacoma,* 525 F. Supp. 65 (W.D. Wash 1981), *aff'd,* 717 F.2d 1251 (9th Cir 1983)(declaring navigability on the basis that "Indians navigated the river with their fishing boats and canoes").

Similarly, the lack of actual use at statehood as a "highway for commerce" does not defeat a finding of navigability. *See, e.g., United States v. Utah*, 283 U.S. at 83. As the United States Supreme Court noted in that case:

> Utah ...is not to be denied title to the beds of such of its rivers...either because the location of the rivers and the circumstances of the exploration and settlement of the country through which they flowed had made recourse to navigation a late adventure, or because commercial utilization on a large scale awaits future demands. The question remains one of fact as to the capacity of the rivers in their ordinary condition to meet the needs of commerce as these may arise in connection with the growth of the population....And this capacity may be shown by physical characteristics and experimentation as well as by the uses to which the streams have been put.

Id. at 83.

Finally, in considering the issue of "commerce," it is important to distinguish between cases involving navigability under the Commerce Clause and cases involving navigability for title. In Commerce Clause cases, in order to support federal regulatory jurisdiction over power plants the river must by statute be, or have been, "suitable for use for the transportation of persons or property in interstate or foreign commerce." 16 U.S.C. §796(8)(2006). No such "interstate or foreign commerce" requirement exists when the issue is navigability for title. *Oregon v. Riverfront Protective Ass'n*, 672 F.2d 792, 795 n. 1 (9th Cir. 1982). Again, as the Arizona Court of Appeals cautioned in *Defenders,* "when discussing navigability, any reliance on judicial precedent should be predicated on a careful appraisal of the purpose for which the concept of navigability is invoked." 199 Ariz. 729-30, 18 P. 3d at 418-19. In sum, when the issue is navigability for title purposes, there is no requirement that the watercourse was actually used for commerce or any commercial activity. It is sufficient to show simply that the watercourse was susceptible to use for travel.

In the case of the Santa Cruz River, there is evidence of actual navigation both prior to statehood and after, even though at the time that is occurred, the river was not in its natural condition. Moreover, the evidence supports a finding that the river would have been susceptible to navigation in its natural condition.

As part of his assessment, Mr. Hjalmarson evaluated the Santa Cruz River for navigability. Mr. Hjalmarson evaluated the navigability of the 102 mile reach of the Santa Cruz River downstream from the Mexican border by using two relatively simple independent methods used by federal agencies to determine whether a watercourse is capable of being navigated by various water craft. *Id.* at p. 26, 35 (citing U.S. Fish and Wildlife Service Arizona Game and Fish Department Chapter 10 Santa Cruz River Watershed, January 2011, 86 p. and U. S. Bureau of Outdoor Recreation, 1977, Flow requirements, analysis of benefits, legal and institutional constraints: Recreation and Instream Flow, Vol. 1, 20p.). This third step evaluated the navigability along the river based upon the natural hydrology, hydraulics and morphology of the channel of the river that were determined in steps 1 and 2. Thus, the test for navigability was applied to the Santa Cruz River in its ordinary and natural condition.

Mr. Hjalmarson first applied the "Bureau of Outdoor Recreation Method" developed in 1977 for the Bureau of Outdoor Recreation of the U.S. Department of Interior. And second, he used the Fish and Wildlife Service Method. This latter is a single cross section technique that is very simple to use and is based on a minimum flow recommended for a particular watercraft activity. The USFW method establishes minimum depth and width requirements for canoes, kayaks, drift and row boats. And as Mr. Hjalmarson found, all of these minimum requirements are met from the U.S./Mexico border to Mile 78 of the Santa Cruz River in its natural and

ordinary condition. His specific finding regarding the navigability characteristics of the Santa Cruz River are as follows:

> It is my opinion the Santa Cruz River, from river mile 78 (boundary of sections 9 and 10, T10S R9E in the Red Rock-Picacho Peak area at boundary of alluvial basins 48 and 49) to the Mexican border (mile 180), was susceptible to navigation at the time of statehood (February 14, 1912) in its natural condition. During ordinary years the river was susceptible to navigation 75% of the time.

Hjalmarson Report, p. 30.

It is also significant to note that in December 2008, the Army Corps of Engineers determined that two reaches of the Santa Cruz River, Study Reach A from the Tubac gage station to the Continental gage station and Study Reach B from the Roger Road wastewater treatment plant downstream to the Pima/Pinal County line, are "Traditional Navigable Waters" (TNW). See Determination dated May 23, 2008, EIN X003. In making that determination, the Corps found that the two reaches, "have the potential to be used for commercial recreational navigation activities, such as canoeing, kayaking, birding, nature and wildlife viewing. Such attractions and activities demonstrate that the Study Reaches may be susceptible to use in interstate commerce." *Id.* at p. 5.

B. Issue 2: Segmentation.

The United States Supreme Court held that a river's navigability must be determined on a segment-by-segment basis. *PPL Montana LLC v. Montana,* 132 S. Ct. 1215 (2012). The Court recognized that "[p]hysical conditions that affect navigability often vary over the length of a river." *Id.* at 1230. In determining the navigability of the Santa Cruz River, this Commission must undertake the same approach. It would be contrary to well-established federal law to find an entire river "nonnavigable" simply because portions of the river were not susceptible to navigation, when others clearly were.

navigability. In summary, the evidence demonstrating navigability includes information regarding the perennial flow of the river in its ordinary and natural condition and historic and recent incidents of boating. When the objective evidence submitted is evaluated in light of the appropriate standard, it is clear that at the time of statehood the Santa Cruz, in its ordinary and natural condition, was susceptible for use as a highway for commerce, over which trade and travel could be conducted in the customary modes of trade and travel from the U.S./Mexico border to mile 78. Therefore, we urge ANSAC to find that portion of the river navigable at statehood.

Respectfully submitted this 13th day of June 2014

ARIZONA CENTER FOR LAW
IN THE PUBLIC INTEREST
2205 E. Speedway Blvd.
Tucson, Arizona 85719

Joy E. Herr-Cardillo
Timothy M. Hogan

ORIGINAL AND SEVEN COPIES of the foregoing
Mailed for filing this 13th day of
June 2014, to:

Arizona Navigable Stream Adjudication Commission
1700 W. Washington
Room B-54
Phoenix, AZ 85007

COPY of the foregoing mailed this 13th day of
June 2014, to:

Laurie Hachtel
Joy Hernbrode
Attorney General's Office
1275 West Washington Street
Phoenix, AZ 85007-2297
Attorneys for State of Arizona

John B. Weldon, Jr.
Mark A. McGinnis
Salmon, Lewis & Weldon, Plc
2850 E. Camelback Rd., Ste 200
Phoenix, AZ 85016-4316
Attorneys for the Salt River Project Agricultural Improvement
And Power District and Salt River Valley Water User's Association

Cynthia M. Chandley
L. William Staudenmaier
Snell & Wilmer
400 East Van Buren
Phoenix, AZ 85004-2022
Attorneys for Freeport-McMoRan Copper & Gold, Inc.

