BEFORE THE ARIZONA NAVIGABLE STREAM ADJUDICATION COMMISSION

IN THE MATTER OF THE NAVIGABILITY OF THE GILA RIVER FROM THE NEW MEXICO BORDER TO THE CONFLUENCE WITH THE COLORADO RIVER, GREENLEE, GRAHAM, GILA, PINAL, MARICOPA, AND YUMA COUNTIES, ARIZONA	No. 03-007-NAV

FIRST ADDENDUM TO THE REPORT, FINDINGS AND DETERMINATION REGARDING THE NAVIGABILITY OF THE GILA RIVER FROM THE NEW MEXICO BORDER TO THE CONFLUENCE WITH THE COLORADO RIVER, GREENLEE, GRAHAM, GILA, PINAL, MARICOPA, AND YUMA COUNTIES, ARIZONA DATED JANUARY 27, 2009

The Arizona Navigable Stream Adjudication Commission ("ANSAC" or "Commission"), having considered all of the historical and scientific data and information, documents and other evidence (collectively, "Evidence in the Record") regarding the issue of whether the Gila River from the New Mexico border to the confluence with the Colorado River ("Gila River" or "the Gila" or "the River") was navigable for title purposes as of February 14, 1912, the date of Arizona's statehood, and being fully advised by counsel, hereby submits this addendum to the *Report, Findings and*

Determination Regarding the Navigability of the Gila River from the New Mexico Border to the Confluence with the Colorado River, Greenlee, Graham, Gila, Pinal, Maricopa, and Yuma Counties, Arizona published January 27, 2009 ("2009 Report").

While the Commission's navigability determination remains unchanged, unless otherwise discussed herein, this opinion supersedes the 2009 Report in its entirety.

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I. PROCEDURAL HISTORY

The Commission has held nine separate hearings over the course of a decade to receive evidence, testimony, and legal memorandum regarding the navigability of the Gila River.

A. 2003-2005 Hearings

The first set of hearings was held between 2003 and 2005 ("2003-05 Hearings"). Hearings were held in the county seat in each county through which the Gila River flows, including Graham County, on October 14, 2003; Greenlee County, on October 15, 2003; Pinal County, on March 9, 2004; Gila County, on November 15, 2004; Yuma County, on January 24, 2005; and Maricopa County, on November 16 and 17, 2005. Each of the 2003-05 Hearings was properly noticed pursuant to the applicable statutes. All parties were advised that anyone who desired to appear and give testimony at the hearings could do so and that, in making its findings and determination as to navigability, the Commission would consider all matters presented to it at the hearings or at any time prior to the date of the hearings.

Various individuals submitted documents and/or testimony in connection with the 2003-05 Hearings. The Commission received 28 separate documentary filings, including studies, newspapers and other historical accounts, pictures and recordings. Seventeen witnesses, at least eleven of which were identified as experts in the fields of hydrology, hydraulics, geomorphology, and history, testified at the hearings in Phoenix on November 16 and 17, 2005. A list of the evidence submitted during the 2003-05 Hearings, together with a summary, which originally appeared as Exhibit E to the 2009 Report, is reproduced here as Exhibit A.

On May 24, 2006, at a public hearing in Phoenix, Arizona, after considering all the evidence, testimony, and legal memoranda submitted by the parties, and the comments

and oral argument presented by the parties, and having been fully advised by counsel, the Commission determined by a unanimous vote that the Gila River was not navigable for purposes of title at statehood. Following the hearing, the Commission issued its 2009 Report.

The Arizona State Land Department ("ASLD") appealed the 2009 Report and determination on October 27, 2009. Proceedings in the case were ultimately stayed, however, while the Arizona Court of Appeals considered a related challenge to the Commission's determination that the Lower Salt River was nonnavigable for purposes of title at statehood.

B. Lower Salt River Appeal (*Winkelman*)

On June 19, 2006, ASLD appealed the Commission's determination that the Lower Salt River was nonnavigable at the time of statehood. ASLD alleged that the Commission misapplied the federal test for navigability for title by concluding that the Lower Salt River's "ordinary and natural condition . . . includes irrigation diversions, canals, and other human impacts," which "dramatically and drastically altered" the River.[1]

The superior court affirmed the Commission's determination regarding the Lower Salt River by order dated August 7, 2007. The determination was further appealed to the court of appeals, which vacated the order and remanded to the Commission with instructions to determine "what the [Lower Salt] 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." *State ex rel. Winkleman v. Ariz. Navigable Stream Adjudication Comm'n*, 224 Ariz. 230, 241 ¶¶ 28-29, 229 P.3d 242, 253 (Ct. App. 2010) (emphasis added).

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[1] Complaint for Judicial Review of Administrative Decision regarding Lower Salt River, *State ex rel. Winkleman v. Ariz. Navigable Stream Adjudication Comm'n*, 2006 WL 6616118 (Ariz. Super. June 19, 2006), at ¶ 22(A).

Subsequent to the court of appeals' decision in *Winkleman* concerning the Lower Salt River, the superior court (in both Maricopa and Pima Counties) remanded to the Commission the navigability determinations for the five other watercourses on which judicial appeals were then pending (Upper Salt, Gila, Verde, San Pedro, and Santa Cruz Rivers). On December 14, 2011, the Commission issued a notice confirming the remand of its navigability determinations and requesting that interested parties submit memoranda recommending a course of action for the Commission to comply with the *Winkelman* decision.

C. U.S. Supreme Court Ruling in *PPL Montana, LLC v. Montana*

In February 2012, the U.S. Supreme Court issued a decision that impacted the way navigability determinations are made in Arizona. *PPL Montana, LLC v. Montana*, 565 U.S. 576 (2012), required the Commission to resolve whether individual segments of the affected watercourses were navigable at the time of statehood. In *PPL Montana*, the U.S. Supreme Court held that, with *de minimis* exception, a watercourse's navigability must be determined on a segment-by-segment basis, even where only "short interruption[s] of navigability in a stream otherwise navigable" exist. 565 U.S. at 593, 594. With respect to determining start and end points, the Court observed that shifts in physical conditions, topographical and geographical indicators, and other physical features characteristic of navigability or nonnavigability are to be taken into consideration. *Id.* at 594.

The Court in *PPL Montana* also addressed the relevance of evidence of present-day, primarily recreational use to the issue of a river's susceptibility to use as a highway for commerce. Specifically, the Court ruled that evidence of "present-day use may be considered to the extent it informs the historical determination whether the river segment was susceptible of use for commercial navigation at the time of statehood." *Id.* at 1233. However, because navigability for title is determined at the time of statehood and concerns a river's usefulness for "trade and travel," rather than for other purposes, the

Court ruled that such evidence "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." *Id.* at 1233 (emphasis added). The Court therefore held that before this type of evidence can be considered in a navigability for title determination, "the party seeking to use present-day evidence for title purposes must show: (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[2] at statehood." *Id.*

D. Reopening of the Record & 2014 Public Hearings

On October 22, 2012, the Commission voted to reopen the record and hold additional public hearings to receive supplemental evidence relevant to the principles addressed in *Winkleman* and *PPL Montana* for the six remanded watercourses. In accordance with A.R.S. §§ 37-1123(B) and 37-1126, the Commission gave proper public notice (copies of which are attached as Exhibit B to this report) of its intent to reopen the record and hold additional public hearings to receive supplemental evidence on the Gila River for consideration of the principles addressed in *Winkleman* and *PPL Montana.*

Hearings were held on June 16-20, and August 18-20, 2014, in Phoenix; and on August 29, 2014, in Florence ("2014 Hearings").[3] Following the final public hearing on August 29, 2014, the Commission advised the parties that they could file post-hearing legal briefs pursuant to Commission Rules.[4] Salt River Project Agricultural Improvement and Power District and Salt River Valley Water Users' Association (collectively, "SRP"),

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[2] In light of *Winkleman* and our obligation to consider a river's "ordinary and natural condition" at statehood, we interpret the phrase "physical condition" in *PPL Montana* to mean "ordinary and natural condition."

[3] Transcripts of the 2014 Hearings are available on the Commission's website, http://www.ansac.az.gov/transcripts.asp.

[4] On December 23, 2014, the Commission issued a Second Amended Order Clarifying Deadlines and Hearing Dates, which established a post-hearing legal briefing schedule.

Freeport Minerals Corporation ("Freeport"), the San Carlos Apache Tribe, and the Gila River Indian Community ("GRIC"), submitted briefs and proposed findings of fact and conclusions of law ("FF/CL") in favor of non-navigability (collectively, "Opponents").[5] The ASLD, Maricopa County and the Flood Control District of Maricopa County ("Maricopa County"), and the Arizona Center for Law in the Public Interest on behalf of Defenders of Wildlife, Donald Steuter, Jerry Van Gasse, and Jim Vaaler ("ACLPI") (collectively, "Proponents") submitted briefs and proposed FF/CL in favor of navigability.[6]

On June 23, 2015, at a properly noticed public hearing in Phoenix, Arizona, after considering all of the new and existing Evidence in the Record; the parties' briefs; the testimony, comments, and oral arguments made at the 2003-05 and 2014 Hearings; and the oral arguments of the parties, and having been fully advised by counsel, the Commission determined by a unanimous vote that Segments 1 through 7 of the Gila River were not navigable or susceptible to navigation in their "ordinary" and "natural" condition at the time of statehood. The Commission further determined by a vote of 3-1 that Segment 8 of the Gila River was not navigable or susceptible to navigation in its "ordinary" and "natural" condition at the time of statehood.[7][8]

II. BURDEN OF PROOF

Arizona Revised Statute § 37-1128(A) provides:

> If the preponderance of the evidence establishes that the watercourse was navigable, the commission shall issue its determination confirming that the watercourse was navigable. If the preponderance of the evidence fails to establish that the watercourse was navigable, the commission shall issue its

[5] The Yavapai-Apache Nation filed a joinder in the proposed FF/CL jointly submitted by Opponents.

[6] The parties' briefs are available on the Commission's website, http://www.ansac.az.gov/RemandCaseLegalMems.asp.

[7] The minutes from the June 23, 2015 hearing are available on the Commission's website, http://www.ansac.az.gov/Board_Info/minutes.asp.

[8] *See* Dissenting Opinion by Commissioner Bill Allen at the end of this Report.

determination confirming that the watercourse was nonnavigable.

The proponent of navigability bears the burden of proof of establishing navigability by a preponderance of the evidence. *Winkleman*, 224 Ariz. at 238-39, 229 P.3d at 250-51.

The "preponderance of the evidence" standard is sometimes referred to as requiring "fifty percent plus one" in favor of the party with the burden of proof. If the evidence on each side weighs exactly even, then the party without the burden of proof necessarily prevails. Proponents, as the party with the burden of proof, must convince the Commission that the Evidence in the Record, considered in its totality, weighs in favor of a finding of navigability. *See generally United States v. Fatico*, 458 U.S. 388, 403-06 (E.D.N.Y. 1978), *aff'd*, 603 F.2d 1053 (2d Cir. 1979), *cert. denied*, 444 U.S. 1073 (1980); *United States v. Schipani*, 289 F.Supp. 43, 56 (E.D.N.Y. 1968), *aff'd*, 414 F.2d 1262 (2d Cir. 1969).

While the Proponents bear the burden of proof as to navigability, the Commission "may not begin its determination with any presumption against navigability." *Winkleman*, 224 Ariz. at 239, 229 P.3d at 251. Indeed, "determinations regarding the title to beds of navigable watercourses in equal footing cases must begin with a strong presumption *against* defeat of state's title." *Defs. of Wildlife v. Hull*, 199 Ariz. 411, 426, 18 P.3d 722, 737 (Ct. App. 2001) (emphasis added). A presumption, however, only applies "in the absence of any evidence to the contrary," *In re Westfall's Estate*, 74 Ariz. 181, 186, 245 P.2d 951, 955 (1952), and "should never be placed in the scale to be weighed as evidence," *In re Hesse's Estate*, 62 Ariz. 273, 282, 157 P.2d 347, 351 (1945); *see also Sheehan v. Pima County*, 135 Ariz. 235, 238, 660 P.2d 486, 489 (Ct. App. 1982) ("a presumption disappears entirely upon the introduction of any contradicting evidence and when such evidence is introduced the existence or non-existence of the presumed fact is to be determined exactly as if no presumption had ever been operative").

III. NAVIGABILITY STANDARD

"The standard of navigability for equal footing claims is established by federal law." *Defs. of Wildlife*, 199 Ariz. at 419, 18 P.3d at 730 (citing *Utah v. United States*, 403 U.S. 9, 10 (1971)); *accord PPL Montana*, 132 S.Ct. at 1227 ("questions of navigability for determining state riverbed title are governed by federal law"). The federal standard has remained virtually unchanged since 1870, when the U.S. Supreme Court provided the classic definition of navigability in *The Daniel Ball*, 77 U.S. (10 Wall.) 557 (1870):

> Those rivers must be regarded as public navigable rivers in law which are navigable in fact. And they are navigable in fact when they are used, or are susceptible of being used, in their ordinary condition, as highways for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water.

Id. at 563; *see PPL Montana*, 132 S.Ct. at 1228 (collecting cases applying the *Daniel Ball* formulation to determine navigability for title under the equal-footing doctrine).

In Arizona, the federal test for navigability for title is codified at A.R.S. § 37-1101(5), which states:

> "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.

"'Watercourse' means the main body or a portion or reach of any lake, river, creek, stream, wash, arroyo, channel or other body of water. Watercourse does not include a man-made water conveyance system described in paragraph 4 of this section, except to the extent that the system encompasses lands that were part of a natural watercourse as of February 14, 1912." A.R.S. § 37-1101(11). "'Highway for commerce' means a corridor or conduit within which the exchange of goods, commodities or property or the transportation of persons may be conducted." *Id.* § 37-1101(3).[9]

[9] The Commission also considered the following definitions in A.R.S. § 37-1101 in making this determination:

As relevant here, the Commission's task is to determine: (1) the characteristics of the Gila River at the time of statehood in its "ordinary" (*i.e.*, usual, absent major flooding or drought) and "natural" (*i.e.*, without man-made dams, canals, or other diversions) condition; and (2) whether, at the time of statehood, the Gila River was used or was susceptible of being used as a highway for commerce in that condition. *Winkleman*, 224 Ariz. at 239, 229 P.3d at 251. In so doing, the Commission must consider the River on a segmented basis, unless doing so is unnecessary. *See PPL Montana*, 132 S.Ct. at 1229, 1230.

IV. EVIDENCE RECEIVED AND CONSIDERED BY THE COMMISSION

Pursuant to A.R.S. § 37-1123, the Commission undertook to receive, compile, and review supplemental evidence regarding the issues of segmentation and whether the Gila River was navigable for title purposes as of statehood in both its ordinary and natural condition. A list of supplemental evidence and records submitted during the 2014 Hearings is attached as Exhibit C and copies of the hearing minutes are attached as Exhibit D. [10] Documents and testimony submitted in connection with the 2003-05 Hearings remain part of the Record and were considered by the Commission in making this Report and determination.

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2. "Bed" means the land lying between the ordinary high watermarks of a watercourse.

6. "Ordinary high watermark" means the line on the banks of a watercourse established by fluctuations of water and indicated by physical characteristics, such as a clear natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation or the presence of litter and debris, or by other appropriate means that consider the characteristics of the surrounding areas. Ordinary high watermark does not mean the line reached by unusual floods.

[10] Citations to the record are identified as "Supp. EIN," for evidence submitted during the 2014 Hearings, or "EIN," for evidence submitted in connection with the 2003-05 Hearings.

Six experts submitted supplemental evidence and testimony during the 2014 Hearings, the details of which are described as relevant below:

- Dr. Jonathan Fuller, hydrologist and boating expert, on behalf of ASLD;
- Donald D. Farmer, boating expert, on behalf of ASLD;
- Allen J. Gookin, registered engineer, land surveyor, and certified hydrologist, on behalf of GRIC;
- Richard Burtell, registered geologist, on behalf of Freeport;
- Douglas R. Littlefield, historian, on behalf of SRP; and
- Dr. Robert A. Mussetter, hydraulic engineer, on behalf of SRP.

V. ANALYSIS OF THE EVIDENCE

A. Segmentation

Although the 2009 Report included discussions that divided the Gila River into an upper, middle and lower reach, these divisions were based on different (albeit related) criteria than that specified in *PPL Montana*. *Compare* 2009 Report, at 8, *with PPL Montana*, 565 U.S. at 595. More importantly, the 2009 Report did not analyze navigability on a segment-by-segment basis as required by *PPL Montana*. 565 U.S. at 596-98.

ACLPI disputes that segmentation is necessary in this case because it contends that the Record is clear that all the Gila's segments were navigable or susceptible to navigation in their ordinary and natural condition at statehood.[11] Opponents also dispute that segmentation is necessary, but for the opposite reason.[12] Only ASLD and Maricopa County contend that segmentation is necessary.[13]

The Commission agrees with ASLD and Maricopa County that segmentation is

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[11] ACLPI Closing Memorandum Regarding the Navigability of the Gila River, at 19-20.

[12] *E.g.*, SRP Closing Brief, at 12; Freeport Closing Brief, at 23; San Carlos Apache Tribe Closing Brief, at 26-27.

[13] ASLD Closing Brief on the Navigability of the Gila River for State Title Purposes ("ASLD Closing Brief"), at 2; Maricopa County Post-Hearing Closing Brief, at 28-30.

necessary in this case under *PPL Montana*. Whatever the intrinsic appeal of ACLPI's and Opponents' contentions, they are simply not the type that warrant a *de minimis* exception to the segment-by-segment approach. *See PPL Montana*, 565 U.S. at 596 (kinds of considerations that would define a *de minimis* exception include "those related to principles of ownership and title, such as inadministrability of parcels of exceedingly small size, or worthlessness of the parcels due to overdivision").

Having determined that segmentation is necessary, the Commission must determine the appropriate start and end points for the segments. As noted above, the Court in *PPL Montana* instructed that shifts in physical conditions, topographical and geographical indicators, and other physical features characteristic of navigability or nonnavigability provide a means to determine appropriate start and end points for the segments. *See PPL Montana, LLC*, 565 U.S. at 595 (shifts in physical conditions); *see also United States v. Utah*, 283 U.S. 64, 77-80 (1931) (gradient changes); *Oklahoma v. Texas*, 258 U.S. 574, 589 (1922) (location of tributary providing additional flow).

With those considerations in mind, the Commission makes the following findings: Over its length, which spans the diverse terrain of the entire state of Arizona, the Gila River flows out of steep mountains through alternating reaches of narrow bedrock canyons and broad alluvial river valleys in a pool and riffle pattern.[14] EIN x002, ASLD, *Arizona Stream Navigability Study for the Upper Gila River Safford to the State Boundary and San Francisco River Gila River Confluence to the State Boundary* (rev. June 2003) ("ASLD Upper Gila Report"), at 4-6, 8-5; Supp. EIN x020, *JE Fuller PowerPoint Presentation to ANSAC: Gila River Navigability* (June 11, 2014) ("Fuller/Gila"), at 30-31,

[14] Pools are the deeper and slower moving portions of an undulating stream bed; riffles are the shallower, faster moving portions. *See* Tr. 6/16/14, at 132:9-11 (Fuller). The pools and riffles form sequences spaced at a repeating distance of about 5-7 widths of the channel. At low water stages, pools generally have a smooth surface while riffles may show white water. Rapids, similar formations that show white water at all stages of flow, are common in bedrock channels, are generally composed of boulders, and are more random in distribution along the channel.

33, 36, 39, 41, 45, 48, 57, 60; EIN x004, ASLD, *Arizona Stream Navigability Study for the Gila River: Colorado River Confluence to the Town of Safford* (rev. June 2003) ("ASLD Lower Gila Report"), at 4-6, 8-5; Tr. 6/1/14, at 122-23 (Fuller). Along its nearly 600-mile Arizona course, it is joined by many tributaries, including the San Francisco, San Carlos, San Pedro, Santa Cruz, Salt, Agua Fria and Hassayampa Rivers.

Under present conditions in its alluvial sections (*i.e.*, segments not confined by bedrock), the Gila is characterized as a compound channel, which consists of braided flood channels and a sinuous to meandering single thread low flow or primary channel. Supp. EIN x035-129, Declaration of Gary Huckleberry Regarding the Gila River dated Sept. 4, 2014 ("Huckleberry Decl."), ¶ 1. Historically, some reaches of the River had deeper water and more use than others. Tr.[15] 6/16/14 at 122-24, 265:11-24 (Fuller).

Based on these features and the criteria outlined in *PPL Montana*, ASLD proposes that the River be divided into eight discrete segments, as follows:

- Segment 1: New Mexico to Gila Box (Duncan Valley)
- Segment 2: Gila Box
- Segment 3: Gila Box to San Carlos Reservoir (Safford Valley)
- Segment 4: San Carlos Canyon
- Segment 5: San Carlos Canyon in Winkleman to Ashurst-Hayden Dam
- Segment 6: Ashurst-Hayden Dam to Salt River Confluence
- Segment 7: Salt River Confluence to Dome
- Segment 8: Dome to Colorado River

No other party to this proceeding offered any meaningful alternative to ASLD's proposed segments.[16] Accordingly, and because the Commission finds ASLD's

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[15] "Tr." refers to a Transcript of the 2003-2005 or 2014 Hearings as noted in each citation.

[16] Mr. Gookin proposed six segments which generally correlate to ASLD's segments, but which are less specific: Duncan Valley (ASLD 1), Box Canyon (ASLD 2), Safford Valley (ASLD 3), Kearney (ASLD 4), Middle Gila (ASLD 5-6), and Lower Gila (ASLD 7-8). *See* Gookin 2014,

segmentation analysis sound,[17] the Commission adopts ASLD's proposed segments for purposes of this Report and determination.

The following sections discuss each segment in more detail.

1. Segment 1: New Mexico to Gila Box (Duncan Valley)

Segment 1 extends from the New Mexico border to the upstream end of the Gila Box near Apache Grove. Here, the River is perennial, with reliable flow throughout the year. ASLD Upper Gila Report, at 5-32. The River flows in a canyon with an average width of about 2,000 feet, with floodplains that alternate from side to side, as the main channel meanders across the canyon bottom. *Id.* at 4-6. The channel has a riffle-pool sequence, with numerous Class I and II riffles and rapids. *Id.* at 4-7, 6-5.

According to the U.S. Bureau of Reclamation's ("BOR") analysis of aerial photography, channel widening occurred in this segment from 1935 through 2000 in response to large flood events. Supp. EIN x008, Declaration of Rich Burtell on the Non-Navigability of the Upper Gila River At and Prior to Statehood (May 2014) ("Burtell Decl."), at ¶ 23. Evidence was also presented that the channel was frequently braided near the time of statehood. *See id.* (citing U.S. Geological Survey ("USGS") discharge measurements from 1923-1931). Nonetheless, in comparison to other segments, and especially Segment 3, the channel in Segment 1 has remained relatively stable over time. *See id.* ¶ 24.

Segment 1 is distinguished from Segment 2 based on its broad alluvial valley, degree of historical disturbance, fewer rapids, and slightly lower flow rate.

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at 1. Mr. Burtell's proposed segments for the Upper Gila also correspond to ASLD's segments: (1) Segment A - Duncan Valley from New Mexico to just below Guthrie (ASLD 1); (2) Segment B - Gila Box (ASLD 2); and (3) Segment C - Safford Valley, from just below Bonita Creek to Coolidge Dam (ASLD 3). *See* Burtell Decl., at 3.

[17] *See, e.g.*, *PPL Montana*, 565 U.S. at 595 (shifts in physical conditions); *Oklahoma*, 258 U.S. at 589 (location of tributary providing additional flow); *Utah*, 283 U.S. at 77-80 (gradient changes).

2. Segment 2: Gila Box

Segment 2 extends through the Gila Box Canyon and Wilderness Area, and is located mostly within relatively narrow bedrock canyons, which are associated with greater channel stability and more rapids. ASLD Upper Gila Report, at 4-6; *see* Tr. 6/16/14 at 67:21-68:5 (Fuller). The average width of the canyons in this reach is about 500 feet, with very narrow floodplain terraces. ASLD Upper Gila Report, at 4-6. In the later reaches of this segment, moderate floods tend to fill the entire canyon bottom. *Id.* Segment 2 is perennial with reliable flow throughout the year, and has a riffle-pool sequence with numerous Class II rapids. *Id.* at 4-6 to 4-7.

Within this segment, the River flows in a single, meandering channel, and has likely changed little over time. Burtell Decl., at ¶¶ 25-27 & Fig. 4; *see also* ASLD Upper Gila Report, at 4-18 ("Bedrock along the channel margins in these canyons precludes significant movement of the river channel or other channel changes."). This segment is distinguished from Segment 3 based on its slightly higher flow rate, more difficult river access, and lesser degree of historical disturbance.

3. Segment 3: Gila Box to San Carlos Reservoir (Safford Valley)

Segment 3 is located within a deep alluvial valley, extending from the downstream end of the Gila Box canyon through the Safford Valley to what is now the San Carlos Reservoir. ASLD Upper Gila Report, at 4-6. In this section, the River flows in a broad valley more than a mile wide, and is subject to shifting of the channel and floodplain geometry in response to floods. *Id.* For example, from 1846 through 1904, the channel in this reach was relatively narrow (150 to 300 feet), stable and meandered through a floodplain covered with willow, cottonwood and mesquite. Burtell Decl., at ¶ 19. Primarily due to large winter floods occurring between 1905 and 1917, the average width of the channel increased to 1,000 to 2,000 feet, destroying the River's meander pattern

and the riparian vegetation along its banks. *Id.* The braided channel that resulted from this flooding narrowed over time and, as of 1964, a single, meandering channel had been reestablished, less than 200 feet wide with dense vegetation growing on its floodplain. *Id.*; *see also* ASLD Upper Gila Report, at 4-6.

Like Segments 1 and 2, Segment 3 is perennial, with reliable flow throughout the year. ASLD Lower Gila Report, at VII-6. It has a pool and riffle pattern, with mostly Class I riffles and few, if any, rapids. ASLD Upper Gila Report, at 4-9, Table 2. The valley in this section is densely irrigated. ASLD Lower Gila Report, at VI-2.

Segment 3 is distinguished from Segment 4 by its alluvial river valley location, ease of access, and historical disturbance.

4. Segment 4: San Carlos Canyon

Segment 4 extends from the San Carlos Reservoir impoundment to the confluence with the San Pedro River near Winkelman. Here, the River flows within a deep, narrow, bedrock canyon with few access points. ASLD Lower Gila Report, at VII-2. The current in this segment is perennial, with reliable flows throughout the year. *Id.* at VII-6.

Segment 4 is distinguished from Segment 5 based on its canyon topography, more difficult river access, and lesser degree of historical disturbance.

5. Segment 5: San Carlos Canyon in Winkleman to Ashurst-Hayden Dam

Segment 5 extends from the San Carlos Canyon in Winkleman to the Ashurst-Hayden Irrigation Diversion Dam ("Ashurst-Hayden Dam"). In this reach, the River flows within a moderately deep valley between low mountains and hills, mostly on private lands. ASLD Lower Gila Report, at VIII-1.

Segment 5 is perennial, with reliable flow throughout the year, and has a riffle-pool sequence, with numerous Class II rapids. *Id.* at VII-6. It is distinguished from Segment 6 by its more reliable flow, and confined geometry.

6. Segment 6: Ashurst-Hayden Dam to Salt River Confluence

Segment 6 extends from the Ashurst-Hayden Dam to the confluence with the Salt River. The River in this segment has a braided and compound channel pattern, with few if any rapids or riffles. ASLD Lower Gila Report, at VII-5. At the time of statehood, the River contained a wide, shallow, braided, sandy channel above Pima Butte. *Id.* at VII-5. Before Anglo settlement in the 1860's, the River in this section would periodically run dry near the Pima Villages in May and June. *Id.* at VII-4.

Segment 6 is perennial, with reliable flow throughout the year. *Id.* It is distinguished from Segment 7 by its lower flow rate, and greater seasonal variation in flow.

7. Segment 7: Salt River Confluence to Dome

Segment 7 extends from the Salt River confluence to Dome, Arizona. Historically, this reach of the River was perennial all the way to the Colorado River, and large galleries of cottonwood trees lined the banks as recently as the late 1800's. ASLD Lower Gila Report, at VII-5 to VII-6. Historic accounts of Segment 7 suggest both a braided, sandy stream, and a relatively narrow, deep channel, though the latter description may be of the main flow channel within an overall braided channel. *Id.*

Segment 7 is distinguished from Segment 8 based on the latter's record of historical boating. Tr. 6/16/14 at 253:8-256:13 (Fuller); *see also* Tr. 8/18/14 at 154 (Littlefield), 329 (Schumm).

8. Segment 8: Dome to Colorado River

The Gila's final segment extends from Dome to its confluence with the Colorado River. Segment 8 resembles Segment 7 in that it was historically perennial, with cottonwood trees lining its banks. What distinguishes the two segments is the record of historical boating in Segment 8. *See* Tr. 8/18/14 at 154 (Littlefield), 329 (Schumm).

B. Hydrology and Geomorphology

The Evidence in the Record shows that before Anglo-American development, the River was mostly perennial, except for a few short stretches where the Pimas and Maricopas had diverted the entirety of the River. Supp. EIN x015, Gookin, *Hydrologic History of the Gila River Indian Reservation* (Nov. 1, 2000) ("Gookin 2000"), at 3-3. The major tributaries were also in a mostly perennial state. *Id.*

Even then, however, the River was "susceptible to wide seasonal and annual variations in discharge rates." ASLD Upper Gila Report, at 8. Given the extreme variability of the River, data regarding its average or mean flow conditions at discrete points is of limited value in determining whether the River or a segment thereof was navigable or susceptible to navigation at the time of statehood. *See* ASLD Upper Gila Report, at 5-45. Rather, median flows are more useful since they are more representative of typical flow conditions. *Id.* at 8-6; *see also* EIN x023, Hjalmar W. Hjalmarson, *Navigability Along the Natural Channel of the Gila River (From the Confluence with the Salt River to the Mouth at the Colorado River near Yuma, Arizona)* (Oct. 24, 2002) ("Hjalmarson 2002"), at 16 ("about 70% of the time the flow is less than the mean annual flow").

Much evidence was presented during the 2003-05 and 2014 Hearings regarding the River's ordinary and natural hydrology. The following sections detail the various flow, depth, and velocity estimates in the Record.

1. Burtell's Streamflow Reconstruction of the Upper Gila (Segments 1-4)

Mr. Burtell reconstructed ordinary and natural streamflow conditions at four USGS gages along the Upper Gila: below Blue Creek, near Virden, New Mexico (Segment 1); near Clifton (Segment 2); near Solomonville, at the head of Safford Valley (Segment 3); and at Coolidge Dam (Segment 4). Burtell Decl., at ¶ 58. Mr. Burtell relied on streamflow

data from the early 1920's to the early 1930's for his calculations, in part because annual flows during this time were near their long-term median, with about an equal number of years above and below the median, and no extreme wet or dry years. *Id.* at ¶¶ 60-64. In other words, conditions during this period were representative of ordinary conditions. *See Winkleman*, 224 Ariz. at 253 (defining "ordinary" as "customary," "occurring in the regular course of events; normal; usual"). In addition, because irrigation pumping did not begin in this area until the early- to mid-1930's, flows were largely unaffected by well pumpage during this time. *Id.* at ¶ 63.

To reconstruct ordinary and natural streamflow conditions, Mr. Burtell added diversions upstream of the USGS gaging stations to the gaged flows. *Id.* at ¶ 67. He relied on USGS field measurements of irrigation diversions at the major irrigation canals and ditches in the area, as well as his own estimates of irrigation diversions at canals and ditches that were not gaged or regularly field-measured by USGS, including diversions in the headwaters and along its tributaries. *Id.* at ¶ 69. Mr. Burtell also estimated non-agricultural diversions (*i.e.*, those for mining and other industrial purposes, and domestic use) upstream of the gages and included those in his calculations as well. *Id.* at ¶ 70.

Based on his analysis, Mr. Burtell concluded that, in its ordinary and natural condition, flows in the Upper Gila were typically highest in March and April due to snow melt, and during the monsoon in August. *Id.* ¶¶ 59, 71. During these peak flow months, Mr. Burtell opined that median flows in the Duncan Valley (Segment 1) and upper Gila Box (Segment 2) would have remained below 350 cubic feet per second ("cfs"); and that median flows near Solomonville (Segment 3) and at Coolidge Dam (Segment 4) would have typically ranged from 600-700 cfs and 750-900 cfs, respectively. *Id.* & tbl. 10. Because Mr. Burtell did not correct for canal spills, return flows, or the effects from infiltration and evapotranspiration ("ET"), some diversions were double counted in his analysis, and his reconstructed flow rates should therefore be considered upper estimates.

See id. at ¶¶ 59, 72, 75; *see also* 6/20/14 Tr. at 1098:20-1099:8 (Burtell).

Using his adjusted flows and hydraulic rating curves developed based on USGS field discharge measurements, Mr. Burtell then reconstructed the depth and velocity at the four USGS gages. Burtell Decl., at ¶¶ 80, 83-91. His analysis found that undepleted flows typically had a mean depth of less than 2 feet and average velocities greater than 1.5 feet per second ("ft/s"). *Id.* at ¶ 81. Even during the spring snowmelt and summer monsoon when flows were generally deeper and/or velocities greater, flow depths at most points typically remained less than 2 feet. *Id.* An exception was the gage below Bonita Creek within lower Gila Box (Segment 2). *Id.* at ¶ 85. The rating curve for this gage showed a relatively wide range of stream depths for a given flow rate. *See id.* at Fig. E-8. According to Mr. Burtell, this indicates that, although the River was not braided at this point, its channel cross section was rather variable. *Id.* at ¶ 85. As a result, there were months when typical flow depths here would have ranged from 1.1-2.2 feet and between 1.5-2.5 feet. *Id.* at ¶ 85 & tbl. 10.

Mr. Burtell's stream depths represent conditions at discrete points along the River where the channel was not braided. Burtell Decl., at ¶ 86. However, as discussed above and described in more detail below in Section V-C, portions of the River have historically remained braided for years. In those areas, the channel would also have been broader, sandbars more common, and reconstructed stream depths less. *See* Burtell Decl., at ¶ 86.

2. Gookin's Streamflow Reconstruction of the Middle Gila (Segments 5-7)

Mr. Gookin estimated natural mean, median, and low daily flows near Kelvin (Segment 5), above the Salt-Gila confluence (Segment 6), and below the Salt-Gila confluence (Segment 7) based on historic stream flow records. Supp. EIN x009, T. Allen J. Gookin, *Report on the Navigability of the Gila River* (2014) ("Gookin 2014"), at II-3. Mr. Gookin's approach was to add net depletions caused by human activity to the total

daily historic flows from gages that were draining relatively undisturbed areas (adjusted to match historic annual flow data presented in a U.S. Bureau of Reclamation ("BOR") report). *Id.* at II-3 to II-5. To compute the flow above and below the Salt-Gila confluence, Mr. Gookin also added flow from the major gaged tributaries. *Id.* at II-7.

Using Manning's Equation, Mr. Gookin then computed the maximum depths that would have occurred at these flows. *Id.* at V-9 & figs. V-1 to V-2. The results of Mr. Gookin's analysis is presented in Table 1 below.

Table 1. Gookin's Streamflow Reconstruction

	Kelvin	Above Salt-Gila Confluence	Below Salt-Gila Confluence
Mean Flow	755 cfs	637 cfs	2,397 cfs
Depth	.70 ft	0.98 ft	-
Velocity	1.35 ft/s	1.13 ft/s	-
Median	345 cfs	193 cfs	774 cfs
Depth	0.57 ft	0.76 ft	-
Velocity	1.01 ft/s	0.77 ft/s	
Base Flow	175 cfs	23 cfs	109 cfs
Depth	0.44 ft	0.24 ft	-
Velocity	0.77 ft	0.33 ft	-

Gookin 2014, at II-6, II-12 to II-13; Supp. EIN x029, T. Allen J. Gookin, Supplemental Information concerning Navigability of the Gila River ("Gookin Supp. Report"), Fig. V-3.

3. Mr. Hjalmarson's Streamflow Reconstruction of the Lower Gila (Segments 7-8)

Mr. Hjalmar Hjalmarson, who testified and submitted written materials during the

2003-05 Hearings, estimated much higher flows and depths at the Salt-Gila confluence (Segment 7) and at the mouth near Yuma (Segment 8). Mr. Hjalmarson constructed a numerical model to simulate groundwater flow, stream aquifer connection and ET for the entire Gila River in Arizona. Applying his model, he concluded that the Gila's annual average discharge in its ordinary and natural condition at its confluence with the Salt would be 1.6 million acre feet ("af"), or 2,300 cfs. Hjalmarson 2002, at 15; *see also* Tr. 11/17/05 at 236-39 (Hjalmarson). From this, Mr. Hjalmarson estimated the median annual flow to be approximately 1,750 cfs, and depths of between 2.5 and 3.5 feet deep. Hjalmarson 2002, at 14-15; Tr. 11/17/05 at 241:4-245:14 (Hjalmarson).