Sean Hood
Fennemore Craig, P.C.
2394 E. Camelback, Suite 600
Phoenix, AZ 85016-3429
Attorneys for Freeport-McMoRan Copper & Gold, Inc.

Joe P. Sparks
The Sparks Law Firm
7503 First Street
Scottsdale, AZ 85251-4201
Attorneys for San Carlos Apache Tribe, et al

Steven L. Wene
Moyes Sellers & Sims
1850 N. Central Ave., Ste 1100
Phoenix, AZ 85004

Cynthia S. Campbell
Law Department
City Of Phoenix
200 W. Washington Street, Ste 1300
Phoenix, AZ 85003-1611
Attorneys for City of Phoenix

William H. Anger
Engelman Berger, P.C.
3636 N. Central Avenue, Ste 700
Phoenix, AZ 85012
Attorneys for City of Mesa

Charles L. Cahoy
Assistant City Attorney
City Attorney's Office
CITY OF TEMPE
21E. Sixth St, Ste 201
Tempe, AZ 85280
Attorneys for City of Tempe

Michael J. Pearce
Maguire & Pearce, LLC
2999 N. 44th Street, Ste 630
Phoenix, AZ 85018-0001
Attorneys for Chamber of Commerce
and Home Builders' Association

Carla Consoli
Lewis, Roca, Rothgerber
201 E. Washington St, Ste1200
Phoenix, AZ 85004-2595
Attorneys for Cemex

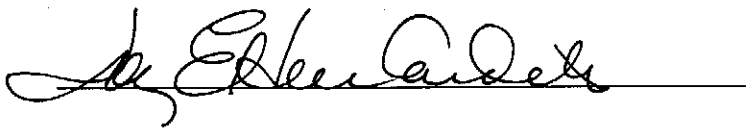
James T. Braselton
Mariscal, Weeks, McIntyre & Friedlander, P.A
2901 N. Central Ave, Ste 200
Phoenix, AZ 85012-2705
Attorneys for Various Title Companies

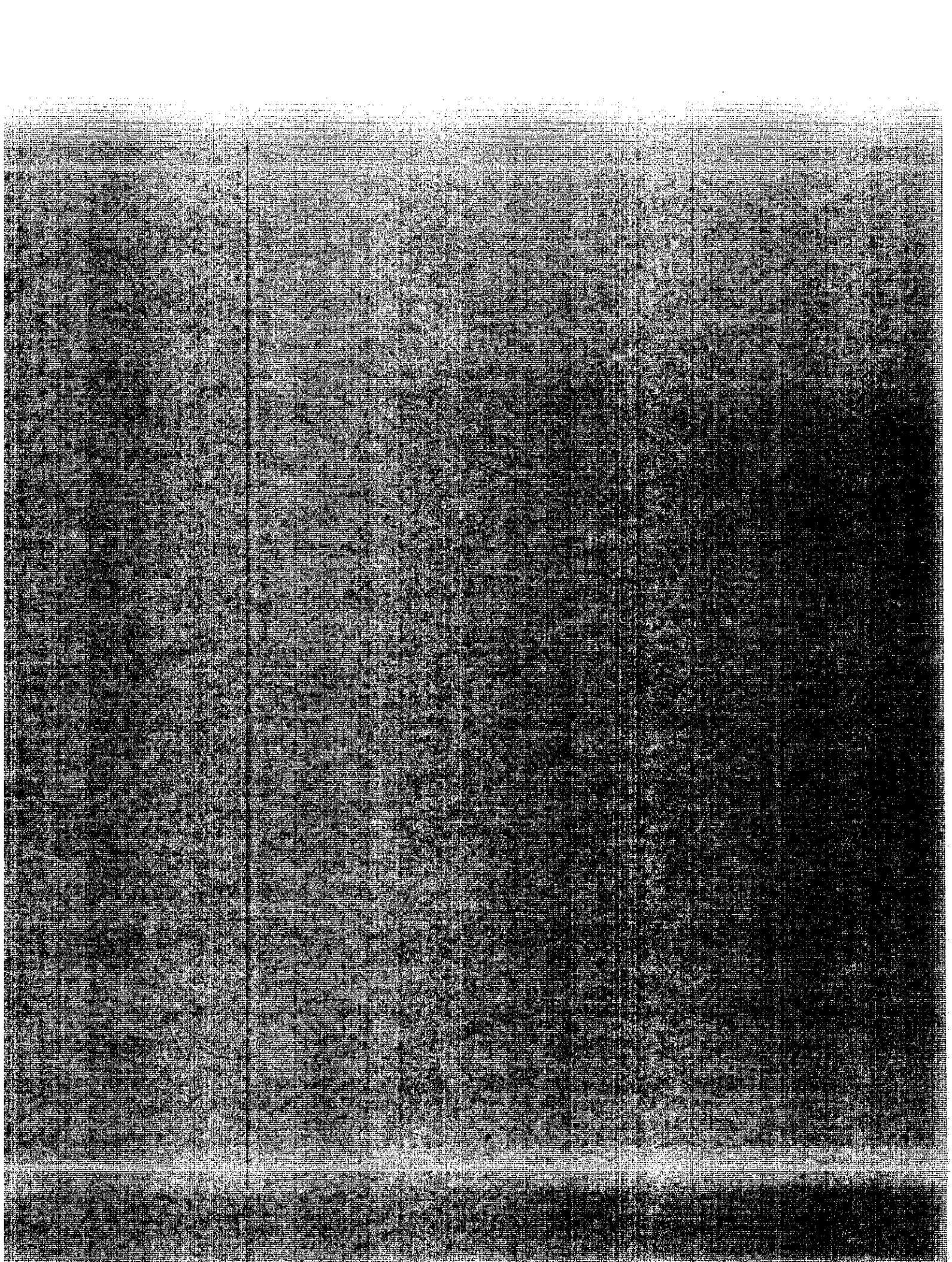
Thomas L. Murphy
Linus Everling
Gila River Indian Community Law Office
Post Office Box 97
Sacaton, AZ 85147
Attorney for Gila River Indian Community

Sandy Bahr
202 E. McDowell Rd, Ste 277
Phoenix, AZ 85004
Sierra Club

David A. Brown
Brown & Brown Law Offices
128 E. Commercial PO Box 1890
St Johns, Arizona 85936

Susan B. Montgomery
Robyn L. Interpreter
MONTGOMERY & INTERPRETER, PLC
4835 E. Cactus Rd., Ste. 210
Scottsdale, AZ 85254





Joe P. Sparks, 002383
THE SPARKS LAW FIRM, P.C.
7503 First Street
Scottsdale, Arizona 85251
(480) 949-1339
joesparks@sparkslawaz.com

Attorney for the San Carlos Apache Tribe

BEFORE THE ARIZONA NAVIGABLE STREAM ADJUDICATION COMMISSION

IN RE DETERMINATION OF THE NAVIGABILITY OF THE SANTA CRUZ RIVER FROM THE MEXICAN BORDER TO THE CONFLUENCE WITH THE GILA RIVER: SANTA CRUZ, PIMA, AND PINAL COUNTIES, ARIZONA	No. 03-002-NAV THE SAN CARLOS APACHE TRIBE'S OPENING POST HEARING MEMORANDUM

The San Carlos Apache Tribe ("Tribe") submits its Opening Post-Hearing Memorandum on the navigability of the Santa Cruz River ("Santa Cruz" or "River") in its ordinary and natural condition as of the date of Arizona's statehood, February 14, 1912.