C. Channel Configuration

The Evidence in the Record demonstrates that, at the time of statehood, substantial portions of the River, especially in the lower segments below the Salt River confluence, consisted of a braided channel. For example, Dr. Mussetter, an esteemed geomorphologist and hydrologist, opined that:

> 1. From the mid-1800's until the early-1900's, portions of the reach of the Gila River through Arizona had a single-thread channel that was lined with thick stands of woody riparian vegetation.
> 2. Large floods that occurred during the period between 1895 and 1906 scoured away much of this vegetation, caused extensive bank erosion and channel widening, and converted the Gila River to a wide, braided platform that persists to the present time.

Supp. EIN x003, Dr. Mussetter, Declaration Navigability of the Gila River between the Arizona-New Mexico Stateline and the Confluence with the Colorado River (Jan. 8, 2014) ("Mussetter Decl."), at 1-2. Dr. Mussetter testified that examining U.S. General Land Office ("GLO") survey maps prior to and after statehood shows that the River moved and changed dramatically in a matter of decades. Specifically, he testified:

> [I]n that sort of dry period in the mid 1800's, when we have descriptions of the river being a single-thread channel, and then we come forward to a

> period after the larger floods around the turn of the century, and we see a wide, braided channel at that time, showing the influence of the flows.

Tr. 8/19/14 at 1693 (Mussetter); *see also* Supp. EIN x022, Dr. Bob Mussetter, *Gila River Navigability* ("Mussetter"), at 18.

GRIC's expert similarly opined that:

> The period approaching Statehood took the non-navigable and partially braided Gila River and made it worse. Numerous large floods occurred in 1890 through 1906 that scoured and widened the river channel. The resulting river channels were braided. These braided channels existed at Statehood because of natural phenomena.

Gookin 2014, Executive Summary, at 1. Mr. Gookin opined that flooding occurring in 1890-91, 1905-06 and 1915-16 "turned the Gila River from being a primarily single channel river into a primarily braided stream. This statement is true in the Upper Gila, the Middle Gila, and the Lower Gila." *Id.* at II-13 to II-14. Even ASLD's geomorphologist, Mr. Fuller, admitted that portions of the Upper Gila were in a braided condition at the time of statehood due in part to flooding that occurred in 1905 and 1906. Tr. 6/17/14 at 350-351 (Fuller).

To be sure, portions of the Gila apparently had a single, relatively stable channel in the mid-1800's and at other times over the prior hundred years. *E.g.*, Tr. 8/19/14 at 1678, 1697-1700 (Mussetter); Tr. 6/16/14 at 135 (Fuller). But as Dr. Mussetter credibly testified during the 2014 Hearings, those periods were naturally followed by large floods and other wet cycles that resulted in a wide, unstable, braided watercourse with multiple and shifting channels, which persisted for extended periods of time. Tr. 8/19/14 at 1678-80, 1690-93, 1695, 1697-1700 (Mussetter); *see also* Mussetter Decl., at 8. The conclusion that the Gila was braided in its ordinary and natural condition is also supported by environmental reconstructions of the Gila River Valley contained in the ASLD reports, which show that the River has been braided through much of its existence, though it

apparently varied between a bar-braided and island-braided channel from 798 A.D. to 1500 A.D. ASLD Lower Gila Report, at III-23.

Other experts attested to the Gila's dynamic nature and long history of alternating between cycles of channel braiding and single channel conditions. For example, ASLD's geomorphologist stated in the ASLD Report on the Lower Gila that the River has experienced "alternating periods of channel stability and instability, and specifically, changes in channel form (e.g., braided vs. meandering)" during the past 10,000 years. ASLD Lower Gila Report, at VII-2; *see also* Tr. 11/16/05 at 56-57 (Huckleberry). Dr. Huckleberry concluded that "the Gila River responds to secular climactic variability by radical changes in channel configuration, and that periods of increased, large flood frequency correlate with unstable, braided channel conditions." ASLD Lower Gila, at VII-10; *see also id.* at VII-2; Tr. 11/16/05 at 56-57 (Huckleberry); Schumm, at 3 ("The Gila River is characterized by inherent instability and frequent and destructive channel migration."); Tr. 11/17/05 at 17 (Schumm). And Dr. Littlefield, a highly regarded historian of the American West, testified based on his review of the historical record that "[t]he historical record illustrates that the Gila River [downstream of the Salt-Gila confluence, *i.e.*, Segments 7 and 8] was erratic, subject to unpredictable flooding, prone to channel changes, and blocked by natural obstacles such as rock outcroppings and sandbars." Tr. 8/18/14 at 1450:4-16; *see also* Tr. 6/20/14 at 1058:11-13 (Burtell) ("[T]here is a long geologic history of channel braiding followed by meandering followed by braiding."); Burtell Decl., at ¶ 21; Schumm, at 3 ("The Gila River is characterized by inherent instability and frequent and destructive channel migration.").[18]

[18] Although changes in the River's geomorphology are believed to have been primarily climactically driven, one cannot ignore the human impacts such as irrigation diversions, dams, and exotic vegetation as well. *See, e.g.*, ASLD Lower Gila Report, at VII-10. The 2009 Report contained a comprehensive discussion of human impacts on the Gila River. *See* 2009 Report, at 23-37. Because the evidence regarding human impacts remains materially the same, the Commission incorporates by reference the discussion on pages 23-37 of the 2009 Report. Human impacts are also discussed in Section

Proponents do not dispute that the River experienced alternating periods of channel instability and braided and meandering channels. Rather, ASLD contends that "[h]istorical descriptions almost exclusively describe the River with a single low-flow channel." ASLD FOF #138; *see also* Fuller/Gila, at 98. While ASLD is correct that most of the anecdotal descriptions in the Record suggest a single channel, these descriptions are from the mid-1800's, when the evidence is undisputed that the Gila had a single, relatively stable channel, or from other times when the River was likely in a single-channel condition. *E.g.*, Tr. 8/19/14 at 1678, 1690 (Mussetter); Tr. 6/16/14 at 135 (Fuller); *cf.* Fuller/Gila at 77-88. As discussed below, these conditions are not representative of the ordinary and natural channel at the time of statehood.

Beginning in the late-1800's, a series of large floods occurred on the Gila, causing its channel to change dramatically. At the time of statehood, large parts of the upper, middle, and lower Gila were in a braided, unstable condition, with the exception of Segment 2. *See* Tr. 6/20/14 at 1058:11-19 (Burtell); Gookin 2014, at II-13 to II-14. The evidence indicates that these conditions persisted for decades after the flooding and braiding took place. For example, USGS field measurements and aerial photographs from the 1920's and 1930's show that the River had multiple flowing channels through the Duncan Valley (Segment 1) and Safford Valley (Segment 3), during a time when the River was in the process of transitioning back to a single meandering channel. *See* Tr. 6/20/14 at 1054:17-1056:10 (Burtell); Supp. EIN x027-Freeport, Aerial Photographs of the Gila River.

The conclusion that flooding in the late 1890's and early 1900's caused channel widening and braiding is consistent with the testimony of Proponents' experts. *See, e.g.*, Tr. 6/17/14 at 350-351 (Fuller) (admitting on cross-examination that parts of the Upper

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V.C below as they relate to the River's "ordinary and natural" condition.

Gila "probably had a wide, braided flood channel" due to flooding that occurred in 1905-06); ASLD Lower Gila, at VII-2, VII-10 ("periods of large flood events correlate with unstable, braided channel conditions"); Tr. 11/16/05 at 56-57 (Huckleberry); 6/16/14 Tr. at 117 (Fuller) (noting that the "character of the River valley is rewritten" during large flood events, and that large floods can move the low flow channel from the left side to the right).[19] It is also consistent with anecdotal descriptions from this time. For example, an account from 1899 describes the riverbed as "sandy and shifting" and the channel as "composed of quicksand and likely to change daily with any considerable amount of water in the river." ASLD Lower Gila Report, at IV-9. Other accounts from this time describe the River as a "constantly shifting channel," *id.* at IV-13 (1908), that is "composed of sand and gravel, free from vegetation, and shifting," *id.* at IV-9 (1904); *see also id.* at IV-14 (1910: "The bed of the stream is composed of shifting sand and silt."). Another account from 1905 notes that "at every flood the channel shifts." *Id.* at IV-12; *see also, e.g.*, Littlefield 2014, at 102-03 (citing a 1906 USGS report which referenced the "continual changing of the river bed" and noted that the Gila's bed "not only scours out during a flood and fills in after it, but [the] channel changes from one side of the bottom to the other").

D. Potential Impediments to Navigation

Evidence was also presented that rapids, sandbars, beaver dams, and other potential

[19] As discussed *infra*, Mr. Hjalmarson's analysis assumed that the natural Gila was a smooth parabolic channel. Hjalmarson 2002, at 19; EIN x023, Hjalmarson, *Navigability Along the Natural Channel of the Gila River, AZ* (November 16, 2005) ("Hjalmarson 2005 PP"), at 33; Tr. 11/17/05 at 165-66 (Hjalmarson). But even he admitted on cross-examination during the November 2005 Hearing that the Gila was braided in many areas. Tr. 11/17/05 at 248:14-24, 266:16-267:12 (Hjalmarson). And in an earlier version of his report, which is in the Record, Mr. Hjalmarson acknowledged the multiple channels and braiding of the River, both in its predevelopment and current condition. Hjalmarson 2001, at 35, 50; *see also* Hjalmarson 2001 Notes, at 66 ("Navigability of the Gila River below Gillespie Damsite was limited by areas with multiple (braided) channels because flow was divided among two or more channels.").

impediments to navigation existed throughout the ordinary and natural Gila. *E.g.*, Tr. 6/16/14 at 75-77, 141 (Fuller); Gookin 2014, at III-9, IV-11; Tr. 6/18/14 at 626 (Farmer); Tr. 8/19/14 at 1761 (Mussetter).

1. Rapids

The ASLD reports document numerous Class I and II rapids occurring in Segments 1, 2, and 5, *see* ASLD Upper Gila Report, at 4-6 to 4-7, 6-5; ASLD Lower Gila Report, at VII-6; *see also* Tr. 6/18/14 at 564 (Farmer), and Mr. Fuller testified that there are a number of rapids in Segment 4, including numerous Class II rapids, and a Class III.[20] *See* Tr. 6/16/14 at 141 (Fuller); Supp. EIN x013, Fuller, *Presentation to ANSAC: Gila River Navigability* (June 16, 2014) ("Fuller/Gila"), at 42. The remaining segments apparently had few, if any, rapids. *See* ASLD Upper Gila Report, at 4-9; ASLD Lower Gila Report, at VII-5; Supp. EIN x020, Fuller, *Boating in Arizona ca. 1912* (June 16, 2014) ("Fuller/Boating"), at 48, 57, 60. According to Mr. Fuller, the only scientific expert who has boated the Gila, the rapids are "very short and tend to be small drops." Tr. 6/16/14 at 71 (Fuller).

There was a consensus among the boating experts that Class II or III rapids are readily navigable, at least in modern recreational boats. That said, Mr. Farmer acknowledged that Class II rapids "could pose some danger" to a novice boater, and that

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[20] The American Whitewater Association defines Class I, II, and III rapids as follows:

Class I: Fast moving water with riffles and small waves. Few obstructions, all obvious and easily missed with little training. Risk to swimmers is slight; self-rescue is easy.

Class II: Straightforward rapids with wide, clear channels which are evident without scouting. Occasional maneuvering may be required, but rocks and medium-sized waves are easily missed by trained paddlers.

Class III: Rapids with moderate, irregular waves which may be difficult to avoid and which can swamp an open canoe. Complex maneuvers in fast current and good boat control in tight passages or around ledges are often required; large waves or strainers may be present but are easily avoided. Strong eddies and powerful current effects can be found, particularly on large-volume rivers. scouting is advisable for inexperienced parties. Injuries while swimming are rare; self-rescue is usually easy but group assistance may be required to avoid long swims. Rapids that are at the lower or upper end of this difficulty range are designated "Class III-" or "Class III+" respectively.

there are places on the River where a novice "should get out and scout the rapid and plan his descent through it." Tr. 6/18/14 at 564-65 (Farmer). Moreover, contemporaneous accounts of J.W. Evans and Amos Adams' trip down the Upper Gila in January-February 1895 report that the men experienced problems due to "a continuous series of rough rapids and falls for 81 miles." ASLD Upper Gila Report, at 3-28; Supp. EIN x014-33 (*Arizona Sentinel*, 3/9/1895). The boat itself was apparently damaged due to the rapids, with "one end being entirely submerged," and Adams had to "bail[] out the water from the stern." ASLD Lower Gila Report, at IV-8. Evans later reported that he "would not engage to make the trip down [the Gila's] hazardous waters again." ASLD Upper Gila, at 3-28; ASLD Lower Gila, at IV-8 to IV-9. Mr. Burtell also testified that several Forty-Niners attempted to boat the Upper Gila in July when a member of their party, David C. Buchanan, was accidently shot in the leg. According to the account, "[s]everal plans were suggested to carry Buchanan on," and eventually, "[t]hey built a raft for Buchanan, but it was not practicable. The river was too low and [had] too many rapids." Tr. 6/20/14 at 1138:21-1143:17 (Burtell). Mr. Buchanan ultimately had to be carried out by his party. *See id.*

2. Sandbars

In addition to rapids, the evidence was undisputed that sandbars existed along the ordinary and natural Gila, including in Segments 7 and 8. Tr. 8/18/14 at 1450:4-16 (Littlefield); Tr. 6/16/14 at 77 (Fuller); Fuller/Boating, at 100-01.[21] Mr. Fuller testified that a sandbar is "basically just a deposit of sand on the side, and you go around it. You go

[21] *See also* Tr. 6/17/14 at 424 (Fuller) (quoting an 1849 account that described the River from Gila Bend to Yuma as "shallow and full of Bars, and the Current very rapid"); Supp. EIN x004_ASLD-47, Hannum, *A Quaker Forty-Niner: The Adventures of Charles Edward Pancoast on the American Frontier*, at 248 (1930); Littlefield 2013, at 97-98 (quoting the *Report on the United States and Mexican Boundary Survey Made under the Direction of the Secretary of the Interior* (1857-59), which described the Gila as "becom[ing] so low that a sand-bar forms as its mouth during the summer, and at no time does it supply much water").

where the water is. It's really no difficulty there in getting around them." Tr. 6/16/14 at 77:12-18 (Fuller). But even he admitted that a sandbar is an "obstacle at low flow." Fuller-Boating, at 101; *see also* Tr. 6/16/14 at 77:23-25 (Fuller). More importantly, the historical Evidence in the Record indicates that sandbars were an impediment to historical navigation. For example, a book regarding the 1847 expedition by the Mormon Battalion along the Lower Gila stated:

> At times the craft caught on sand bars and spun crazily. Once it was half submerged and Stoneman and his crew of three had to hustle the cargo ashore. Then the boat was freed of the sand bar and they had to moor it and reload. Irksome was the word for it. For in less than a mile it snagged on another sandbar and the same tedious process had to be repeated. . . .

EIN x001, Corle, *The Gila: River of the Southwest*, at 153-54 (1951). Even Mr. Fuller acknowledged that the HMT Powell trip in 1849, and the "Yuma or Bust" expedition in November 1881 encountered difficulty with sandbars. *See* Tr. 6/16/14 at 196-97, 203:5-9 (Fuller); Fuller/Gila, at 107, 117. Specifically, Mr. Fuller testified that the Yuma or Bust expedition encountered "[a] good deal of trouble getting through some sandbars" in Segment 7/8, and that the men were seen "pushing their boat." Tr. 6/16/14 at 196-97 (Fuller).

3. Beaver Dams

Evidence was also presented that beaver dams existed on certain portions of the Gila. *E.g.*, Tr. 6/16/14 at 76:15-18 (Fuller); Gookin 2014, Exec. Summary, at 2, IV-12. Mr. Gookin postulated that there were likely more beaver dams on the Gila than on the San Pedro given the Gila's longer length, but that the dams were likely more spread out. Gookin 2014, Exec. Summary, at IV-11 to IV-12.

To be sure, Mr. Fuller and Mr. Farmer, the only testifying experts who have boated the Gila, credibly testified that they have never seen or encountered a beaver dam on any of their trips. 6/16/14 at 191:22-25 (Fuller); 6/18/14 at 566:13-23 (Farmer), 726:9-18

(Fuller). But this testimony only proves that beaver dams no longer exist on the Gila River; it does nothing to prove that they did not exist under ordinary and natural conditions. For that, ASLD relies on the declaration of David A. Weedman, a biologist with the Arizona Game and Fish Department, who opined that "any beaver dams in the main channel of the Gila would likely be destroyed by seasonal high flows; therefore beaver [sic] possibly dammed only side or backwater channels of the Gila or created dams in the tributaries." *See* ASLD FOF #299 (citing Supp. EIN x012-73, Declaration of David A. Weedman Regarding the Gila River (May 30, 2014) ("Weedman Decl."), at ¶ 4(g)). Mr. Weedman is undoubtedly qualified to offer an opinion regarding the presence of beaver dams on the Gila River. However, unlike the other experts, Mr. Weedman stated no facts and cited no evidence to support his opinions. *Cf.* Burtell Decl., at 24-28; Gookin 2014, References; Fuller/Boating, at 8-11, 13, 17, 19-20, 28, 50, 52-53; Littlefield 2013, at 16-167 nns. 2-178. There is not any Evidence in the Record that would support his opinion that the Gila's main channel cannot be dammed, or that any such dams would likely be destroyed by seasonal high flows.[22] *See* Weedman Decl. ¶ 4(g). These issues may have been resolved by questioning Mr. Weedman about his opinions, but because ASLD opted not to call him as a witness, *e.g.*, Tr. 6/18/14 at 725:13-18 (Katz), the Commission is left without the ability to test the depth of his knowledge and veracity of his opinions. Because there is no testimony or other evidence linking Mr. Weedman's conclusory opinion to the actual Evidence in the Record, the Commission declines to afford it any weight.

With respect to the effect beaver dams had on navigability, Mr. Fuller opined that dams are "really not obstructions to small boats. You either . . . paddle right across it or

[22] In this regard, the Commission notes that beaver dams were abundant in the natural San Pedro River, which is a major tributary of the Gila and shares many of the Gila's characteristics, including its propensity for heavy monsoons. *See* 2018 San Pedro Report, at ___.

you get out of your boat, slide the boat over the top of it and you get back in your boat and you keep on your journey. They're really not an issue at all." Tr. 6/16/14 at 75-76 (Fuller); *see also* Fuller/Boating, at 96. The only other boating expert offered similar testimony. *See* Tr. 6/18/14 at 566-67 (Farmer). Mr. Gookin, for his part, acknowledged that "traversing each individual dam would not constitute a major barrier," but he maintained that "hundreds or even thousands of them cumulatively would make commercial trade impracticable." Gookin 2014, at IV-12. More specifically, he opined that "beaver dams would have forced considerable amounts of portage in the natural state," Gookin 2014, at III-9, and would have been a "significant obstacle to commerce up and down the Gila River." *Id.* at IV-12. Dr. Mussetter's testimony describing his experience encountering beaver dams on other rivers corroborates this opinion. Dr. Mussetter testified that upon encountering a beaver dam, he "got out of the canoe and carried it around and got back in the canoe." Tr. 8/19/14 at 1761 (Mussetter). In other words, he portaged. *See PPL Montana*, 565 U.S. at 597 (portages are areas in a river that require transportation over land rather than water; in most cases, they are sufficient to defeat a finding of navigability).

4. Marshes and Strainers

Finally, the evidence was undisputed that extensive marshes (also called swamps or cienegas) existed throughout the ordinary and natural Gila, including near present-day Sacaton, at the Santa Cruz confluence and near the mouth of the Salt River. *See* Gookin 2014, at V-17 to V-18; ASLD Lower Gila Report, at III-20. As late as 1915, some parts of the Gila still contained swamps. Gookin 2014, at V-18.

Mr. Fuller also testified that "strainers" or "sawyers" (trees whose branches are leaning into or fallen into the water) have existed on the Gila since historic times, though he posited that "you see more of them now than perhaps in the past." Tr. 6/16/14 at 79:1-

11 (Fuller). With respect to the effect strainers have on navigability, Mr. Fuller testified:

> [T]hey're basically a hazard only to the unprepared. So if you go down the river and you're not thinking about those things, you take your boat into them, it's possible you could tip your boat over. But you tip your boat back up and dry off your gear and you move on down the river. Basically, if you've had a problem with a strainer, you were not prepared, and you were inexperienced or not paying attention. Very easily avoided for experienced boaters.

Tr. 6/16/14 at 79:11-19 (Fuller).

E. The Gila River in its Ordinary and Natural Condition

As noted above, *Winkleman* requires that the Commission 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. *Winkleman*, 224 Ariz. at 241, 229 P.3d at 253.

1. Natural Condition

a. Hydrology

The Record reflects that, at the time of statehood, the natural hydrology of the Gila had been altered by human impacts, though the extent of the impact is subject to debate. Undoubtedly, the groundwater and surface water removals discussed on pages 35-37 of the 2009 Report caused substantial depletions of flow, in some areas eliminating all water in the River. [23] *See* Fuller/Gila, at 174-87. By 1912, extensive diversions and impoundments on the Salt River had largely reduced flows downstream of the Salt-Gila confluence in Segments 7 and 8. ASLD Lower Gila Report, at X-2. Accordingly, the Commission must determine when the River was in its natural condition. The obvious answer is that it was in its natural condition before the Native Americans arrived many centuries ago and developed canals and other diversions that actively diverted the River.

[23] The Commission incorporates by reference pages 35-37 of the 2009 Report.

However, as in *Winkleman*, little if any historical data exists from that period. Moreover, the parties agree that Native American diversions were minimal, and that meaningful diversions did not begin on the Gila and the Salt (its main tributary) until the late 1860's and early 1870's. *See, e.g.*, Tr. 6/18/14 at 721 (Fuller); Supp. EIN x004-23, *Predevelopment Hydrology*, at 1-2; Tr. 11/16/05 at 206-07 (Jackson); Burtell Decl., at ¶ 29 & tbl. 2; EIN x015, *Globe Equity Decree*, at 14. Consequently, the River could be considered to be in its natural state before the commencement of modern-era diversions in the late 1860's and early 1870's. While evidence from this period should be considered as the "best evidence" of the River's natural condition, *see id.* at 242, 229 P.3d at 254, evidence of the River's condition after man-made diversions can also be informative and relevant, and assuming the evidence has indicia of reliability, the determination of the relevance and weight to be afforded the evidence is for the Commission to make. *See id.*

Unfortunately, there are no streamflow measurements until 1888, and only a few available recorded observations of the River's width and depth from before the late 1860's/early 1870's.[24] *See* Hjalmarson 2002, at 9. Those descriptions are often conflicting, in part due to differences in location, year, and time of year. Moreover, many lack specific notations of the River's width and depth at a given location, or of the time of year. Accordingly, the Commission considers several lines of evidence in determining the River's natural hydrology, including: (1) historic accounts of the River's width and depth at various locations from before periods of low diversions; (2) historical land surveys; and (3) expert testimony regarding the River's natural condition. Each line of evidence is described below.

[24] Other descriptions in the Record lack specific notations of the River's width and depth, and so are of limited value to the Commission in determining the River's natural hydrology.

(i) Historic Descriptions from Periods of Low Diversions

In interpreting early River descriptions, several factors must be considered, including: (1) the segment described; (2) the year; (3) the time of year; (4) whether the River was experiencing ordinary conditions at the time; and (5) the point of view and attitude of the observer. *See* Fuller/Gila, at 76. Taking these factors into account, the Commission finds that the historic descriptions describe a relatively shallow stream, between 1 and 2 feet deep at most points along the River. Deeper areas were reported in the Lower Gila near the Colorado River.

Mr. Burtell summarized historic accounts of Upper Gila River streamflow conditions made before 1880. Burtell Decl. ¶ 29 & Tbl. 1. Mr. Burtell specifically selected accounts when cultural impacts on streamflows were limited – from the 1820s through 1872 less than approximately a few hundred acres were being irrigated along the Upper Gila and its tributaries at any given time. *Id.* ¶ 29. The historic descriptions describe a relatively shallow River in summer and fall, with depths ranging from 1-2 feet. *See id.* at Tbl. 1. For example, Lt. William H. Emory described Segment 1 in July 1849 as 50 feet wide and an average of 2 feet deep. *Id.* Three years later, William Chamberlain described Segment 1 as "about 12 yards wide and 18 inches deep." *Id.*; see also Fuller/Gila, at 81, 83 (citing accounts from 1846 and 1849 describing Segment 1 as 1 and 1.5 feet deep, respectively). Chapin, the commander of Camp Goodwin, observed that the River near present-day Geronimo (in Segment 2) was 50 feet wide and an average of 2 feet deep in 1867 (month unknown). Burtell Decl., Tbl. 1.

Although Mr. Burtell's declaration focused on the Upper Gila, evidence was also presented that the Middle Gila was similarly described by early explorers as between 1-2 feet deep. For example, John R. Bartlett of the U.S. Army Corps of Topographical Engineers surveyed the U.S.-Mexico boundary from 1850-1853. He described Segment 6

in June/July 1849 as "low flow, navigation doubtful . . . completely dry at Pima Villages . . . . 50 yds wide, 9 inches deep." Fuller/Gila, at 86. Another surveyor by the name of Parke reported that Segment 5 was "20 ft wide, 12 inches deep" in July 1855. *Id.* GLO surveyors noted in June 1869 that the River was dry in Florence (in Segment 6). *Id.* at 88.

Relatively deeper areas were noted in Segments 7 and 8, though the reported depths varied significantly. For instance, the U.S. Army noted in 1853-54 that the Gila was approximately 9 ft. deep for 35 miles above the mouth (in Segment 8) during low water, and 12 ft. deep and dry in Segment 7 in mid-February. ASLD Lower Gila Report, at IV-3. In 1846, two of the men that accompanied General Kearny on his expedition down the Gila in October 1846 described Segment 7 as between 80-150 yards and 3-4 feet deep. Fuller/Gila, at 81. A year later, a member of the Mormon Battalion described Segment 7 in January as "4-5 ft. deep, 150 yds wide." *Id.* at 82. That same year, the U.S. Government reported depths of between 3-4 feet in Segment 7. *Id.* In 1849, Audubon observed that the River was "18-20 in deep, 150 yds wide" in Segment 7. *Id.* at 84.

On June 16, 1866, the *Arizona Miner* (a Prescott-based publication) included a narrative about a trip through Arizona including a description of the Gila, stating that it "is at some seasons dry twenty-five miles above its junction with the Colorado [River]." Littlefield 2013, at 120. Still other accounts describe the River in Segment 8 as between 12-15 ft. deep in Sept. 1890; and 18 inches to 2 ft. deep in Segment 7 in 1907. *Id.* at 86.

(ii) Historic Land Surveys

The areas along the Gila River were surveyed and resurveyed many times as part of the U.S. Government's surveying efforts. *See* EIN x012, Dr. Douglas Littlefield, *Assessment of the Navigability of the Gila River Between the Mouth of the Salt River and the Confluence with the Colorado River Prior to and on the Date of Arizona's Statehood,*

February 14, 1912 (Nov. 3, 2005) ("Littlefield 2005"), at 55. Because these surveys were prepared at a relatively early date by professionals from the "perspective [of a] historical party who was specifically told to look for navigability at the time that he carried out his work," Tr. 8/17/14 at 1315, 1317 (Littlefield), they are particularly probative of the River's natural hydrology. *See id.*; *see also* Gookin 2014, at V-6 to V-7. Boundary surveyors' descriptions of the Gila's depth range from 9 inches deep in June/July 1849 (Segment 6), to 12 inches deep in July 1855 (Segment 5), to 12-15 feet in 1890, and 1.5-2 feet in 1907. Fuller/Gila, at 86; Tr. 6/16/14 at 179 (Fuller).

Dr. Littlefield examined all the GLO surveys and found that, while they were all done at varying times of the year, in different years, and by several individuals, all the descriptions and plats consistently portrayed the Gila as being a nonnavigable stream. Littlefield 2005, at 46-55. Mr. Burtell similarly testified that none of the government surveys he reviewed, which were made prior to "substantial settlement by Americans and prior to the flooding of the early 1900's," found that the Upper Gila was susceptible to navigation. *See* Burtell Decl., at 11.

(iii) Expert Testimony

Mr. Burtell reconstructed flows to reflect the Upper Gila's natural condition by adjusting USGS gauge data from two decades after statehood to account for upstream diversions. Mr. Burtell made use of gauge data from several gauges in the Upper Gila watershed, taking care to select a time of ordinary precipitation and prior to impacts from groundwater pumping,[25] and he reconstructed flows by accounting for the upstream diversions and adding that water back into the stream. *See generally* Tr. 6/20/14 at

[25] As a general matter, evidence of a river's conditions after statehood and man-made diversions is less probative of ordinary and natural conditions at statehood. *See Winkleman*, 224 Ariz. at 243, 229 P.3d at 255. Here, however, Mr. Burtell's analysis is based on actual data that was collected during a time of ordinary precipitation and prior to impacts from groundwater pumping - in other words, it has "indicia of reliability." *See id.* As such, it is for the Commission to decide the relevance and weight to be afforded his analysis. *See id.*

1097:14-1125:7 (Burtell). Mr. Burtell summarized his results as follows:

> Undepleted flows along the Upper Gila River typically had a mean depth of less than 2.0 feet and average velocities greater than 1.5 feet per second. Flows were generally deeper and/or velocities were greater during the spring snowmelt and summer monsoon, but even at those times, flow depths at most points typically remained less than 2 feet.

Burtell Decl., at ¶ 81. Mr. Burtell noted that when compared to the findings in other navigability determinations the mean stream depths reconstructed along the Upper Gila River indicate that this reach of the River would not be found navigable in its ordinary and natural condition prior to statehood. *Id.* ¶ 87. For example, in *United States v. Utah*, 283 U.S. 64 (1931), the Special Master determined that the San Juan River was not navigable, a finding that the U.S. Supreme Court later adopted. Among the factors that the Special Master cited in his report was the relatively shallow depth of the river, which he found had a mean depth of less than 2 feet during 167 days or over 5 months of the year. *Id.* By comparison, along the Upper Gila River, Mr. Burtell's reconstructed stream depths were less than 2 feet for all months evaluated and at all gaging stations except the one below Bonita Creek. Since his stream depths were reconstructed based on median monthly flows, then during at least half of the days each year, average stream depths were less than 2.0 feet at the Gila River gage sites, a frequency of shallow flow conditions greater than observed for the San Juan River. *Id.*[26]

There was agreement during the 2014 Hearings that Mr. Burtell's calculations were conservative; indeed, even ASLD's expert incorporated Mr. Burtell's depth reconstructions into his PowerPoint presentation to the Commission. *See* Tr. 8/19/14 at

[26] While navigability findings on other rivers are not conclusive for the Gila River as all rivers have different geology, hydrology, etc., and "each determination as to navigability must stand on its own facts," United States v. Utah, 283 U.S. 64, 87 (1931), the Commission finds that the other navigability determinations in the Record (and particularly the San Juan River determination) are some evidence of nonnavigability.

1703:24 to 17604:15, 1742:1-15 (Mussetter); Tr. 6/17/14 at 4342:1-343:13 (Fuller).

Mr. Burtell did not reconstruct flows for the Middle Gila, but Mr. Gookin did. Although Mr. Gookin made an error in his initial calculations, he submitted a supplemental report, which corrected the mistake in his use of 0.020 for Manning's "n" value, and arrived at a median depth below Kelvin (Segment 5) of 0.57 feet and above the Salt-Gila confluence (Segment 6) of 0.76 feet. Gookin Supplemental Report, Fig. V-3. Other than noting that Mr. Gookin made an error in his initial calculations, Proponents offer no substantive analysis or critique of Mr. Gookin's research or methodology.

Mr. Hjalmarson, the only expert to estimate natural flows for the Lower Gila, estimated that median depths at the confluence with the Salt would have been between 2.5 and 3.5 feet deep. Hjalmarson 2002, at 14-15; Tr. 11/17/05 at 241:4-245:14 (Hjalmarson). As discussed in the 2009 Report, there are a number of problems with Mr. Hjalmarson's modeling. *See* 2009 Report, at 73-76 (incorporated by reference). For example, it assumes that the ordinary and natural River at statehood was a single meandering, smooth, parabolic channel, when all the Evidence in the Record is to the contrary. *See id.* at 73; *see also infra*. Similarly, it is based on estimates taken from USGS surveys on the Salt River Indian Reservation on the Salt River and the Pima Indian Reservation on the Gila River, which are inconsistent with the figures obtained from the gauging stations and other evidence in the ASLD report. *See* Hjalmarson 2002, at 12-14. Despite these and other issues noted in the 2009 Report, Mr. Hjalmarson made no effort to calibrate his results, believing it unnecessary. *See* Tr. 11/17/05 at 293:5-295:24 (Hjalmarson). In the 2009 Report, the Commission summarized its impressions of Mr. Hjalmarson's analysis as follows:

> [Mr. Hjalmarson] stated that in making his report and preparing for his testimony, he made certain assumptions as to what he thought the River should have looked like in 1860 and then applied various empirical test to it to see if his assumption was correct. He also admitted that if the

> assumptions and the tests did not conform to actual conditions as reported by observers on the river, there could be a problem with his conclusions. While his report was impressive, its credibility was not high.

2009 Report, at 76.

Mr. Hjalmarson did not testify or submit any written materials during the 2014 Hearings, nor was there any other evidence presented that would warrant departing from the conclusion, reached in the 2009 Report, regarding Mr. Hjalmarson's credibility.[27] Accordingly, the Commission again finds that Mr. Hjalmarson's opinion is not particularly credible.[28]

b. Natural Geomorphology

Much of the testimony during the 2014 Hearings related to whether the periodic large floods that occur on the Gila and transform the channel from a single-thread, meandering planform to a braided, multi-channel planform were "ordinary and natural." Dr. Mussetter credibly testified that both conditions are natural conditions that existed in predevelopment times. In summarizing his opinions on this issue, Dr. Mussetter stated:

> In summary, dryland streams in the arid southwestern U.S. experience cycles of low-to moderate flows punctuated by large, infrequent, monsoon-drive flood events. During the low to moderate flow periods they tend toward a single-thread, meandering planform, and during the infrequent, large floods, they can rapidly transform into a wide, braided multi-channel planform in which the flow depths are highly irregular, both spatially and temporally. Both conditions are *natural and ordinary* conditions of the river. Particularly during the floods and the subsequent recovery periods following the floods, the multiple, individual channels in the braided planform tend to be very shallow and unstable.

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[27] While he did not testify during the 2014 Hearings, the Commission is well acquainted with Mr. Hjalmarson, as he has participated in the proceedings concerning the San Pedro, Santa Cruz, Verde, and Gila Rivers. While the specific evidence and conclusions have varied somewhat by stream, Mr. Hjalmarson's general approach has remained consistent and, in each instance, he opined that a significant portion of the stream is navigable.

[28] As discussed *infra*, even if the Commission were to accept Mr. Hjalmarson's reconstructed depths as true, the Evidence in the Record is still inconclusive regarding the navigability or nonnavigability of Segment 8.

Mussetter Decl., at 4. Mr. Burtell similarly testified that both a single-thread, meandering channel and a braided multi-channel were "natural" conditions. Tr. 6/20/14 at 1058 (Burtell). Even Mr. Fuller conceded on cross-examination that the braided flood channel "is a natural condition of the river." Tr. 6/17/14 at 350-51, 476-77 (Fuller); *see also* Fuller/Gila, at 37.

While both conditions are natural, the Commission must determine the River's natural condition *at the time of statehood. See Winkleman*, 229 P.3d at 253-54. As to that point, the Record reflects that the River was primarily braided at the time of statehood due to a series of large floods that occurred at the turn of the century. *E.g.*, Gookin 2014, at II-13 to II-14.

2. Ordinary Condition

Having determined that the periodic large floods that occur on the Gila and change the nature and shape of the channel are natural conditions, the Commission must also decide whether these conditions can be considered "ordinary." In *Winkleman*, the court defined "ordinary" as "[o]ccurring in the regular course of events; normal; usual," and cited U.S. Supreme Court cases stating that ordinary conditions are those "prevailing throughout the greater part of the year." 224 Ariz. at 241, 229 P.3d at 253 (citing *Oklahoma v. Texas,* 258 U.S. 574, 587 (1922) (recognizing "an occasional tendency to emphasize the exceptional conditions in times of temporary high water and to disregard the ordinary conditions prevailing throughout the greater part of the year"). In *Oklahoma v. Texas*, the U.S. Supreme Court held that the watercourse was not navigable because its use for transportation was "confined to the irregular and short periods of temporary high water." *Oklahoma*, 258 U.S. at 591. Similarly, here, the Commission finds that the periods when the River is actually experiencing flooding (*e.g.*, from 1890-1907) cannot be considered in determining the River's "ordinary" condition. *See, e.g.*, ASLD Upper Gila

Report, at 3-14 (quoting Bartlett in 1854 stating that "[i]t is doubtful whether [the Gila] can ever be navigated, *except at its floods, and these are by no means regular.* At such times [*i.e.*, during irregular floods,] flat-bottomed boats might pass to the mouth of the Salinas [Salt River], near the Pima villages." (emphasis added)).