I. Evidence in the Record

A. Summary

The Record of the Arizona Navigable Stream Adjudication Commission ("Commission") contains significant evidence regarding the question of navigability of the Santa Cruz River ("Record"). The burden of proof regarding navigation lies with the proponents of navigability, and is based on the entirety of evidence in the Record. Archeologists have studied the chronology of human inhabitants of the Santa Cruz River Valley dating back several centuries, and scientists have been able to determine the

evolutionary physical conditions of the Santa Cruz throughout time. The Record demonstrates that the Santa Cruz River, in its ordinary and natural condition, was not navigable or susceptible to navigation at any time in history, including the date of Arizona statehood, February 14, 1912.

1. The Santa Cruz River in Prehistoric Times

The prehistoric period as discussed here is the period from the earliest evidence of human habitation of the Santa Cruz River valley or use of the Santa Cruz River from approximately 9,500 B.C. to the first European contact in the 1600's. Archeologists have found artifacts and archival data that have been used to determine the "ethnicity, occupation, social class, and gender of particular sites." *See* the Arizona Stream Navigability Study for the Santa Cruz River: Gila River Confluence to the Headwaters (November 1996) at § 2 at 17. Archeologists have used this evidence to "reconstruct the daily lives of different groups of people" who occupied the Santa Cruz River Valley from the dawn of time to the modern period. *Id.* at § 2 at 17. A study conducted by SFC Engineering on behalf of the Arizona State Land Department entitled, *Arizona Stream Navigability Study for the Santa Cruz River: Gila River Confluence to the Headwaters*, dated November 1996 ("SCR Study"), cites numerous archeological findings that show human occupation of the Santa Cruz Valley dating back to at least 9500 B.C., almost 11,500 years ago. SCR Study at § 2 at 10. These early populations in the archaic period were made up of small bands of seasonally nomadic people who came through the Santa Cruz Valley to hunt now-extinct mega-fauna. *Id.*

Later in the archaic period, larger populations of people moved through the Santa Cruz Valley, to take advantage of the maize-growing and harvesting season. Archeologists have

determined that these occupations were brief and subject to seasonal exploitation, as opposed to permanent long-term settlement. *Id.* at 11-12.

The first evidence of a sedentary population near the Santa Cruz was attributed to the Hohokam people whose culture developed sometime between 50 B.C. and A.D. 425. *Id. supra* at 12. Infrastructural remains left by the Hohokam show evidence of permanent housing and, strategic utilization of flood water farming to grow maize, upon which the Hohokam became dependent upon. *Id.* While the infrastructure constructed by the Hohokam represented the beginning of permanent residency along the Santa Cruz River, archeological evidence also shows that the technological characteristics related to seasonal residency and mobility remained the same as those technologies used during the archaic period by nomadic populations. *Id.*

There is no evidence in the Record to suggest that any archaic population, including the first permanent residents of the Santa Cruz Valley, ever attempted to use the Santa Cruz for any purpose other than for providing basic necessities of food and water for nomadic survival and eventually for seasonal floodwater farming.

Evidence in the Record to demonstrates that these early indigenous populations engaged in free trade, exchanging basic items like shells and ceramics. *Id.* at 30. However, nothing in the Record shows the Santa Cruz was used to transport people or trade goods by water craft during the prehistoric period, or as a means to travel. *Id.* With an abundance of evidence proving a prolonged period of human occupation for thousands of years along the river, "no archeological evidence of navigation along the Santa Cruz River has been found." *Id.*

2. Spanish Missionaries, Pioneers, and Colonizers

The Record shows that Spanish missionaries arrived in the Santa Cruz River Valley during the late 1600's. The first Spanish mission was established in 1691. *Id* at 18. The Record contains no evidence that the original Spanish missionaries, and the many that followed, ever used the Santa Cruz River for travel by watercraft, to transport goods, for trade or for commerce.

The Record shows that the Santa Cruz was used by the early colonizers, miners, cattlemen, and travelers as a water source along a route through the Santa Cruz Valley, but it provides no evidence that these pioneers traveled on the Santa Cruz by water craft or used the river to transport goods for commerce. *Id. supra* at § 6 at 1.

The Santa Cruz was certainly vital to human survival. The Record shows that the Santa Cruz served as a water source for travelers and early settlers who, without its water, would probably not have survived. *Id. supra*, at 11. The vast weight of the evidence proves that the Santa Cruz's historical flow was unsuitable for purposes of navigation for transportation, commerce or otherwise by watercraft. *Id. supra* at § 6 at 1-2.

The Record show that in most years the Santa Cruz was dry for months at a time, and even "during unusually wet years", the River went dry several times throughout the year. *Id. supra* § 4 at 57. The inconsistent flow of the Santa Cruz made it impossible for settlers to use the Santa Cruz in a way that would be considered navigation or suggest that the river was susceptible to navigation.

In 1880, a surveyor with the U.S. Surveyor General recorded the accounts relayed to him by two individuals who described the waters of the upper reaches of the Santa Cruz

River. Burtell Declaration at 4. Both accounts noted the presence of 'running water' that would rise above and fall below ground level throughout the entire upper course of the Santa Cruz. *Id.* However, there are no descriptions of the River that include characteristics required for navigability, such as above-ground flowing water, that would be consistent or reliable for navigation. Historical impressions of the middle Santa Cruz River indicate that a handful of "narrow" segments which experienced surface water flow, were described as "typically shallow (1 foot or less)." *Id.* at 5. Accounts of floating boats, or attempts to navigate the waters of the Santa Cruz were not included in the reports by the U.S. Surveyor.

The 17th and 18th centuries brought missionaries, explorers, miners and pioneers to the Santa Cruz Valley. Many of these groups traveled along the Santa Cruz, relying on its water and to lead them through the valley. Those who made the Santa Cruz Valley their home also relied on the river for survival, using the Santa Cruz for both domestic water use and agricultural sustenance. The Record contains no evidence that anyone ever attempted to use the Santa Cruz as a means of travel by watercraft or as a highway for trade or commerce during the 1700's and 1800's.