That said, it does not necessarily follow that the *effects* of flooding cannot be considered. On the contrary, where, as here, the flooding has long-term effects on a River's character, those impacts constitute ordinary conditions. *See* Mussetter Decl., at 7-8 (flooding resulted in a wide, braided channel that persisted for some time and influenced the form of the River throughout the ensuing low- to moderate-flow periods). As Dr. Mussetter aptly stated in his Declaration:

> While it is reasonable to exclude the limited periods when the river is actually experiencing major flooding or drought when considering navigability, the effects of these periods on the long-term character of the river cannot be discounted. The wide, braided planform that is created by major flooding persists for a significant period and influences the form of the river throughout the ensuing low- to moderate flow periods.

Mussetter Decl., at 8; *see also* Tr. 8/19/14 at 1701, 1824 (Mussetter) ("The specific time when the high water is there during a flood probably fits outside the definition of ordinary; but the impact of that, that persist[s] sometimes for many years or even decades after the flood, is an ordinary condition of the river.").

Dr. Mussetter's opinion that the floods on the Gila were the primary driver of the braiding and that such floods occurred throughout history, Tr. 8/19/14 at 1679, 1852 (Mussetter) is consistent with the testimony by all experts during the 2003-05 and 2014 Hearings, including Mr. Fuller's prior testimony and that of Dr. Huckleberry. *See* Tr. 8/20/14 at 1868-81 (Mussetter); *e.g.*, Gookin 2014, at II-13, V-18 (flood and changed occurred throughout history, even before modern development); Tr. 6/17/14 at 351 (Fuller) (conceding that, in certain circumstances, "floods have more of an impact on the channel

than [] diversions").

It is also consistent with historical Evidence in the Record. For example, in 1891, the *Twelfth Annual Report of the U.S. Geological Survey* described the Gila as follows: "These streams *fluctuate greatly*, being at times subject to *sudden floods*, *especially during summer rains*, when they often sweep out bridges, dams, and canal head works, while at other times they may diminish until the water almost disappears." Littlefield 2013, at 101 (emphasis added). Dr. Littlefield, an acknowledged expert in the history of the American West, testified that the historical evidence indicates that the Gila was "*erratic, subject to unpredictable flooding, [and] prone to channel changes* ..." Tr. 8/18/14 at 1450 (Littlefield) (emphasis added).

Other Evidence in the Record indicates that portions of the Gila went dry for parts of the year. Lieutenant Nathaniel Michler, authoring a chapter in Lt. Emory's *Report on the United States and Mexican Boundary Survey Made under the Direction of the Secretary of the Interior*, concluded that the Gila was non-navigable while indicating that the Colorado River as the only navigable river in the area:

> . . . The Gila *becomes so low* that a sand-bar forms *at its mouth during the summer, and at no time does it supply much water*. The Colorado on the contrary, is navigable for small steamers, drawing two and two and a half feet water, as high up as Fort Yuma. . . . This [navigation] is a great saving, as the cost of transportation of stores by trains across the desert is enormous. . . .

Littlefield 2013, at 97-98 (emphasis added); *see also* Littlefield 2013, at 120 (citing an *Arizona Miner* article from June 1866 stating that the Gila "is at some seasons dry twenty-five miles above its junction with the Colorado [River]"). Still other Record Evidence demonstrates the Gila's highly variable nature. Testifying before Congress on April 1, 1870, Richard C. McCormick, who served as Arizona's delegate to Congress from 1869-1870, stated that "[f]or half or two-thirds of the year [the Gila] is a larger river, and the

other part a comparatively small one. It is not navigated." Littlefield 2013, at 121.

F. Gila River's Susceptibility to Commercial Navigation

1. Evidence of Actual Navigation or Susceptibility to Navigation Prior to Spanish Exploration

The 2009 Report described in great detail the various indigenous civilizations that inhabited the Gila River Valley for more than a millennium. *See* 2009 Report, at 23-29 (incorporated by reference here). As the 2009 Report recognized, these people were heavily reliant on, and deeply connected to the River, yet there is no evidence that any of these populations ever boated the Gila River for any purpose. *See id.* at 29 ("There is no evidence in [the] archeological Record that would indicate that any of the prehistoric cultures located in the study areas along the Gila River used the Gila River as a means of transportation by boat or other watercraft and there has been no documented use of the river for commercial trade and travel or for flotation of logs. All travel along the Gila River during this period was by foot."); *see also* ASLD Upper Gila Report, at 8-2.

Although Mr. Fuller testified during the 2014 Hearings that there is "minimal evidence" in the archeological records about Native American use of boats, he could not recall any evidence of the use of the Gila by indigenous peoples for trade or commerce. *See* Tr. 6/17/14 at 304:17-307:20 (Fuller). This is true regarding the entire length of the Gila. *See id.* Moreover, in his 2003 report concerning the Upper Gila, Mr. Fuller stated that "[a]rcheological research has not documented any use of the [Upper Gila] for commercial trade and travel or any regular flotation of logs." ASLD Upper Gila Report, at 8-2.

Other Evidence in the Record confirms that while the Native Americans used the Gila for irrigation and as a transportation corridor, they did not use the River for navigation, at least during recorded history. *See* EIN x15, Gookin, *Presentation to Arizona Stream and Navigability Commission* (Nov. 16, 2005) ("Gookin 2005"), at 3; Tr. 11/16/05

at 227 (Gookin). For example, there is no evidence that the Pimas, who lived and traded all along the Gila River and would have benefited from water travel, used boats of any kind for trade. *E.g.*, Gookin 2014, at VI-7. Instead, the Evidence in the Record indicates that the Pimas traveled exclusively by foot alongside the River. *See* Gookin 2005, at 3. Nor is there any Evidence in the Record that the Hohokam, who traveled along the Gila and down the Colorado as far south as the Gulf of Baja trading clam shells, used boats or other flotation devices, despite a clear need. Gookin 2014, at IV-3 to IV-4.

Except for the fact that archaeological records may have been easily been destroyed over time or swept away in a major flood (which is true for all Rivers), none of the Proponents' witnesses could offer a cogent explanation for the lack of archaeological records showing prehistoric use of the River for trade and travel. Mr. Fuller attempted to attribute the lack of evidence of Native American use for travel or trade to "cultural beliefs about using the rivers." Tr. 6/16/14 at 49:8-17 (Fuller). But when pressed on this point during cross-examination, Mr. Fuller acknowledged that he was unaware of any cultural beliefs about rivers that would preclude the Apache, the Akimel O'otham, or the Pee-Posh from boating the Gila, had it been navigable. Tr. 6/17/14 at 463 (Fuller). Mr. Fuller also suggested that Native Americans may have "found alternative modes more suitable." Tr. 6/16/14 at 49:8-17 (Fuller). But the fact that the Native Americans may have found alternative modes of travel more suitable only serves to reinforce the conclusion that prehistoric cultures did not view the Gila River as a navigable stream. *See* ASLD Upper Gila Report, at 8-2.

2. Evidence of Actual Navigation or Susceptibility to Navigation During Early Exploration and Before Anglo-Settlement

The Record is replete with historical narratives, observations, reports, and journals from those who claimed to have travelled along and near the Gila River during early exploration and before Anglo settlement. *See, e.g.*, ASLD Upper Gila Report, at 8-2;

ASLD Lower Gila Report, at IV-64, III-24. Some of these early travelers came through the area carrying canoes, rafts, and other watercraft. Tr. 6/17/14 at 324-25 (Fuller); *see also* ASLD Upper Gila Report, at 4. However, like the Native Americans before them, they apparently did not attempt to navigate the Gila River, choosing instead to travel overland along the Gila until reaching the Colorado River where they could float their boats in the River. *See, e.g.*, ASLD Upper Gila Report, at 3-1, 8-2; Tr. 6/17/14 at 339-40 (Fuller). For example, Mr. Fuller testified that early Spanish explorers navigated the Colorado but that they "are not known to have used boats on other Arizona rivers as their exploration inland was on horseback and on foot." Tr. 6/17/14 at 339:11-21 (citing EIN x016-FMI_X008, J.E. Fuller, *Criteria for Assessing Characteristics of Navigability for Small Watercourses in Arizona* (Sept. 1998) ("Small Watercourses")).

Proponents and their experts extensively cite *The Personal Narrative of James O. Pattie*[29] and the story of James O. Pattie traveling near the Gila as evidence of the River's navigability. *See, e.g.*, Tr. 6/16/14 at 177-78, 183, 190-92 (Fuller); Tr. 6/17/14 at 285, 290, 324-91 (Fuller); Tr. 6/18/14 at 649 (Fuller); Fuller/Boating, at 80, 101; ASLD FOF #168-173, 176. The Commission finds that the Pattie Narrative, while interesting, lacks credibility. Indeed, later editions of the Pattie Narrative introduced by Opponents contain historical prologues, introductions, editor's prefaces and notes warning readers that the Pattie Narrative is not a reliable historical document, and may not even be the writings of James O. Pattie. *See* Supp. EIN x036:123, THE PERSONAL NARRATIVE OF JAMES O. PATTIE (4th ed. 1930) ("4th ed. Pattie Narrative"), at v-vi, xiv, xx, xxii; Supp. EIN x036:126, Zephyrin Engelhardt, *Appendix E: James Ohio Pattie's Vaccination Story in* FRANCISCO OR MISSION DOLORES (1924) ("Zephyrin"), at 407-11; Supp. EIN x036:127,

[29] Supp. EIN x006, THE PERSONAL NARRATIVE OF JAMES O. PATTIE (1st ed. 1831) ("Pattie Narrative").

Excerpts from Hubert Howe Bancroft, 3 HISTORY OF CALIFORNIA (1886) ("Bancroft"), at 82-83 n.43, 170-71.

Multiple historians who have studied the narrative have warned that it lacks any "historical sense of accuracy" and would never stand the test of "subsequent historical criticism." 4th Ed. Pattie Narrative, "Publishers Preface" and "Historical Introduction"; *see also id.* at xxii. At the least, the evidence establishes that large parts of the Pattie Narrative, including the descriptions of the Gila River, were written by a man who had never even been to Arizona or the Southwest, and based his descriptions on his "acquaintance with the accounts of travelers in New Mexico, and published views of the county..." *See* Supp. EIN x036:121, Timothy Flint, "Editors Preface" and "Introduction" *in* THE PERSONAL NARRATIVE OF JAMES O. PATTIE (1st Ed. 1831) ("Flint"), at iii-iv; Supp. EIN x036:120, Appendices from THE PERSONAL NARRATIVE OF JAMES O. PATTIE (1st Ed. 1831).

With respect to Mr. Fuller's suggestion that Pattie made numerous canoe trips up and down the Gila prior to 1830, the evidence is otherwise and supports a finding that when his party constructed eight canoes, they had already reached the Colorado River. Tr. 6/17/14 at 335:8-38:23 (Fuller); *see also* Tr. 6/17/14 at 279 (Fuller); Tr. 6/18/14 at 697-98 (Fuller) (explaining that he had used a "daisy chain" method of research to support his testimony regarding the history of boating on the Gila, by which he was citing information that was previously in the Land Departments Report"). The only description of Pattie or his party using a canoe on the Gila was to go back and forth across the stream for purposes of setting beaver traps without leaving a scent. Tr. 6/20/14 at 1133-37 (Burtell).

Mr. Fuller also testified regarding one instance he read about in a master's thesis of trappers using canoes on the Gila to travel from Safford to Yuma on several occasions. Tr. 6/16/14 at 177, 190, 264 (Fuller); Tr. 6/17/14 at 297 (Fuller); Fuller/Boating, at 101. But he later admitted on cross-examination that the same thesis indicated that the canoes were

never used on the Gila, but instead were used to navigate the Colorado River. Tr. 6/17/14 at 327-28 (Fuller); *see also* ASLD Upper Gila Report, at 8-2. The reality is that, as Mr. Fuller stated in his report for the ASLD, "[t]hese early trappers traveled primarily on horseback or on foot in the [Upper Gila River] area, although there [sic] records indicate that they built and used canoes and rafts when they reached the Colorado River ...." ASLD Upper Gila Report, at 8-2.

Beginning in 1846, military operations commenced in the region due to the Mexican War. Mr. Gookin reported that "[i]nstead of the water route, the military chose to march directly from the Gila-Salt confluence across the desert to the approximate location of Painted Rock Dam that exists today." Gookin 2014, at IV-13. Mr. Burtell similarly found no documentary evidence from this time of the use of boats on the Gila to transport military supplies to Fort Goodwin. Burtell Decl., at 8. This is significant because the need for reliable and inexpensive transportation clearly existed and it was a time when the region was largely unsettled, with little water diverted for agriculture. *Id.*

In December 1846 or January 1847, Captain Philip St. George Cooke and the Mormon Battalion reportedly constructed a raft from two wagon beds to float supplies on the Lower Gila from Gila Bend to Yuma. ASLD Lower Gila Report, at IV-2. The raft caught on sand bars and went aground numerous times, forcing Lieutenant George Stoneman "to jettison a portion of the cargo." *Id.* at IV-2; Tr. 11/16/05 at 38, 70 (Gilpin); EIN x001, Edwin Corle, The Gila: River of the Southwest (1951) ("Corle"), at 153-54. In Edwin Corle's book about the Mormon Battalion's expedition, he wrote that "[b]oating on the Gila, [Lt. Stoneman] reported to Colonel Cooke, was definitely not to be recommended to Washington." Corle, at 153. Colonel Cooke himself described his attempt to travel down the Gila as follows: "The experiment *significantly failed*, owing to the shallowness of the water on the bars; the river was very low." *See* Littlefield 2013, at 94-95 (emphasis added).

In 1849, the Edward Howard party reportedly constructed a boat to float down the Gila from Gila Bend to Yuma. No evidence was presented indicating what time of year this trip took place or whether it may have occurred during a flood. *See* ASLD Lower Gila Report, at IV-2; Tr. 11/16/05 at 70 (Gilpin). Decades later, the *Arizona Weekly Citizen* recounted the historical background on one of the earliest ferries used to cross the Colorado River, which had also been used on one occasion to float a family (believed to be the Howard family) down the Gila in 1849. Littlefield 2013, at 131. The article described the family as "reckless voyagers," and stated that military officials at Fort Yuma were alarmed when they heard of the trip because of the dangerous nature of the River. *Id.* at 131-32; *see also* Tr. 6/16/14 at 195 (Fuller); Fuller/Gila, at 103. Additionally, consistent with other Record Evidence, the crew of the trip apparently found the River "shallow and full of Bars, and the Current very rapid; they frequently found themselves aground and had much difficulty in getting off." Supp. EIN x004_ASLD 47, Hannum, *A Quaker Forty-Niner: The Adventures of Charles Edward Pancoast on the American Frontier* (1930) ("Hannum"), at 348.

There are also reports that some Forty-Niners attempted to float boats or rafts down the Gila to Yuma, but generally they were unsuccessful. The few accounts of purportedly successful trips in the Record do not indicate what time of year the trips took place, and whether they may have occurred during a flood. For example, while one traveler reported in 1850 that the "expedient of lightening down teams by building small boats on the Gila" had been tried and succeeded, there is no evidence regarding the time of year these trips supposedly took place, where they took place, or whether they took place during a period of high flows. Nor is there any other contemporaneous report indicating that it was common practice for travelers during the Gold Rush in this region to travel on the Gila by boat to the Colorado River. *See* ASLD Lower Gila Report, at IV-3; Tr. 11/16/05 at 71 (Gilpin). The ASLD Reports contain a handful of other accounts mentioning attempts to

boat the Gila River prior to statehood, *see* ASLD Lower Gila Report, at IV-2 to IV-14; ASLD Upper Gila Report, at 3-27 to 3-29, but as Mr. Fuller testified, these accounts all consisted of "low draft" boats used primarily for "downstream travel." Tr. 6/16/14 at 60 (Fuller).

3. Evidence of Actual Navigation or Susceptibility to Navigation During the Last Half of the 1800s

In 1854, Bartlett, who worked on surveying the U.S.-Mexico boundary from 1850-53, wrote that: "It is doubtful whether [the Gila] can ever be navigated, *except at its floods, and these are by no means regular.* At such times [*i.e.*, during irregular floods,] flat-bottomed boats might pass to the mouth of the Salinas [Salt River], near the Pima villages." ASLD Upper Gila Report, at 3-14 (emphasis added). Similarly, Dr. Littlefield and Mr. Burtell both credibly testified that GLO surveys and other government assessments from this time indicate that the River was not navigable. *See* Tr. 8/18/14 at 1315, 1335-36 (Littlefield) (testifying that "none of the [GLO surveys] indicated that the River was navigable by having meanders done on both banks"); Burtell Decl., at 11 (none of the government surveys he reviewed found that the Upper Gila was susceptible to navigation).

Dr. Littlefield also testified regarding early federal and state patents, which he stated "shed considerable light on the navigability or nonnavigability" of the River. Tr. 8/18/14 at 1337 (Littlefield). Federal patents indicate the total amount of land awarded by the Federal Government. Dr. Littlefield opined that "[t]he acreage is significant because if the Gila River had been considered navigable, federal officials presumably would not have granted title to any land through which the River flowed." Littlefield 2013, at 69. He similarly inferred that if the state had believed it owned the bed and banks of the River, it would have considered the stream's navigability in disposing of those lands. *Id.* at 91. Yet as his testimony makes clear, there are over 150 federal and state patents relating to the

Gila River, and not one indicates that acreage was being withheld because the River was navigable. *See* Littlefield 2013, at 70; Tr. 8/18/14 at 1360 (Littlefield).

Notwithstanding the foregoing, the Evidence in the Record regarding actual or attempted boating during this time provides some evidence of navigability. For example, Morgan's Ferry reportedly operated near Maricopa Wells for twenty-five years beginning in 1867, though it was apparently only used to cross the River, and there is no information indicating how many trips it took or whether it was operated only on a seasonal basis. ASLD Lower Gila Report, at IV-5; *see also* Tr. 11/16/05 at 71-71 (Gilpin). In February 1881, Cotton and Bingham were reported to be planning a trip to Yuma via the Salt and Gila Rivers in an 18-foot skiff, flat-bottom boat. It is unclear whether this trip actually occurred, however, because the only Evidence in the Record is a newspaper article which was written the day before the trip was set to commence. *See* ASLD Lower Gila Report, at IV-7; *see also* Tr. 11/16/05 at 74 (Gilpin). Also in 1881, three men, including William "Buckeye" O'Neill, reportedly departed Phoenix for Yuma in a 20-foot long, 5-foot wide boat called "Yuma or Bust." During the trip, which took place in November, the men were "wading in water up to their knees." *See* ASLD Lower Gila Report, at IV-7; Littlefield 2013, at 128; *see also* Tr. 11/16/05 at 73 (Gilpin). The *Arizona Gazette* reported that the boat reached Gila Bend and "'busted.' . . . [The crew] endured great hardships, being compelled to wade in the water the greater portion of the time and push the craft ahead of them." Littlefield 2013, at 128. Indeed, even Mr. Fuller acknowledged that the crew had "[a] good deal of trouble getting through some sandbars" and were seen "pushing their boat." Tr. 6/16/14 at 196-96 (Fuller); Fuller/Gila, at 107.