3. Mining, Development and Diversions

The Record demonstrates that prior to Arizona's statehood, February 14, 1912, there were a number of small mining operations in the Santa Cruz Valley. *Id. supra* § 3 at 49. In 1857 a larger entity, the Sonora Exploring and Mining Company, was formed but it produced no significant profit. *Id.* at 35. During this period evidence shows that some prospectors blamed the failure of mines to develop into a significant, profitable enterprises on the absence of a railway system that would allow for a cheaper, faster and more reliable method of

transporting goods and materials. At the time overland travel by foot, horse, wagon, or carriage was the only method of travel in the Santa Cruz River Valley. The Record contains no evidence that watercraft were used on the River as a method of trade or transportation.

There is evidence from 1878 that shows that these small mining operations used groundwater pumping. However, the reported impacts of groundwater pumping by mines are all post-statehood. Those impacts occurred after the railroad was built to provide mining operations with the most current pumping technology and transportation of ore, the lack of which had been blamed for the mines' inability to produce acceptable profits. *Id. supra* § 3 at 35.

The absence of significant mining development was based in part on limited routes and means of transportation. There is no evidence that an alternative means of transportation on the Santa Cruz by watercraft was available. There is no evidence in the Record to prove that the Santa Cruz was ever considered to be a viable option for such transportation to support mining. If navigation on the Santa Cruz had been possible, mine owners would have surely attempted to exploit it.

As the settlements in the Santa Cruz Valley grew, so did the opportunity for land speculators to market and sell property to unknowing buyers. The Record contain a reference to a pamphlet which portrayed the Santa Cruz River as having a wide channel, deep enough to be traversed by steam boats and other large vessels. SCR Study at § 3 at 36. The pamphlet was meant to lure curious easterners to the Arizona Territory with promises of stable trade and navigation, similar to those luxuries established in the Eastern part of the United States. The depiction on the pamphlet was an absurd exaggeration made by a local real estate

speculator in the late 1800's. *Id.* Those who came to the Santa Cruz Valley expecting to see a navigable corridor susceptible to commerce and travel were surely sorely disappointed.

There is no evidence in the Record to show that groundwater pumping prior to statehood had any effect on the navigability of Santa Cruz in its natural condition. The Record does contain evidence that mining actives, agriculture and the general needs of an increasing population did impact the amount of water available by 1912. ANSAC Report at 27. However, the Record does not support the Proponents argument that these diversions impacted the navigability of the Santa Cruz because the Santa Cruz, had never been a navigable. In fact the Record shows that agricultural diversions and irrigation were intermittently interrupted throughout the Mexican, Spanish and Early American periods, most often due to Apache unrest and periods when water was not available. Burtell Declaration at 6. There is no question that diversions were made, but even at the height of the growing season, irrigation "would not have depleted, on average, at total of more than 10 to 20 cfs from the stream....there were times when streamflows were insufficient even for this limited cultural demand." *Id.* at 6. These diversions would not have had a substantial impact on the susceptibility of the River to navigation, because "[c]learly it would have been impractical to conduct commercial navigation under such flow conditions, even if there were no diversions." *Id.* at 6.

4. <u>Boating Santa Cruz River and Lakes</u>

The Record contains several accounts of people who attempted to navigate the Santa Cruz by boat. However these efforts failed due to the Santa Cruz's inability to support navigation.

The first Recorded attempt to float a boat down the Santa Cruz was in 1914. *Id. supra,* § 3 at 20. Three sailors launched a small wooden boat during an extraordinary flood and readied themselves for what they thought would be a 2 day excursion on the Santa Cruz. The sailors may have been disappointed when the small boat went aground shortly after leaving Nogales. The trip was never completed or attempted again. *Id.*

Another attempt to float a boat on the Santa Cruz also occurred during a major flood in 1914, when the National Guard attempted to rescue people stranded on rooftops using an inflatable watercraft. *Id.* at 62. While the inflatable raft appeared to float, the currents of Santa Cruz proved to be too strong and violent, so much so that the mission was quickly aborted and the rescue attempt failed. *Id.*

The Record also contains a diary entry written by a traveler named John Spring, who retold the story of a single Mexican settler who built a canoe and purportedly crossed the Santa Cruz when the summer floods washed out the roads making it impossible to travel. *Id.* at 32. There is no other evidence to support Mr. Spring's claim, and nothing in Record shows that Mr. Spring personally ever attempted or saw anyone attempt to cross the Santa Cruz using a boat or any other type of watercraft. *Id.* Mr. Springs simply repeated the story of an act he never saw, which was not verified by anyone else at the time.

Descriptions provided by people who attempted to navigate or simply happened to observe the Santa Cruz during seasonal floods, describe a river that was too violent and fierce to even navigate during emergencies. *Id.* at 62

The Record contains evidence of people who floated on water crafts on manmade lakes built along the Santa Cruz in the 1880's. Id. supra at § 6 at 5. These accounts were short

lived, because the lakes were quickly destroyed and washed away in the 1890's due to seasonal flooding. *Id.*

The Proponents of navigation have submitted evidence into the Record purporting to show accounts of post-statehood boating on the Santa Cruz. *Id. supra* at § 3 at 62. These post-statehood accounts are insufficient to support a finding of navigability because there is no showing that the those modern-day watercraft were meaningfully similar to those customarily used for trade and travel on February 14, 1912; or that the physical condition of the Santa Cruz River during these modern-day accounts was the same as the River's ordinary and natural condition on the date of Arizona's statehood,. *see* PPL Montana, 132 S.Ct. at 1233 (holding that present-day recreational boating is only sufficient to demonstrate navigability if the proponent of navigability shows that (1) watercraft was substantially similar to those watercraft used for trade and travel at the time of statehood; and (2) that the river's post-statehood condition was materially similar to the physical condition of the river at statehood.).

No evidence in the Record shows that the Santa Cruz was ever susceptible to navigation. On the contrary the evidence strongly supports the position that "the Santa Cruz River has never within history or known prehistory been considered a navigable river..." *see* the Report, Findings and Determination Regarding the Navigability of the Santa Cruz River from the Mexican Border to the Confluence with the Gila River (October 18, 2006), ("Santa Cruz Findings") at 25.

B. Natural and Ordinary Condition of the Santa Cruz River

The climate data, hydrologic evidence and, geomorphologic characteristics of the Santa Cruz River are included in the Record for the Commission's consideration. The overwhelming evidence supports the fact that the Santa Cruz was not navigable in its ordinary and natural condition, on February 14, 1912.

1. Climate

The Santa Cruz Valley has the typical characteristics of a dry arid desert climate which have dictated the flow of the Santa Cruz River since pre-historic times. The flow of the Santa Cruz has always been directly related to the amount of water produced by the seasonal monsoons. SCR Study at § 4 at 6. For much of the year the Santa Cruz River has always had little or no flow. The Santa Cruz River has forever experienced "seasonal distribution of precipitation" during the summer and winter months, resulting in flooding, or "flow events" that coincide with those rainy seasons. *Id.* § 4 at 9. While there is more water flowing in the Santa Cruz during these fierce monsoons and erratic winter rains, that flow could never be safely navigated. § 4 at 5.

2. Hydrology

The hydrologic evidence in the Record also supports a finding that the Santa Cruz was never a navigable waterway. In the late 1800's the Santa Cruz was made up of "marshlands" and "intermittent streams." *Id. supra* at §3 at 3. According to the historical evidence in the Record "only the very largest floods sustained flows from the headwaters to the confluence with the Gila River." *Id.* at §6 at 2. The hydrology of the Santa Cruz indicates that it was not navigable at the time of statehood February 14, 1912, nor was it susceptible to navigation,

usable as a highway for commerce or capable of supporting vessels customarily used for commerce on navigable watercourses in 1912.

3. Geomorphology

Geomorphologic data also show the Santa Cruz was non-navigable. Evidence in the Record describes the upper portion of the Santa Cruz as an ill-defined set of braided channels. I*d.* § 4 at 58. When originally interpreted by the Commission in 2006, the final determination was that, "the Santa Cruz River, while considered to be a perennial stream, has an almost insignificant flow during the dry season of the year. As of February 14, 1912 and currently, the Santa Cruz flows/flowed primarily in direct response to precipitation and seasonal storms." Santa Cruz Findings at 28. When flowing at all, the Santa Cruz has always been a river with wide braided channels and, "almost insignificant flow during the dry seasons of the year". *Id.* at 30.

The evidence in the Record provides an impressive illustration of the Santa Cruz River as it was in its ordinary and natural condition. In its ordinary and natural state, the Santa Cruz was a non-navigable up until and including the date of Arizona statehood, February 14, 1912.Proponents have failed to meet their burden of proof to provide the Commission with any climactic, hydrologic or geomorphologic data as evidence to support their argument that the Santa Cruz was ever navigable or susceptible to navigation in its ordinary and natural condition.

///

C. **The Commission Must Find That the Santa Cruz River was Not Navigable**

1. Proponents Failed to Meet Their Burden of Proof

The proponents of navigability for the Santa Cruz River ("River") have the burden of proving, by a preponderance of the evidence, that the River was navigable in its ordinary and natural condition. *State of Arizona v. Arizona Navigable Stream Adjudication Comm.*, 224 Ariz. 230, 239, 229 P.3d 242, 251 (Ariz. Ct. App. 2010). The U.S. Supreme Court defined the term "navigable waters" in an admiralty case, The Daniel Ball, 77 U.S. 557 (1870). In defining "navigable or "navigable waterway, the Arizona State Legislature looked to The Daniel Ball: "'Navigable' or 'navigable watercourse' means a watercourse that was in existence of February 14, 1912, and at that time was used or was susceptible of being used in its ordinary and natural condition, as a highway of 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).

In PPL Montana, the U.S. Supreme Court stated that evidence of navigability "must be confined to that which shows the river could sustain the kinds of commercial use that, as a realistic matter, might have occurred at the time of statehood." *PPL Montana, LLC v. Montana*, 132 S. Ct 1215, 1233(2012) ("PPL Montana"). PPL Montana went on, stating that "[n]avigability must be assessed as the time of statehood, and it concerns the river's usefulness for 'trade and travel,' rather than for other purposes." Id. The trade and travel discussed in PPL Montana, must be the kind that constitutes a "commercial reality." PPL Montana, at 1234. Evidence of initial explorers or trappers using boats on a river, or post-statehood evidence of boats navigating a river may be used to support navigation, but only if

the "(1) the watercraft are meaningfully similar to those in customary use for trade and travel at the time if statehood; and (2) the river's post-statehood condition is not materially different from its physical condition at statehood." Id. The Court made it clear that modern watercraft of any type, "may be able to navigate water much more shallow or with rockier beds than boats customarily used for trade and travel at statehood." Id.

Proponents have failed to present evidence that would lead a reasonable person to conclude by a preponderance of the evidence that the Santa Cruz was ever susceptible to navigation, much less navigated at any time at or around the time of statehood. Proponents have failed to meet their burden of proof. In fact the weight of the evidence in the Record clearly shows that the Santa Cruz was not navigable at the time of Arizona's statehood, February 14, 1912.

2. The Evidence Does Not Support a Finding of Navigability

The Santa Cruz in its ordinary and natural condition was not navigable or susceptible to navigation on the date of Arizona's statehood, February 14, 1912. There is no evidence which proves that the Santa Cruz has ever been used as a highway of commerce in the ordinary method of trade or travel at the time of Arizona's statehood, February 14, 1912. There is no evidence that proves that the Santa Cruz River was ever capable of navigation or had the potential to support navigation. There is abundant evidence showing that the Santa Cruz Valley was a heavily used corridor for Indians, travelers, miners and pioneers who traveled along the Santa Cruz River through the valley. However there is no credible evidence in the Record supports the finding that anyone ever traveled by water craft on the Santa Cruz.

There is one uncorroborated anecdotal story of a man who made a canoe to cross the Santa Cruz during time when a flood washed a road. Nothing in the Record supports that story, and no other reports of boating the Santa Cruz on or prior to statehood support a finding of navigability.

3. 'Date of Statehood' May Not Be Trivialized

Proponents of navigability have provided evidence to the Commission offered to support o very limited elements of the statutory definition of navigability or navigation. Proponents evidence conflicts with the test for navigability on its face, while it supports a separate and *equally* important element. The Proponents, pick and chose parts of the statute which they apply to the definition of navigability. The Proponents seek to eliminate the requirement that the River be considered navigable in fact on or around the date of statehood, February 14, 1912 (*See* A.R.S. § 37-1101(5).

This approach violates the most basic canons of statutory construction. "Statutory provisions must be considered in context of entire statute and consideration must be given to all statute's provisions so as to arrive at legislative intent manifested by entire act". *One Hundred Eighteen Members of Blue Sky Mobile Home Owners Ass'n v. Murdock* 140 Ariz. 417, 682 P.2d 422 (App. Div.1 1984). When applying the Arizona Statute that defines a navigable watercourse, the Commission must ensure that "no clause, sentence, or word is rendered superfluous, void, contradictory or insignificant". *State v. Superior Court for Maricopa County* (1976) 113 Ariz. 248, 550 P.2d 626. See also *Adams v. Bolin* 74 Ariz. 269, 247 P.2d 617 (1952); *City of Phoenix v. Yates* 69 Ariz. 68, 208 P.2d 1147 (1949).

Proponents of navigation have submitted evidence for the Record on purported instances of pre-historic and post-statehood navigability, while ignoring other critical parts of the statutory requirements of 'ordinary and natural' as of 'February 14, 1912.