There is also evidence of a prospector using a dugout canoe to travel down the Gila from Clifton to Florence in February/March 1886. *See* Tr. 6/16/14 at 204 (Fuller); Fuller/Gila, at 118. But even Mr. Fuller described this attempt as "a boating failure" because the boat got entangled in a strainer, which caused the prospector to lose his gear

and his boat to sink. Tr. 6/16/14 at 204:4-20 (Fuller); *see also* Fuller/Gila, at 118. Eventually, the prospector gave up and walked the 80 miles to Florence. Tr. 6/16/14 at 204 (Fuller); Fuller/Gila, at 118.

In March 1891, another ferry operated by Straus, Dallman & Co. was used to cross the River. Again, however, there is no evidence suggesting that this ferry was ever used to travel up- or down-stream, nor is there any information indicating how many trips this ferry took or whether it was operated only on a seasonal basis. *See* ASLD Lower Gila Report, at IV-8; *see also* Tr. 11/16/05 at 71-72 (Gilpin).

In January 1895, G.W. Evans and Amos Adams reportedly boated down the San Francisco River from Clifton, then down the Gila to Riverside. This trip was reported in two newspaper articles, which detail the difficulties the pair experienced. For example, in the Upper Gila, it was reported that the pair experienced problems due to "a continuous series of rough rapids and falls for 81 miles." ASLD Upper Gila Report, at 3-28. At one point, Evans, who called it "a torturous route," fell in the water and swam or was carried by the current downstream. The boat itself was damaged due to the rapids, with "one end being entirely submerged" and Adams having to "bail out the water from the stern." ASLD Lower Gila Report, at IV-8; *see also* Tr. 11/16/05 at 74-75 (Gilpin). The pair did not boat the entire length of the River. Instead, upon reaching Sacaton in February 1895, the men apparently hauled their boat overland via train and then boated down the Salt and Gila Rivers to Yuma. Upon reaching Yuma, Evans reportedly concluded that he "would not engage to make the trip down (the Gila's) hazardous waters again." ASLD Upper Gila Report, at 3-28; ASLD Lower Gila Report, at IV-8 to IV-9; *see also* Tr. 11/16/05 at 75 (Gilpin). In addition to the "81 mile[s] of rough rapids and falls," the men reported that they had difficulty in one segment because of a blind corner, which resulted in them damaging their boat while attempting to line it. Tr. 6/16/14 at 200 (Fuller).

While most of the boating attempts failed or were unsuccessful, there were a few incidents of successful boating in the latter part of the 1800's, when a series of major floods occurred on the River. For example, Mr. Fuller testified that the Day brothers trip down the Gila from Camp Verde to Yuma in 1891-92 was "very profitable," with no problems and that the Day brothers intended to boat the Gila again the next day. Tr. 6/16/14 at 199 (Fuller); *see also* Fuller/Gila, at 110. Nor is there any evidence of incidents on Lieutenants Gully & Richardson's trip from Pima Villages to Yuma in 1896, or on Hamilton, Jordan, and Halesworth's trip in 1897. Tr. 6/16/14 at 195, 200-02 (Fuller). With regard to the latter incident, Mr. Fuller testified that the boaters found the River "perfectly practicable for navigation." Tr. 6/16/14 at 195 (Fuller); Fuller/Gila, at 105.

There is also one documented instance of floating logs in Segment 8, though it is unclear how far the logs were floated. Specifically, Mr. Fuller testified that an 1897 article in the *Los Angeles Herald* described people sending wood down the Gila below Dome on a raft. Tr. 6/16/14 at 201 (Fuller); *see also* Fuller/Gila, at 113. On cross-examination, however, Mr. Fuller did not know how far the logs were floated, and he acknowledged that it could have been as short as half a mile. 6/17/14 at 427 (Fuller).

4. Evidence of Actual Navigation or Susceptibility to Navigation During the 20th Century

In March 1905, a new model boat that had "hand-driven, side-propellers" was evidently unable to cross the Gila. ASLD Lower Gila Report, at IV-13; *see also* Tr. 11/16/05 at 76 (Gilpin). It was reported that "nothing short of a ten horse power engine" would be needed to cross the River. ASLD Lower Gila Report, at IV-13; *see also* Tr. 11/16/05 at 76 (Gilpin). Streamflow records from March 1905 indicate that the River may have been experiencing a flood event. ASLD Lower Gila Report, at IV-13. The following month, Jack Shibely reportedly attempted to boat the Gila downstream from Phoenix, but his boat capsized once and lost much of its cargo. ASLD Lower Gila Report, at IV-13; *see*

also Tr. 11/16/05 at 40 (Gilpin). In December 1905, yet another attempt to boat across the River failed, in part because the parties could not launch the boat because "the current was too swift." ASLD Lower Gila Report, at IV-13; *see also* Tr. 11/16/05 at 76 (Gilpin).

The *Arizona Blade-Tribune* reported on March 16, 1912 that the River had run bank-full for 90 consecutive days in 1884, and William Eaton, with a boat measuring 4 x 14 feet, cleared $1,500. ASLD Lower Gila Report, at IV-16. There is also one report that Stanley Sykes canoed the entire length of the Gila in 1909. *See* Fuller/Gila, at 115; Tr. 6/16/14 at 197 (Fuller). The fact that this trip does not appear in Sykes' biographical sketch, and there is no contemporaneous record of the incident, casts doubt on its reliability. *See* ASLD Upper Gila Report, at 3-29; *see also* Tr. 11/16/05 at 76-77 (Gilpin). With respect to this account, Mr. Fuller testified that "I'm including this because its listed in the Land Department reports. My thought is that this is referring to the other Sykes. So I'm not going to make any more discussion of that, and I'm not counting this as a new account." Tr. 6/17/14 at 203 (Fuller). If the trip did in fact occur, the Record indicates that Sykes probably did not float the Upper Gila, but rather started in Phoenix. *See, e.g.*, Tr. 6/20/14 at 1132:23-1138:2 (Burtell); Tr. 6/17/14 at 336:16-338:23 (Fuller). Further, another witness who testified on ASLD's behalf during the 2005 Hearings, reported that the Sykes trip was "quite unsuccessful" because "[o]nly one person could be in the boat at the time because the other one would weigh it down too much. So one person would walk along and pull the boat while other one sat in it, or sometimes they both would pull the boat. Tr. 6/17/14 at 336-37 (Fuller); Tr. 11/15/06 at 106 (Tellman); Fuller/Gila, at 115.

On April 5, 1980, the *Tombstone Epitaph Prospector* reported:

> Deputy Sheriff Frank Burke and George Davis of the Harqua Hala mines, who had $15,000 in gold bullion in charge, were dumped into the Gila River last week by their boat capsizing. As the boat turned over, Davis held onto the bullion and struck the bottom of the river with some force; through the assistance of Mr. Burke, Davis and his bullion were soon on 'terra firm,'

> otherwise known as Sentinel station on the railroad [downstream on the Gila from Gila Bend].

Littlefield 2013, at 132. Mr. Fuller testified that the boaters damaged or lost their boat at the Needle's Eye Wilderness Area and were forced to build another boat. Tr. 6/16/14 at 198 (Fuller); Fuller/Gila, at 109.

5. Types of Commerce Contemplated Prior To and At Statehood

The Record indicates that the following types of commerce were contemplated prior to and at statehood: transport of mining loads, materials, and equipment; transport of agricultural goods; travel or transport of people; transport of military supplies; and trapping/hunting. *See* Fuller/Gila, at 124 (listing typical trade/travel at statehood).

In 1849, gold was discovered in California, and large numbers of people traveled by land down the Upper Gila on their way to the California gold fields. Burtell Decl., at ¶ 33. Two of these people kept journals which were later published. *Id.* & Attachment D. Like earlier travelers, they crossed the Upper Gila numerous times with their horses and mules without any difficulties. *Id.* In contrast, when they finally reached the Colorado River in August, they encountered great difficulty in transporting mules and supplies across that stream. *Id.*

Military forts were also established in the area in the late 1860's, which further necessitated the transportation of goods and equipment. *See id.* at ¶¶ 34, 42; Gookin 2014, at IV-15 & fig. IV-4 (showing locations of forts along Gila). In 1864, Fort Goodwin was established in the Safford Valley (in Segment 3) near present-day Geronimo. Burtell Decl., at ¶¶ 34, 42. It operated until 1871 when, because of malaria, it was abandoned and eventually replaced nearby by Fort Thomas in 1876. *Id.* at ¶ 41. When in operation, most supplies were transported to Fort Goodwin via land from the Yuma Depot. General Mason reported the following in 1866:

> The vessel brought [the supplies for Fort Goodwin] to Fort Yuma, and we were compelled to haul them from there to their destination. Much difficulty and delay was experienced on account of the very limited amount of transportation in the Territory. . . .

Id. at ¶ 42. Apparently, despite the ease of heading east along a navigable River, the Army found that "[t]ravel inland from the [Colorado] river still required a difficult and time-consuming journey by horse or stagecoach, one made worse by the poor condition of the few existing roads." Gookin 2014, at IV-15. Had the Gila been navigable, it would have provided a direct route to transport supplies to military forts. Burtell Decl., at ¶ 46. Given the clear need for reliable and inexpensive transportation, the Commission expects there would be some evidence of the River being used to transport soldiers and/or military supplies to and from forts if in fact navigation were possible. However, except for a ferry built to cross the River during a flood, no such Evidence exists in the Record. *Id.* at ¶ 46; Gookin 2014, at IV-15 ("[T]here are on records indicating that the forts in the Gila Watershed were supplied by river deliveries."); Lingenfelter, at 10 ("In over fifty years of researching and writing on Western American history, [Dr. Lingenfelter] found no historical evidence of any commercial navigation on the Gila River more than a short distance above its junction with the Colorado, despite a continued demand from developing mines for cheaper transportation."). This is particularly significant because this was a time when the region was largely unsettled, with very little water diverted for agriculture. Burtell Decl., at ¶ 46.

Mines were also established in the area beginning in the early 1870's. *Id.* at ¶ 47. The first mining claims were located in the Clifton-Morenci District during the early 1870's. *Id.* Had the Gila been considered navigable, one would assume that miners and investors would have utilized the River to transport goods and materials necessary for the mines to thrive. However, no such Evidence exists in the Record. Rather, the evidence that does exist indicates that supplies and processed ore were transported to and from the

mines by wagon and later, by railroad. *See id.* ¶¶ 48, 50-53.

In addition to mines, post offices were established in the Upper Gila during the same timeframe. For instance, a post office was established in Clifton in 1875, and post offices were also established in Safford and Solomonville. Once again, despite the need to transport and deliver mail in the area, there is no evidence that the Upper Gila was ever used for that purpose. Tr. 6/20/14 at 1072-73 (Burtell). The existences of post offices is also important for the independent reason that it undermines Mr. Fuller's assertion that there was an insufficient population to warrant commercial navigation in this timeframe. *See* Tr. 6/17/14 at 309-10 (Fuller). As Mr. Burtell persuasively testified, population centers had developed by this time, or there would have been no need to establish these post offices. Tr. 6/20/14 at 1072-73 (Burtell).

The arrival of the railroad in 1877 "truly opened southern Arizona," bringing with it "intensive farming and ranching, and substantial new city and town development date to the completion of the railroad. It provided a way to ship out agricultural and mining products, and to bring in imported foodstuffs and finished products which formerly had been subject to hideously expensive and always uncertain overland freighting." Gookin 2014, at IV-15 to IV-16 (citation omitted); *see* ASLD Upper Gila report, at 3-25. As Mr. Gookin stated, "[t]he railroad, by providing what the Gila River never did, sustainable commercial transport, laid the groundwork for the development of Arizona's modern economy." Gookin 2014, at IV-16 (citation omitted).

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 (1931), Proponents offer no cogent explanation for why the Gila was not used for commercial navigation despite the well-documented need for such navigation throughout various times when the Gila was in its ordinary and natural condition. This is perhaps the most compelling proof that the Gila was not susceptible for

use as a highway of commerce, because if it had been, it would have been used to meet these needs.

ASLD's attempts to explain the absence of evidence of commercial navigation are impossible to reconcile with common sense or the historical Evidence in the Record. Relying on the testimony of Mr. Fuller, ASLD asserts that "it was more convenient for people to travel around the state by railroad or by wagon than by river, because the railroads went where people wanted to go and wagons could go anywhere," and that "[m]ining companies could ship ore more cost-effectively and faster by train or wagon than by river, and trains and wagons could carry more cargo than boats." ASLD FOF #196-97; *see also* Tr. 6/16/14 at 54-56, 58 (Fuller); Tr. 6/17/14 at 312-13 (Fuller); Fuller/Boating at 63-73.

Mr. Fuller's assertions notwithstanding, the Record Evidence indicates that wagons were an unsatisfactory means of travel and transportation. It is implausible to suggest that the Gila was susceptible to commercial navigation but was nevertheless disregarded in favor of wagon roads. At the very least, the fact that the River was not used for trade or travel in the years prior to the introduction of the railroad is powerful evidence that the River was not susceptible for use as a highway for commerce. *See* Burtell Decl., at ¶ 52.

Mr. Fuller's testimony was also contradicted by Dr. Richard E. Lingenfelter, a recognized expert on navigation in the American West, who submitted an affidavit regarding navigation on the Gila. *See* Supp. EIN x008, Affidavit of Richard E. Lingenfelter (May 16, 2014) ("Lingenfelter"). As Mr. Fuller recognized in one of his reports submitted to the Commission, Dr. Lingenfelter is responsible for one of the two seminal works on historic boating in Arizona, *Steamboats on the Colorado River, 1852-1916. See* Supp. EIN x016-8, *Criteria for Assessing Characteristics of Navigability for Small Watercourses in Arizona* (1998), B-1, at 1. Dr. Lingenfelter also recently completed a six-year study of the economic history of metal mining in the American West, which

included historical research concerning major copper mines at Ajo and Cliften-Morenci in Arizona. Lingenfelter, at ¶ 13. As Dr. Lingenfelter recounts in his affidavit, mining operations throughout the country and within Arizona "were constantly looking for cheaper transportation, either by river or rail." *Id.* at 8. "Transportation costs, particularly shipping out copper matte and high-grade ores, were very often the largest expenses of the mining operation, and frequently determined whether profitable operations were possible." *Id.* Having the Colorado River, a navigable river, close to a mine lead to cheaper transportation: "the cost of hauling the ore by wagon, a roughly 300-mile round trip . . . .was nearly half of the value of the ore. ..." *Id.* at 9. Dr. Lingenfelter explained that the mines "could cut shipping costs by two-thirds, and profitably work a much larger amount of lower grade ore, but they found that even rafting down the Gila, let alone running a steamer up it, was simply not possible most of the year." *Id.* He ultimately concluded that "mining entrepreneurs would have eagerly undertaken navigation of the Gila if it had been possible. The failure of anyone to do so was not for [a] lack of demand, but for lack of sufficient water. The Gila River was simply not susceptible to commercial navigation." *Id.* at 10; *see also* Tr. 6/20/14 at 1072-72 (Burtell) (noting that Mr. Fuller's argument that overland travel was preferable to boat travel "doesn't seem consistent with my understanding of how the West was settled").

G. Instances of Boating on the Gila River

1. Historic Boating Attempts

As discussed *supra* Section F, there is no evidence of prehistoric boating of any kind, and the sporadic historic attempts to boat the Gila were largely unsuccessful and recreational in nature, and often during periods of high water. To be sure, there are exceptions, most notably ferries that were used to cross the River. However, there is no evidence that any of these ferries traveled up or down the Gila, nor is there any evidence

regarding how many trips these ferries took, or when they operated.

2. Post-Statehood Boating Attempts

Similarly, although there are a few documented instances of recreational boating since statehood, Proponents have not met their burden to prove that "the river's post-statehood condition is not materially different from its physical condition at statehood," and that the modern watercraft used "are meaningfully similar to those in customary use for trade and travel at the time of statehood." *PPL Montana*, 132 S.Ct. at 1233 (requiring proponent of present-day recreational boating evidence to show that "the river's post-statehood condition is not materially different from its physical condition at statehood," and that modern watercraft "are meaningfully similar to those in customary use for trade and travel at the time of statehood" before such evidence can be considered in a navigability-for-title determination). With respect to the first factor, ASLD relies heavily on the existence of modern-day recreational boating in dam regulated flows that are more consistent than the flows were in the River's ordinary and natural condition. This is at odds with *PPL Montana*'s requirement that the proponent of the evidence show that "the river's post-statehood condition is not materially different from its physical condition at statehood" before modern day recreational boating can be considered as evidence in a navigability determination. *See* 132 S.Ct. at 1233.

But even if Proponents could satisfy the first hurdle, they have not convincingly demonstrated that modern watercraft "are meaningfully similar to those in customary use for trade and travel at the time of statehood." *See id.* While modern canoes and flatboats are similar to historic canoes and flatboats in their shape and design, they are different in several significant respects. First, modern canoes and kayaks are made from plastic and other modern materials that were not available at statehood. Tr. 6/18/14 at 584:1-17, 592:11-22 (Farmer) (noting that his canoe is a modern recreational canoe made from

polyethylene, which was not available in 1912). Because of the different materials, modern day boats are lighter than their historic counterparts. *See* Tr. 6/18/14 at 635:16-20 (Farmer) (a wooden canoe "would trend a little heavier than . . . a modern plastic canoe"); Lingenfelter, at 9 (observing that the types of boats that were customarily used for trade and travel in 1912 "did not include craft that are similar to modern day recreational craft such as modern lightweight canoes and kayaks"). It follows that, under Archimedes Principle,[30] they likewise have lower draws. *See, e.g.*, Supp. EIN x016-8, *Criteria for Assessing Characteristics of Navigability for Small Watercourses in Arizona* (1998), at 28; *see also, e.g., PPL Montana*, 132 S.Ct. at 1234 (modern recreational boats "may be able to navigate water much more shallow or with rockier beds than the boats customarily used for trade and travel at statehood"). To the extent ASLD's boating experts opine that modern canoes and kayaks, which are made of plastic and other lightweight materials, have the same draw as canoes at the time of statehood despite their lighter weight, these opinions are inconsistent with the Archimedes Principle. *See* Tr. 6/16/14 at 43:13-44:6 (Fuller); Tr. 6/18/14 at 549, 597 (Farmer).