4. The Army Corps of Engineers 'Traditionally Navigable Waters' Determination

The Arizona Center for Law in the Public Interest ("ACLPI") submitted the report "Determination of the Two Reaches of the Santa Cruz River as Traditionally Navigable Waters" ("TNW Determination") dated May 23, 2008 and signed by Colonel Thomas H. Magness, United States Army, acting as Commander of the Los Angeles District of the Army Corps of Engineers ("Colonel Magness"). When ACLPI introduced the TNW Determination, it failed to provide the Commission with the complete documentary Record relating to that decision. Had the complete Record been submitted it would have shown that the TNW Determination is fatally flawed for the purposes of determining the ordinary and natural conditions of the Santa Cruz River, at the time of Statehood. The Tribe therefore provided the Commission with the complete documentary history related to the TNW Determination, to the extent the Record can be assembled from available public records. This includes the documents related to the controversial result of the TNW Determination, which is discussed below.

The TNW Determination contends that two reaches of the Santa Cruz River are traditionally navigable, based on each sections post-statehood physical characteristics, past and current public accessibility, and use or potential usage for commercial activities. TNW Determination at 2, 4 and 5. The TNW Determination is based on an expanded concept of

"traditionally navigable waters" as used in the Clean Water Act. ("CWA"). In making its TNW Determination, the Army Corps of Engineers ("Corps") and the Environmental Protection Agency ("EPA"), took it upon themselves to issue a joint memorandum entitled *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carbell v. United States* and *Appendix D of the U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook*, issued June 5, 2007 ("2007 Rapanos Guidance"). The Corps and EPA's self-serving expansion of what constitutes "traditionally navigable waters" is laid out in the 2007 Rapanos Guidance. When applying the 2007 Rapanos Guidance to the Santa Cruz River for jurisdiction to enforce water quality standards, the Army Corps of Engineers determined that the two sections of the Santa Cruz River, qualify as traditionally navigable waterway, *but only* for the purpose of expanding the jurisdiction over waters for the purpose of applying the CWA.

First, the purpose and use of the terms "navigable" and "navigability", in the context of the TNW Determination, are not remotely related to the same terms used for the purposes of actual navigation under *The Daniel Ball*, 77 U.S. 557 (1970). *See* section C(1) of this Memorandum for the definition given in *The Daniel Ball*. The following elements were used to support the Corps finding that the physical characteristics, public accessibility, and commerce potential of the Santa Cruz River met the elements of what the 2007 Rapanos Guidance deems as a 'traditionally navigable waters':

a. the mean and average flows of the Santa Cruz River based on *post statehood* flow data, including the River's highest and lowest outliers;

b. *modern day* measurements of effluent flows of the Santa Cruz River;

c. 1951 *post statehood* account of the Tucson City Engineer navigating the Santa Cruz River from San Xavier del Bac Mission to Congress Street in Tucson;

d. 1994 *post statehood* account of two people canoeing the Santa Cruz River for three miles;

e. 2005 *post statehood* account of a radio disk jockey floating down the Santa Cruz *after a large monsoon*;

f. navigation of *manmade lakes;*

g. *modern day* public accessibility to the relevant reaches if the Santa Cruz River; and

h. the use of *manmade lakes* to power a flour mill.

TNW Determination at 1 (emphasis added).

4. **Sewage Effluent Flow in the Santa Cruz River was Not its Ordinary and Natural Condition at Statehood**

ACLPI failed to point out the fact that Colonel Magness was analyzing a River that he acknowledged as being "mostly, but not exclusively, effluent from a wastewater treatment plant..." Email from Colonel Magness to Mr. Steven L. Stockton dated June 30, 2008.

The flow data analysis undertaken by Colonel Magness used the mean and average post-statehood flow rates measured at gages along limited sections of the Santa Cruz. *Id.* at 3-4. In accordance with the Corps and EPA's self-serving 2007 Rapanos Guidance, Colonel Magness failed to differentiate between those instances of extreme peak flows that occur during the torrential monsoon season, and the normal flow rate that makes up the Santa Cruz

for roughly two-thirds of the year. For a more accurate representation of the Santa Cruz, Colonel Magness should have excluded the handful of extreme peaks from his average flow rate calculations, and the contribution of flow from sewer plants.

The TNW Determination becomes even more irrelevant when the Commission considers the fact that contemporary stream flow data does not accurately represent the flow of the Santa Cruz as it was on the date of Arizona statehood.

The evidence and analysis used to support the 'physical characteristics' of two sections of the Santa Cruz River are not representative of the Santa Cruz in its ordinary and natural condition at statehood, which is required to show navigability for the purposes of ANSAC. Instead, TNW Determination is of a river flow made up of mostly sewage effluent water from a nearby wastewater treatment plant, and average/mean flow rate calculated with the peak flow rates included. This results in a drastically exaggerate average flow of the Santa Cruz River.

Proponents of navigability offered the TNW Determination to the Commission to show the Santa Cruz in its ordinary and natural condition. A reasonable review of the report should have made it clear to Proponents that the TNW Determination misrepresents the Santa Cruz in its ordinary and natural condition.

The ACPLI not only failed to give the Commission the entire documentary history of the TNW Determination, but the TNW Determination is not evidence of navigability at statehood. The TNW Determination is clearly not a determination based on the Santa Cruz River's ordinary and natural condition.

The TNW Determination is also based on the assumption that the Santa Cruz River has been used in the past for interstate commerce and has the potential to be used for future commercial activities. *Id.* at 5. The TNW Determination states that "navigation has occurred historically and in recent times within the two Study Reaches of the Santa Cruz River." *Id.* The earliest *historical* account of navigation on the River cited in the TNW Determination is from 1951, followed by a 1994 account of two people who purported to have canoed three miles of the Santa Cruz River. *Id.* Nothing in the TNW Determination shows that these events could have been performed on the Santa Cruz at the time of Arizona's statehood in the River's ordinary and natural condition.

Finally, the TNW Determination speculates that commercial commerce could potentially take place on the Santa Cruz River because of the fact that "the Study Reaches of the Santa Cruz River have public accessibility." *Id.* at 4. Evidence of public accessibility is not evidence that the Santa Cruz was used or could have been used as a highway of commerce for trade or travel at the time of statehood for the purposes of answering ANSAC's navigability question. The TNW Determination supports its commercial use theory based on what it deems to be 'heavy tourism' present along the reaches of the Santa Cruz. *Id.* (noting the abundance of out-of-state tourists that come to stay at the resorts along the low banks of the River). Interestingly the TNW Determination names specific activities that it claims draw in out-of-state tourists to the banks of the Santa Cruz River. Included on this list of activities is hiking, horseback riding and bird watching. *Id.* Note though, that none of the tourists activities referenced include, on-water recreation or on-river recreational activities, like canoeing, kayaking, whitewater rafting or on-river fishing.

Proponents of navigability have failed to meet their burden of proof. The supplemental evidence in the Record does little more than confuse the reader the Santa Cruz River is not navigable simply because the word "navigable" is used in the TNW Determination. The ACLPI's submission of the TNW report as supplemental evidence is irrelevant to the Commission's decision. Further, no evidence, supplemental or otherwise supports the position that the Santa Cruz River was navigable or susceptible to navigability in its ordinary and natural condition on the date of Arizona's statehood February 14, 1912.

II. Conclusion and Requested Action

The Proponents of navigability have the burden of proving that the Santa Cruz was navigable by a preponderance of the evidence. There is no credible evidence in the Record to show that the Santa Cruz was ever navigable, or susceptible to navigation. The Proponents of navigability have failed to meet their burden and therefore the Commission should find the Santa Cruz River was in fact not navigable at the time of Arizona's statehood, February 14, 1912.

The San Carlos Apache Tribe respectfully requests that after the Commission consider the historical and scientific data, documents and all other evidence in the Record, to find, "that the Santa Cruz River was not used or 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 as of February 14, 1912." Santa Cruz Findings at 27. statehood,

///

DATED this 15th day of April, 2014.

THE SPARKS LAW FIRM, P.C.

By _____

Joe P. Sparks
7503 First Street
Scottsdale, Arizona 85251
Attorney for the San Carlos Apache Tribe

ORIGINAL AND SIX COPIES of the foregoing hand-delivered for filing this 15th day of April, 2014 to:

Arizona Navigable Stream Adjudication Commission
1700 West Washington, Room B-54
Phoenix, AZ 85007

COPY, with CD containing electronic Word version in Word format, sent by U.S. mail this 15th day of April, 2014 to:

Fred E. Breedlove III
Squire Sanders (US) LLP
1 East Washington Street, Suite 2700
Phoenix, AZ 85004-2556
Attorney for the Commission

COPY sent by U.S. mail this 15th day of April, 2014 to:

Laurie A. Hachtel
Joy Hernbrode
Attorney General's Office
1275 West Washington Street
Phoenix, AZ 85007-2997
Attorneys for State of Arizona

Joy E. Herr-Cardillo
Timothy M. Hogan
Arizona Center for Law in the Public Interest
2205 E. Speedway Blvd.
Tucson, AZ 85719
Attorneys for Defenders of Wildlife, et al.

John B. Weldon, Jr.
Mark A. McGinnis
Scott M. Deeny
Salmon, Lewis & Weldon, P.L.C.
2850 East Camelback Road, Suite 200
Phoenix, Arizona 85016
Attorneys for Salt River Project Agricultural Improvement and Power District and Salt River Valley Water Users' Association

Sally Worthington
John Helm
Helm, Livesay, & Worthington, Ltd.
1619 E. Guadalupe #1
Tempe, AZ 85283
Attorneys for Maricopa County

Sandy Bahr
202 E. McDowell Road, Ste. 277
Phoenix, AZ 85004
Sierra Club

Carla Consoli
Lewis & Roca
40 N. Central Avenue
Phoenix, AZ 85004
Attorneys for Cemex

L. William Staudenmaier
Snell & Wilmer LLP
One Arizona Center
400 E. Van Buren
Phoenix, AZ 85004-2202
Attorneys for Freeport-McMoRan Copper & Gold, Inc.

Sean Hood
Fennemore Craig, P.C.
2394 E. Camelback Road, Suite 600
Phoenix, AZ 85016-3429
Attorneys for Freeport-McMoRan Copper & Gold, Inc.

Charles Cahoy
Assistant City Attorney
City of Tempe
21 E. Sixth Street
Tempe, AZ 85280
Attorney for City of Tempe

Cynthia Campbell
Law Department
City of Phoenix
200 W. Washington, Suite 1300
Phoenix, AZ 85003
Attorney for City of Phoenix

William H. Anger
Engelman Berger, P.C.
3636 N. Central Avenue, Suite 700
Phoenix, AZ 85012
Attorneys for City of Mesa

Thomas L. Murphy
Gila San Pedro Indian Community Law Office
Post Office Box 97
Sacaton, AZ 85147
Attorney for Gila River Indian Community

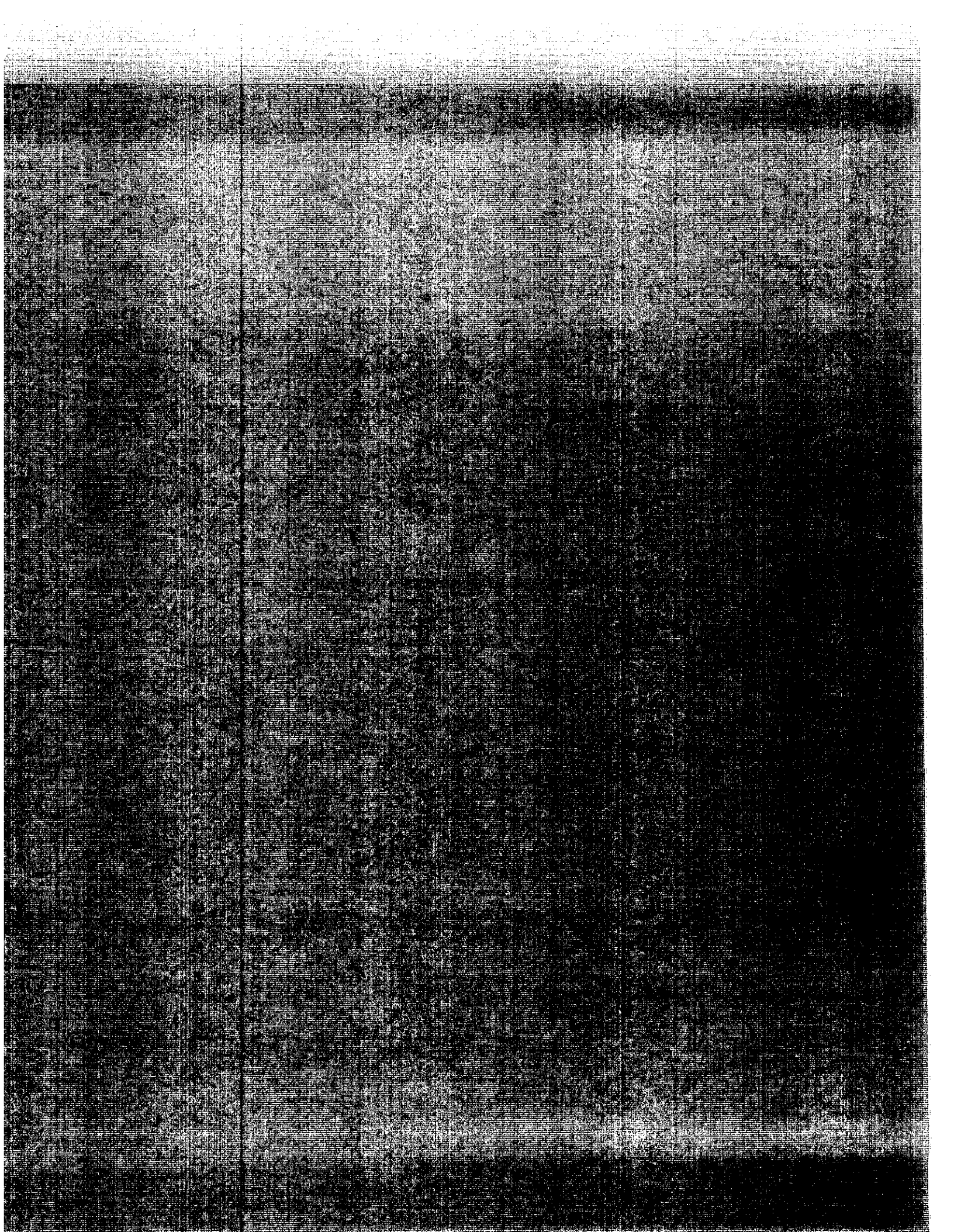
Michael J. Pearce
Maguire & Pearce LLC
2999 N. 44th Street, Suite 630
Phoenix, AZ 85018-0001
Attorneys for Chamber of Commerce and Home Builders' Association