In addition to requiring less water to float, the evidence is undisputed that modern boating materials are significantly more durable than historic materials, which means that they require less skill to safely pilot down the river. *See, e.g.*, 6/16/14 Tr. at 86:17-87:1 (Fuller) ("The durability [of boats] has improved significantly. We now have plastics, Hypalon, other sorts of modern materials that are more durable."); Tr. 6/17/14 at 365-69 (Fuller); ASLD Closing Brief, at 14; Gookin, at V-14. This is because, as Mr. Gookin explained in his report, the more durable materials used in modern recreational canoes

[30] As Dr. Mussetter testified, the Archimedes Principle is a fundamental principle of physics that holds "that an object that's put in the water will displace an equivalent weight of the water. So if you have a light boat it will displace a fairly small amount of water, and therefore, the draft will be fairly small. And if you have a heavy boat, it will displace more water." Tr. 8/19/14 at 1705:1-1706:4 (Mussetter).

means that they can withstand impacts with rocks and boulders much better than the canoes that were used at the time of statehood. Gookin 2014, at V-14. Modern recreational boaters also have access to technology that was not available at the time of statehood, allowing boaters to check conditions before they go out on the River. Mr. Farmer testified that before floating the Gila Box, he checks the flows online, and that he usually brings his cell phone on boating trips. Tr. 6/18/14 at 629, 631 (Farmer).

The differences are compounded when one compares modern day canoes and kayaks to the types of craft that were in fact customarily used for trade and travel (as opposed to recreation) at the time of statehood, *i.e.*, large steamboats and gasoline powered paddle wheelers. Lingenfelter, at 9; Gookin 2014, at V-14.

In sum, modern recreational canoes and kayaks require less water to float and are much more durable than the crafts that were customarily used for trade and travel in 1912. Consequently, they are "able to navigate water much more shallow" and "with rockier beds than the boats customarily used for trade and travel at statehood." *PPL Montana*, 132 S.Ct. at 1234. Because Proponents have not met their burden of showing that modern-day boats are "meaningfully similar" to the boats customarily used for trade and travel at statehood, the Commission cannot consider evidence of modern recreational boating in making its navigability determination. *See id.* (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").

VI. FINDINGS AND DETERMINATION

As noted above, Proponents bear the burden of proof of establishing navigability by a preponderance of the evidence. *Winkleman*, 224 Ariz. at 238-39, 229 P.3d at 250-51. That is, Proponents must show that it is more likely than not that the Gila River, or a

segment thereof, was navigable or susceptible to navigation at the time of statehood under ordinary and natural conditions. If the evidence on each side is exactly even, the Commission must find in favor of nonnavigability. Evidence is something, including testimony, documents, and tangible objects, that tends to prove or disprove the existence of an alleged fact. Black's Law Dictionary (7th ed. 2013) at 457. The Commission's findings and conclusions reflect its evaluation of the Evidence in the Record while sitting as the trier of fact, including evidence presented by way of testimony, and the Commission's determination regarding the weight, if any, to be given to that evidence. *See Winkleman*, 229 P. 3d at 255 (noting that it is the function of the Commission to determine the relevance and weight of evidence).

The Commission elaborates on allocation of burden of proof because some of the findings of fact made below are determined by burden of proof. In this case that burden matters.

A. Findings of Fact

The Commission makes the following findings of fact:

1. The Gila has always been subject to unpredictable flooding and seasonal periods of high flows; it is spatially and temporally heterogenous.
2. The channel changes that persist after flood flows recede are part of the River's "ordinary" condition, as are other long-term changes to the River (for example, debris left by flooding).
3. The prehistoric inhabitants in the area did not use the Gila as a highway for commerce.
4. Early trappers and settlers did not use the Gila as a highway for commerce.
5. To this date, the Gila is not used for commercial navigation, though recreational boating occurs in some segments (*e.g.*, Segment 4 below

Coolidge Dam).

6. The following types of commerce were contemplated prior to and at statehood: transport of mining loads, materials, and equipment; transport of agricultural goods; travel or transport of people; transport of military supplies; and trapping/hunting.

7. By the late 1860's/early 1870's, military posts, mines, and post offices had been established in the area, which necessitated the transportation of goods and equipment.

8. Population centers also developed along the River around this time.

9. The Gila is in its "ordinary" condition when it is not experiencing a drought or flood.

10. While prehistoric peoples diverted water from the River for centuries, the impact of these diversions was minimal. Meaningful diversions did not begin on the Salt and Gila River until the late 1860's/early 1870's.

11. The Gila was in its "natural" condition prior to the commencement of modern-era diversions in the late 1860's/early 1870's.

12. Some historical instances of boating on the Gila have been reported. However, the rarity of the reports and the fact that they were often seen as newsworthy suggests that the Gila was (a) not actually used as a highway for commerce prior to statehood and (b) was not, in its ordinary and natural condition at the time of statehood, susceptible to being used as a highway for commerce. Moreover, most instances were unsuccessful and, except for the use of boats to cross the River for travel or trapping, lacked commercial intent.

13. Class I and II rapids occur in Segments 1, 2, and 5 under ordinary and natural conditions. Numerous Class II rapids, and one Class III, occur in

Segment 4.

14. At the time of statehood, the River contained a highly braided channel in Segments 1, 3, and 6.

15. The braiding that was present in large parts of the River in 1912 was primarily driven by a series of large floods that occurred on the River at the turn of the century.

16. In its "ordinary" and "natural" condition, the Gila is typified by low flows.

17. The dynamic, variable nature of the River is part of its "ordinary" condition.

18. While some braided rivers can be used as a highway for commerce, it takes far more river flow than any of the experts or records suggest for the Gila. The braided planform that existed and the really low flows at the time of statehood would have made commercial navigation very impractical.

19. The presence of Class I, II, and even III rapids on the Gila did not preclude navigation, but did make it more difficult for historic boaters to navigate the River safely, particularly with heavy cargo.

20. In addition to rapids, sandbars, rock outcroppings, beaver dams, marshes, and strainers are ordinary and natural conditions that existed in various parts of the River at the time of statehood. Each of these conditions made commercial navigation more difficult and less practicable.

21. Moderm canoes and kayaks made of Kevlar, Hypalon, fiberglass, and other modern materials are meaningfully different from the boats customarily used for trade and travel at statehood.

22. The fact that a skilled kayaker in a modern plastic or inflatable craft can float, bump, and scrape down a shallow stream does not make it navigable. If that were the case, modern recreational boating enthusiasts have demonstrated that nearly every stream in the United States is navigable for

title purposes. A commercial boater or traveler at the time of statehood would have far greater concern for crashing, wrecking, or swamping their boats and damaging or losing their valuable cargo or customers. This explains the dearth of boating in the Gila's history until the later twentieth century when plastic boats were introduced.

23. Historical records indicate that prior to and at the time of Arizona's statehood the Gila River was considered not navigable by virtually every contemporaneous observer.

24. Historically, the Gila River was highly erratic, subject to flooding and major channel changes, and blocked by obstacles.

25. Occasional use in exceptional times does not support a finding of navigability.

B. Conclusions of Law

1. Despite a well-presented case, Proponents failed to show by a preponderance of evidence that Segment 8, or any other segment, was navigable or susceptible to navigation at the time of statehood under ordinary and natural conditions.

2. With respect to Segment 8, the evidence regarding navigability and nonnavigability is evenly weighted; accordingly, Proponents have failed to meet their burden and the Commission must find in favor of nonnavigability.

3. The Commission concludes, as a matter of law, that the Gila was not, in its ordinary and natural condition at the time of statehood, susceptible to being used as a "highway for commerce."

4. Based on all the new and old Evidence in the Record, the Commission finds

that Proponents have not met their burden of showing by a preponderance of evidence that any segment of the Gila River was 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.

5. Accordingly, based on all of the Evidence in the Record (both old and new) and the Commission's review of the applicable law, including the principles addressed in *Winkleman* and *PPL Montana*, the Commission finds, as a matter of law and fact, that on February 14, 1912, no segment of the Gila River 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. Thus, it is not and was not "navigable" as defined by A.R.S. § 37-1101(5), and federal case law. The Commission further finds that all notices of these hearings and proceedings were properly and timely given.

6. In view of the foregoing, the Commission, pursuant to A.R.S. § 37-1128(A), finds and determines that the Gila River in Greenlee, Graham, Gila, Pinal, Maricopa, and Yuma Counties, Arizona, was not navigable as of February 14, 1912.

VII. DISSENTING OPINION BY COMMISSIONER BILL ALLEN

I concur with the Commission's decision as to Segments 1-7 of the Gila River, but respectfully dissent from their decision with respect to Segment 8. I believe that, based upon the history of Segment 8, this segment meets the test for navigability.

A. Legal Standard for Navigability

The proponents of navigability need only establish by a preponderance of evidence that the segment in question was navigable or susceptible to navigation in the Gila's ordinary and natural condition. *See State ex rel. Winkleman v. Arizona Navigable Stream Adjudication Comm'n*, 224 Ariz. 230, 236, 229 P.3d 242, 248 (App. 2010).

The test for navigability for title purposes is a federal test that has its origin in *The Daniel Ball*, 77 U.S. (10 Wall.) 557 (1870), a case that is paraphrased in Arizona statutory law:

> "Navigable" or "navigable watercourse" means a watercourse that was in existence on February 14, 1912, and at that time was 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.

A.R.S. § 37-1101(5).

"It is not the size of the articles transported in commerce that establishes the navigable character of a waterway. Navigability depends upon the stream's usefulness as a transportation mechanism for commerce." *Puget Sound Power & Light Co. v. Fed. Energy Regulatory Comm'n*, 644 F.2d 785, 789 (9th Cir. 1981) (even use of canoes can establish navigability).

Essentially, the test requires a determination of whether a river in its ordinary and natural condition was used or susceptible to being used as a highway for commerce. *PPL Montana LLC v. Montana*, 132 S.Ct. 1215, 1228 (2012); *Winkleman*, 224 Ariz. at 239, 229 P.3d at 251. The ordinary condition of the river is the usual condition of the river absent major flooding or drought; the natural condition of the river is the river untouched by civilization, absent man-made dams, canals, and other diversions. *Winkleman*, 224 Ariz. at 241, 229 P.3d at 253. On the Salt River, the court found that it was in a natural condition after the Native American diversions had ceased to affect the river and prior to

modern-era settlement and farming in the Salt River Valley that diverted water. *Id.* at 242, 229 P.3d at 254.

While the Gila did not have significant Native American diversions, modern-era diversions began significantly depleting the Gila's flows in the late 1860's/early 1870's. Some portions of the Gila are boated today; it follows that these segments would be even easier to boat in the Gila's natural condition with more water.

B. Historical Descriptions and Boating Accounts Show that Segment 8 Was Navigable and Susceptible to Navigation in its Ordinary and Natural Condition

The Evidence in the Record demonstrates that the River's physical characteristics in Segment 8 such as its depth and channel could have supported navigation. *See* Tr. 6/16/14 at 61 (Fuller) (width is not a limiting factor if the river is deep enough); Tr. 6/16/14 at 105 (Fuller); *see Utah v. United States*, 403 U.S. 9, 12 (1971) (noting that the special master's report relied on Great Salt Lake's depth in finding that lake was physically capable of being navigated). Even putting aside Mr. Hjalmarson's streamflow estimates, the historical descriptions in the Record demonstrate by a preponderance of the evidence that the River in Segment 8 was deep enough to support navigation. For example, in the late-16th century, Coronado referred to the River near the San Pedro Valley as a "deep and reedy stream." Tr. 6/16/14 at 176. Members of the Juan Bautista de Escalante party of 1697 found the River in this Segment to be so deep that they had to swim across to examine Hohokam buildings on the other side. ASLD Lower Gila, at IV-1. In 1825, James Ohio Pattie described the River as "beautiful, running between banks covered with tall cottonwoods and willows." Fuller/Gila, at 80; Tr. 6/16/14 at 177 (Fuller).

In 1846, Henry Smith Turner noted in his journal that the Gila River about eighty

miles west of Gila Bend had attained a width of between 100-150 yards and was on average four feet deep, "quite depth enough to float a steamboat." EIN x002, Douglas R. Littlefield, Ph.D., *Revised and Updated Report: Assessment of the Navigability of the Gila River Between the Mouth of the Salt River and the Confluence with the Colorado River Prior to and on the Date of Arizona's Statehood, February 14, 1912* (Nov. 12, 2013) ("Littlefield Revised Report"), at 95. Consistent with this description, the River was then reportedly 60-80 yards wide and three feet deep at Gila Bend, and in 1846-48 it measured 150 yards wide and three- to four-feet deep. EIN x25, Hjalmar W. Hjalmarson, *Confidential Notes, The Ability to Navigate the Gila River Under Natural Conditions, Below the Confluence with the Salt River to the Mouth at Yuma, Arizona* ("Hjalmarson Notes"), at 47. In 1849, the Forty-Niners described the River near the confluence with the Salt as deep, narrow with a rapid stream. Tr. 6/16/14 at 179 (Fuller).

Moreover, the River in Segment 8 could support, and did in fact support, many of the types of commercial uses that occurred at statehood. *See* Fuller/Boating, at 6 (typical travel and trade uses in 1912). For example, there is evidence of people sending wood down the Gila below Dome on a raft. Tr. 6/16/14 at 201 (Fuller); Fuller/Gila, at 113. There is also evidence of steamboats running up to Dome, Tr. 6/16/14 at 188 (Fuller), and of Pattie making eight dugout canoes and using them to carry furs from Safford to Yuma. *Id.* at 190. In 1846, the Mormon Battalion lashed two wagons to cottonwood logs and used the modified wagons to float supplies down the Gila to Yuma, where the boats arrived before the ground troops. *Id.* at 192-93. A few years later, in 1849, the Howard family took a 16 x 5.5 wooden boat from Pima Villages to Yuma. *Id.* at 194. And many Forty-Niners reportedly used small boats to travel to Yuma. *Id.* at 195.

There are also several reports of people boating from Phoenix to Yuma in the late 1800s. Specifically, Hamilton, Jordan, and Halesworth boated from Phoenix to Yuma in January 1879 in a homemade skiff, and later suggested that the River could be used to

transport produce from Phoenix to Yuma. *Id.* at 195-96. Another trip, later reported in 1945, was made by Stanley Sykes and Charlie McLean sometime in the winter during the 1890s. *Id.* at 197-98. They reported taking a canvas boat from Phoenix to Yuma and, while they encountered some difficulties during the trip, they reported that once they got past the dam, they made good time to Yuma. *Id.* In April 1891, the *Tombstone Epitaph* reported that two men had boated the entire Gila River from the New Mexico highlands down to Yuma in a homemade boat, hunting and trapping all the way. *Id.* The *Arizona Sentinel* similarly reported that the Day brothers took a "very profitable" trip down the Gila from Camp Verde to Yuma in 1891-92, trapping beaver and otter along the way. *Id.* at 199. A few years later, in 1896, Lieutenants Gully and Richardson traveled in a homemade wooden boat from Pima Villages to Yuma. *Id.* at 200-01. The only trouble that these travelers reported was with hostile Indians. *Id.*

The River also supported personal uses that demonstrate Segment 8's susceptibility to commercial navigation. *See, e.g.*, ASLD Lower Gila Report, at IV-2 to IV-14; x019, at 16 (recreational travel); x004-15 (recreational travel but could use for travel); x021, at 11 (recreational travel); x020-79, Fuller/Gila, at 107 (recreational travel); x004-62 (recreational travel); x019, at 15 (recreational boating). The majority glosses over these personal accounts of successful boating, but personal or private use of boats may be used to show the availability of the stream for commercial navigation. *See PPL*, 132 S.Ct. at 1233 ("[P]ersonal or private use by boats demonstrates the availability of the stream for the simpler types of commercial navigation." (internal citation omitted)). This is particularly so here, where there is evidence of commercial navigation as well.

As the State's expert, Jon Fuller summarized:

> So my conclusion is dominantly the historical boating accounts are accounts of successful boating.
>
> On the Gila River, what kinds of - types of boating were they doing? What

> kind of trade and travel were they doing? We have accounts of people hauling good, carrying passengers, doing exploration, military use, ferries, fishing, trapping, hunting, survey, and travel; and the boats that they were done in, dominantly, as I said earlier, in small, low draft boats dominantly in the downstream direction.
>
> These are the segments in which these historical accounts occurred, most of them in Segment 8. But some kind of account in every segment.

Tr. 6/16/14 at 210-11 (Fuller).

C. Weight of the Evidence

In my view, the accounts of historical boating demonstrate that the Gila was navigable near its mouth in Segment 8. Because I feel that the evidence of historical boating in this Segment should be afforded greater weight in the determination of navigability, I cannot concur with the opinion of the other Commissioners as to this segment.

NOW, THEREFORE, the Commission, pursuant to A.R.S. § 37-1128(A), finds and determines that the Gila River from the New Mexico border to the confluence with the Colorado River, was not navigable for purposes of title as of February 14, 1912.

VIII. ADOPTION AND RATIFICATION

The Commission, having considered all of the historical and scientific data and information, documents and other evidence, including the oral and written presentations made by persons appearing at the public hearings and being fully advised in the premises, hereby adopts and ratifies this report containing its findings and determination regarding the Gila River.

DATED this 28th day of June, 2018.

Wade Noble, Chair

Jim Henness
Deceased, May 10, 2018

Jim Horton

Bill Allen

Commission Staff:

George Mehnert
Executive Director

Matthew L. Rojas
Counsel to the Commission

Exhibit A

Evidence Log

Hearing No. 03-007

Arizona Navigable Stream Adjudication Commission

Gila River

Graham County October 14, 2003, Greenlee County October 15, 2003, Pinal County March 9, 2004, Gila County November 15, 2004, Yuma County January 24, 2005, Maricopa County November 16 and 17, 2005.