James T. Braselton
Mariscal Weeks McIntyre & Friedlander PA
2901 N. Central Avenue, Suite 200
Phoenix, AZ 85012-2705
Attorneys for Various Title Companies

Steve Wene
Moyes Sellers & Sims
1850 N. Central Avenue, Suite 1100
Phoenix, AZ 85004-4527
Attorneys for Arizona State University

David A. Brown
Brown & Brown Law Offices
128 E. Commercial, P.O. Box 1890
St. Johns, AZ 85936

Susan B. Montgomery
Robyn L. Interpreter
Montgomery & Interpreter, P.C.
4835 E. Cactus Road, Suite 210
Scottsdale, AZ 85254



John B. Weldon, Jr., 003701
Mark A. McGinnis, 013958
Scott M. Deeny, 021049
SALMON, LEWIS & WELDON, P.L.C.
2850 East Camelback Road, Suite 200
Phoenix, Arizona 85016
(602) 801-9060
jbw@slwplc.com
mam@slwplc.com
smd@slwplc.com

Attorneys for Salt River Project Agricultural Improvement and Power District and Salt River Valley Water Users' Association

BEFORE THE ARIZONA NAVIGABLE STREAM ADJUDICATION COMMISSION

In re Determination of Navigability of the Santa Cruz River	No. 03-002-NAV **SALT RIVER PROJECT'S CLOSING BRIEF**

For its Closing Brief in this matter, the Salt River Project Agricultural Improvement and Power District and Salt River Valley Water Users' Association (collectively, "SRP") hereby join in the Opening Post-Hearing Memorandum filed by the San Carlos Apache Tribe on April 15, 2014. SRP also incorporates by this reference its own pre-hearing memorandum filed with the Commission in September 2012. *See* Salt River Project's Memorandum Regarding Whether Santa Cruz River Was Navigable in Its "Ordinary and Natural Condition" (September 7, 2012). For the reasons set forth in those two memoranda, SRP requests that the Commission find that the Santa Cruz River was not navigable in its "ordinary and natural condition" on February 14, 1912.

. . .

. . .

. . .

. . .

DATED this 13th day of June, 2014.

SALMON, LEWIS & WELDON, P.L.C.

By Mark A McGinnis

John B. Weldon, Jr.
Mark A. McGinnis
Scott M. Deeny
2850 East Camelback Road, Suite 200
Phoenix, Arizona 85016
Attorneys for SRP

ORIGINAL AND SIX COPIES of the foregoing hand-delivered for filing this 13th day of June, 2014 to:

Arizona Navigable Stream Adjudication Commission
1700 West Washington, Room B-54
Phoenix, AZ 85007

AND COPY mailed this 13th day of June, 2014 to:

Fred E. Breedlove III
Squire Sanders & Dempsey LLP
1 East Washington Street, Suite 2700
Phoenix, AZ 85004-2556
Attorney for the Commission

Cynthia M. Chandley
L. William Staudenmaier
Snell & Wilmer LLP
One Arizona Center
400 E. Van Buren
Phoenix, AZ 85004-2202
Attorneys for Freeport-McMoRan Copper & Gold, Inc.

Sean Hood
Fennemore Craig, P.C.
2394 E. Camelback, Suite 600
Phoenix, AZ 85004-2022
Attorneys for Freeport-McMoRan Copper & Gold, Inc.

. . .

Laurie A. Hachtel
Joy Hernbrode
Attorney General's Office
1275 West Washington Street
Phoenix, AZ 85007-2997
Attorneys for State of Arizona

Joy E. Herr-Cardillo
Timothy M. Hogan
Arizona Center for Law in the Public Interest
2205 E. Speedway Blvd.
Tucson, AZ 85719
Attorneys for Defenders of Wildlife, et al.

Joe Sparks
The Sparks Law Firm
7503 First Street
Scottsdale, AZ 85285-4201
Attorneys for San Carlos Apache Tribe

Steve Wene
Moyes Sellers & Hendricks
1850 N. Central Avenue, Suite 1100
Phoenix, AZ 85004-4527
Attorneys for Arizona State University

Cynthia Campbell
Law Department
City of Phoenix
200 W. Washington, Suite 1300
Phoenix, AZ 85003
Attorneys for City of Phoenix

William H. Anger
Engelman Berger, P.C.
3636 N. Central Avenue, Suite 700
Phoenix, AZ 85012
Attorneys for City of Mesa

. . .

. . .

Charles L. Cahoy
Assistant City Attorney
City Attorney's Office
City of Tempe
21 E. Sixth Street, Ste. 201
Tempe, AZ 85280
Attorney for City of Tempe

Michael J. Pearce
Maguire & Pearce LLC
2999 N. 44th Street, Suite 630
Phoenix, AZ 85018-0001
Attorneys for Chamber of Commerce and Home Builders' Association

Carla Consoli
Lewis and Roca
40 N. Central Avenue
Phoenix, AZ 85004
Attorneys for Cemex

James T. Braselton
Mariscal Weeks McIntyre & Friedlander PA
2901 N. Central Avenue, Suite 200
Phoenix, AZ 85012-2705
Attorneys for Various Title Companies

Thomas L. Murphy
Linus Everling
Gila River Indian Community Law Office
Post Office Box 97
Sacaton, AZ 85147
Attorney for Gila River Indian Community

Sandy Bahr
202 E. McDowell Road, Ste. 277
Phoenix, AZ 85004
Sierra Club

. . .

. . .

David A. Brown
Brown & Brown Law Offices
128 E. Commercial, P.O. Box 1890
St. Johns, AZ 85936

Susan B. Montgomery
Robyn L. Interpreter
Montgomery & Interpreter, P.C.
4835 E. Cactus Road, Suite 210
Scottsdale, AZ 85254