Item Number	Received Date	Source to ANSAC	Description	Entry By
1	Pre Aug. 2001	Evidence on hand at prior to August 9, 2002	Four Volumes, I, II, III, IV, and the Criteria for Assessing Small & Minor Watercourses, 9/98 and the 3 County Pilot Study, 9/99.	George Mehnert
2	9/26/03	State Land Department	Draft Final Report by Jon Fuller. Upper Gila River Safford to the State Boundry and San Francisco River, Gila River Confluence to the State Boundry.	George Mehnert
3	10/14/03	Steve Wene	City of Safford's Opening Memorandum, provided at hearing, not as post hearing memorandum in usual sense so treated as evidence item.	George Mehnert
4	2/20/04	State Land Department	Draft Final Report by Jon Fuller-Gila River: Colorado River Confluence to the Town of Safford.	George Mehnert
5	3/9/04	Alan Gookin	Presentation to Arizona Stream and Navigability Commission.	George Mehnert
6	6/2004	Mark McGinnis	Geomorphic Character of the Lower Gila River by Stanley A. Schumm.	George Mehnert
7	5/24/04	Noel Fitzgerald	Letter.	George Mehnert
8	6/15/2004	Chuck Kranz	Letter.	George Mehnert
9	7/11/04	Nancy Orr	Letter.	George Mehnert
10	7/14/04	Coby Muckelroy	Letter.	George Mehnert
11	6/23/04	Jeanne Keller	Letter.	George Mehnert

Evidence Log

Hearing No. 03-007

Arizona Navigable Stream Adjudication Commission

Gila River
Continuation Page

Item Number	Received Date	Source to ANSAC	Description	Entry By
12	11/2005	Mark McGinnis	Assessment of the Navigability of the Gila River Between the Mouth of the Salt River and the Confluence with the Colorado River Prior to and on the Date of Arizona's Statehood, February 14, 1912, by Douglas R. Littlefield.	George Mehnert
13	11/14/05	Mark McGinnis	Faustball Tunnel Article by John Hammond Moore.	George Mehnert
14	11/16/05	Helm & Kyle	Land Surveys and Instructions and other documentation relating to Land Surveys, and affidavit of Vince Murray relating to Land Surveys.	George Mehnert
15	11/16/05	Alan Gookin	Presentation to the Arizona Stream and Navigability Commission, and other documents including Hydrologic History of the Gila River Indian Reservation.	George Mehnert
16	11/16/05	Barbara Tellman for the State Land Department	Papers submitted with testimony.	George Mehnert
17	11/16/05	Jack August	Expert Witness Report.	George Mehnert
18	11/16/05	Rebecca Goldberg	Accounts of Historical Gila River Boating	George Mehnert
19	11/16/05	Helm & Kyle	Deposition of Douglas R. Littlefield, May 25, 2001.	George Mehnert
20	11/16/05	Jon Fuller	Power Point Presentation, copies of slides used by Jon Fuller in testimony.	George Mehnert
21	11/17/05	Helm & Kyle	Power Point Presentation by D. C. Jackson.	George Mehnert
22	11/17/05	Mark McGinnis	Deposition of Donald C. Jackson January 15, 2003.	George Mehnert

Evidence Log

Hearing No. 03-007

Arizona Navigable Stream Adjudication Commission

Gila River

Continuation Page

Item Number	Received Date	Source to ANSAC	Description	Entry By
23	11/17/05	Helm & Kyle	Navigability along the natural channel of the Gila River, including PowerPoint slides, by Hjalmar W. Hjalmarson.	George Mehnert
24	11/17/05	Mark McGinnis	Deposition of Hjalmar W. Hjalmarson January 16, 2003.	George Mehnert
25	11/17/05	Mark McGinnis	Confidential Notes-The Ability to Navigate the Gila River under natural conditions below the confluence with the Salt River to the mouth at Yuma, Arizona by Hjalmar W. Hjalmarson.	George Mehnert
26	11/17/05	John Helm	Single Page #377 Forty-Fourth Congr4ess, Session II, Ch. 107, 108, An act to provide for the sale of desert lands in certain States and Territories.	George Mehnert
27	5/1/04	Candace Hughes	Letter. Filed in other County and added here out of chronological received date order.	George Mehnert
28	4/1/03	Mark McGinnis	Information Regarding Navigability of Selected U.S. Watercourses. Exhibit #25 to Lower Salt River Report.	George Mehnert

Exhibit B

NOTICE OF PUBLIC HEARING
Hearing Date: June 16-20, 2014
State of Arizona
Navigable Stream Adjudication Commission
Pursuant to A.R.S. § 37-1126, notice is hereby given that the Navigable Stream Adjudication Commission will hold a public hearing to receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the time of the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in State v. Arizona Navigable Stream Adjudication Comm'n, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in PPL Montana, LLC v. Montana, 556 U.S. ___, 132 S.Ct. 1215 (2012).
The hearing will begin at 9:00 a.m. at the Arizona State Senate Building, Hearing Room Number 1, 1700 West Washington St., Phoenix, AZ 85007. This is the continuation of a hearing that was held at 9:00 a.m. at the Gila County Board of Supervisors Board Room, 1400 E. Ash Street, Globe, Arizona 85501, on April 24, 2014.
Interested parties may submit evidence to the commission office prior to the hearing. During the public hearing, the commission will receive additional evidence including testimony. The commission will conduct its hearing informally without adherence to judicial rules of procedure or evidence.
Evidence submitted in advance of the hearing will be available for public inspection during regular commission hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except on holidays. The commission office is located at 1700 West Washington Street, Room B-54, Phoenix, AZ 85007. Please call first to review evidence at (602) 542-9214.
Individuals with disabilities who need reasonable accommodation to communicate evidence to the commission or who require this information in an alternate format may contact the commission office at (602) 542-9214 to make their needs known.
George Mehnert, Executive Director
May 8, 2014
Pub: May 14, 2014

AFFIDAVIT OF PUBLICATION

THE ARIZONA REPUBLIC

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

Tabitha Weaver, being first duly sworn, upon oath deposes and says: That she is a Sr. legal advertising representative of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

The Arizona Republic

May 14, 2014

Sworn to before me this
14th day of
May A.D. 2014

MELISSA HOEKSTRA
Notary Public - Arizona
Maricopa County
My Comm. Expires Aug 1, 2014

Notary Public

Affidavit of Publication

State of Arizona
County of Gila

Marc Marin, or his authorized representative being first duly sworn deposes and says: That he is the Publisher of the Arizona Silver Belt and the San Carlos Apache Moccasin newspapers, located at 298 North Pine Street, Globe, Arizona 85501, or mail: P.O. Box 31, Globe, Arizona 85502.

The above stated newspapers are published weekly in Globe, in the State of Arizona, County of Gila and that the following described __√_legal, or ___ advertising was duly published.

NOTICE OF PUBLIC HEARING
Hearing Date: June 16-20, 2014
State of Arizona
Navigable Stream Adjudication Commission
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A printed copy of said legal or advertising is attached hereto and was published in a regular weekly edition of said newspaper (and not a supplement thereof) for 1 consecutive weeks in the __√_ Arizona Silver Belt newspaper, and/or the __√__ San Carlos Apache Moccasin newspaper. The dates of publication being as follows, to wit:

May 14, 2014

Marc Marin
Publisher

State of Arizona)
) ss:
County of Gila)

The foregoing instrument was acknowledged before me **May 14, 2014**, by Marc Marin.

Notary Public

BETHEL JEAN BAKER
Notary Public - State of Arizona
GILA COUNTY
My Commission Expires
December 31, 2015

My Commission Expires:
December 31, 2015

NOTICE OF PUBLIC HEARING
Hearing Date: June 16-20, 2014
State of Arizona
Navigable Stream Adjudication Commission
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George Mehnert, Executive Director.
May 8, 2014
One Pub: 5-14-2014 Belt 9079

AFFP
GILARIVERPLUXHEARING

Affidavit of Publication

STATE OF ARIZONA }
COUNTY OF YUMA } SS

Joni Brooks or Kathy White, being duly sworn, says:

That she is Publisher or Business Manager of the Yuma Sun, a daily newspaper of general circulation, printed and published in Yuma, Yuma County, Arizona; that the publication, a copy of which is attached hereto, was published in the said newspaper on the following dates:

May 14, 2014

That said newspaper was regularly issued and circulated on those dates.
SIGNED:

Publisher or Business Manager

Subscribed to and sworn to me this 14th day of May 2014.

G. KAY PAIZ
Notary Public - State of Arizona
YUMA COUNTY
My Commission Expires
August 1, 2017

G. Kay Paiz, Notary, Yuma County, Arizona

My commission expires: August 01, 2017

00005316 00031007

LEGAL PUBLICATIONS
MK CONSULTANTS, INC
ONE DEER VALLEY RD, STE# 103
PHOENIX, AZ 85027

NOTICE OF PUBLIC HEARING
Hearing Date:
June 16-20, 2014
State of Arizona
Navigable Stream Adjudication Commission

Pursuant to A.R.S. § 37-1126, notice is hereby given that the Navigable Stream Adjudication Commission will hold a public hearing to receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the time of the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in State v. Arizona Navigable Stream Adjudication Comm'n, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in PPL Montana, LLC v. Montana, 556 U.S. ___, 132 S.Ct. 1215 (2012).

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George Mehnert,
Executive Director.
May 8, 2014
Daily May 14, 2014 - 00031007

Affidavit of Publication

Payson Roundup

STATE OF ARIZONA 10070160

COUNTY OF GILA 5/16/2014

I, Paula VanBuskirk, do solemnly swear that I am Assistant Bookkeeper of the Payson Roundup, that the same is a newspaper printed, in whole or in part, and published in the COUNTY OF GILA, State of Arizona, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said COUNTY OF GILA for a period of more than fifty-two weeks prior to the first publication of the annexed legal notice or advertisement; that said newspaper has been admitted to the United States mails as second-class matter under the provisions of the Act of March 3, 1879, or any amendments thereof, and that said newspaper is a newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Arizona. That the annexed legal notice or advertisement was published in the regular and entire issue of every number of said daily newspaper for the period of 1.00 consecutive insertions; and that the first publication of said notice was in the issue of said newspaper dated May 16 A.D., 2014, and that the last publication of said notice was in the issue of said newspaper dated May 16 A.D., 2014. In witness whereof I have hereunto set my hand this May 16 A.D., 2014.

Paula VanBuskirk

Subscribed and sworn to before me, a Notary Public in and for the COUNTY OF GILA, State of Arizona May 16 A.D., 2014.

Julie Lynn Williams, Notary Public

OFFICIAL SEAL
JULIE LYNN WILLIAMS
Notary Public - State of Arizona
GILA COUNTY
My Comm. Expires March 29, 2015

15361: 5/16/2014
NOTICE OF PUBLIC HEARING
Hearing Date: June 16-20, 2014
State of Arizona
Navigable Stream Adjudication Commission

Pursuant to A.R.S. § 37-1126, notice is hereby given that the Navigable Stream Adjudication Commission will hold a public hearing to receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the time of the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in State v. Arizona Navigable Stream Adjudication Comm'n, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in PPL Montana, LLC v. Montana, 556 U.S. ___, 132 S.Ct. 1215 (2012).

The hearing will begin at 9:00 a.m. at the Arizona State Senate Building, Hearing Room Number 1, 1700 West Washington St., Phoenix, AZ 85007. This is the continuation of a hearing that was held at 9:00 a.m. at the Gila County Board of Supervisors Board Room, 1400 E. Ash Street, Globe, Arizona 85501, on April 24, 2014.

Interested parties may submit evidence to the commission office prior to the hearing. During the public hearing, the commission will receive additional evidence including testimony. The commission will conduct its hearing informally without adherence to judicial rules of procedure or evidence.

Evidence submitted in advance of the hearing will be available for public inspection during regular commission hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except on holidays. The commission office is located at 1700 West Washington Street, Room B-54, Phoenix, AZ 85007. Please call first to review evidence at (602) 542-9214.

Individuals with disabilities who need reasonable accommodation to communicate evidence to the commission or who require this information in an alternate format may contact the commission office at (602) 542-9214 to make their needs known.

George Mehnert, Executive Director.
May 8, 2014

STATE OF ARIZONA
} ss.
COUNTY OF PINAL

NOTICE OF PUBLIC HEARING
Hearing Date: June 16-20, 2014
State of Arizona
Navigable Stream Adjudication Commission

Pursuant to A.R.S. § 37-1126, notice is hereby given that the Navigable Stream Adjudication Commission will hold a public hearing to receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the time of the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in State v. Arizona Navigable Stream Adjudication Comm'n, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in PPL Montana, LLC v. Montana, 556 U.S. ___, 132 S.Ct. 1215 (2012).

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Interested parties may submit evidence to the commission office prior to the hearing. During the public hearing, the commission will receive additional evidence including testimony. The commission will conduct its hearing informally without adherence to judicial rules of procedure or evidence.

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Individuals with disabilities who need reasonable accommodation to communicate evidence to the commission or who require this information in an alternate format may contact the commission office at (602) 542-9214 to make their needs known.

George Mehnert, Executive Director.
May 8, 2014
5/14/14
CNS-2621497#
CASA GRANDE DISPATCH

Affidavit of Publication

RUTH A. KRAMER first being duly sworn deposes and says: That he/she is a native born citizen of the United States of America, over 21 years of age, that I am an agent and/or publisher of the Casa Grande Dispatch, a daily newspaper published at Casa Grande, Pinal County, Arizona, Tuesday through Sunday of each week; that a notice, a full, true and complete printed copy of which is hereunto attached, was printed in the regular edition of said newspaper, and not in a supplement thereto, for ONE issues the first publication thereof having been on the

14TH day of MAY A.D., 2014

Second publication _____

Third publication _____

Fourth publication _____

Fifth publication _____

Sixth publication _____

CASA GRANDE DISPATCH

By _____
agent and/or publisher of the Casa Grande Dispatch

Sworn to before me this 19th day of May A.D. 2014

Debbie L. Mumme

Notary Public in and for the County of Pinal, State of Arizona

Official Seal
NOTARY PUBLIC, State of Arizona
County of Pinal
DEBBIE L. MUMME
My Comm. Expires 10-23-17

A000003431481

AFFIDAVIT OF PUBLICATION

STATE OF ARIZONA)
:ss.
COUNTY OF GREENLEE)

STEPHANIE JONES being first duly sworn, deposes and says: That (he) (she) is the Agent to the Publisher of the COPPER ERA newspaper printed and published weekly in the County of Greenlee, State of Arizona, and of general circulation in the city of Clifton, County of Greenlee, State of Arizona and elsewhere, and the hereto attached

MK CONSULTANTS
NOTICE
GILA RIVER

was printed and published correctly in the regular and entire issue of said THE COPPER ERA for 1 issues, that the first was made on the 21st day of MAY 20 14 and the last publication thereof was made on the 21st day of MAY 20 14 that said publication was made on each of the following dates, to wit:

05/21/14

Request of MK CONSULTANTS INC

THE COPPER ERA
By Stephanie Jones

Subscribed sworn to before me this 21st day of MAY 20 14

OFFICIAL SEAL
MONICA L. WATSON
NOTARY PUBLIC - State of Arizona
GRAHAM COUNTY
My Comm. Expires Mar. 11, 2014

Notary Public in and for the County of Graham, State of Arizona

My Commission Expires: Mar. 11, 2014

NOTICE OF PUBLIC HEARING

Hearing Date: June 16-20, 2014
State of Arizona
Navigable Stream Adjudication Commission

Pursuant to A.R.S. § 37-1126, notice is hereby given that the Navigable Stream Adjudication Commission will hold a public hearing to receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the time of the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in *State v. Arizona Navigable Stream Adjudication Comm'n*, 224 Ariz. 230, 229 P3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in *PPL Montana, LLC v. Montana*, 556 U.S. ___, 132 S.Ct. 1215 (2012).

The hearing will begin at 9:00 a.m. at the Arizona State Senate Building, Hearing Room Number 1, 1700 West Washington St, Phoenix, AZ 85007. This is the continuation of a hearing that was held at 9:00 a.m. at the Gila County Board of Supervisors Board Room, 1400 E. Ash Street, Globe, Arizona 85501, on April 24, 2014.

Interested parties may submit evidence to the commission office prior to the hearing. During the public hearing, the commission will receive additional evidence including testimony. The commission will conduct its hearing informally without adherence to judicial rules of procedure or evidence.

Evidence submitted in advance of the hearing will be available for public inspection during regular commission hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except on holidays. The commission office is located at 1700 West Washington Street, Room B-54, Phoenix, AZ 85007. Please call first to review evidence at (602) 542-9214.

Individuals with disabilities who need reasonable accommodation to communicate evidence to the commission or who require this information in an alternate format may contact the commission office at (602) 542-9214 to make their needs known.

George Mehnert,
Executive Director,
May 8, 2014

Req.: MK Consultants, Inc.
Published: May 21, 2014, in the Copper Era, Clifton, Arizona 85533.

AFFIDAVIT OF PUBLICATION

STATE OF ARIZONA)
:ss.
COUNTY OF GRAHAM)

STEPHANIE JONES being first duly sworn, deposes and says: That (he) (she) is the Agent to the Publisher of the EASTERN ARIZONA COURIER newspaper printed and published bi-weekly in the County of Graham, State of Arizona, and of general circulation in the city of Safford, County of Graham, State of Arizona and elsewhere, and the hereto attached

MK CONSULTANTS, INC
PUBLIC NOTICE
GILA RIVER

was printed and published correctly in the regular and entire issue of said EASTERN ARIZONA COURIER for 1 issues, that the first was made on the 17th day of MAY 2014 and the last publication thereof was made on the 17th day of MAY 2014 that said publication was made on each of the following dates, to wit:
05/17/14

Request of MK CONSULTANTS INC

EASTERN ARIZONA COURIER

By Stephanie Jones

Subscribed sworn to before me this 17th day of MAY 2014

Notary Public in and for the County of Graham, State of Arizona

My Commission Expires: Dec. 11, 2014

OFFICIAL SEAL
MARIA L. WATSON
Notary Public - State of Arizona
GRAHAM COUNTY
My Comm. Exp. Dec. 11, 2014

NOTICE OF PUBLIC HEARING
Hearing Date: June 16-20, 2014
State of Arizona
Navigable Stream Adjudication Commission

Pursuant to A.R.S. § 37-1126, notice is hereby given that the Navigable Stream Adjudication Commission will hold a public hearing to receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the time of the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in *State v. Arizona Navigable Stream Adjudication Comm'n*, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in *PPL Montana, LLC v. Montana*, 556 U.S. ___, 132 S.Ct. 1215 (2012).

The hearing will begin at 9:00 a.m. at the Arizona State Senate Building, Hearing Room Number 1, 1700 West Washington St. Phoenix, AZ 85007. This is the continuation of a hearing that was held at 9:00 a.m. at the Gila County Board of Supervisors Board Room, 1400 E. Ash Street, Globe, Arizona 85501, on April 24, 2014.

Interested parties may submit evidence to the commission office prior to the hearing. During the public hearing, the commission will receive additional evidence including testimony. The commission will conduct its hearing informally without adherence to judicial rules of procedure or evidence.

Evidence submitted in advance of the hearing will be available for public inspection during regular commission hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except on holidays. The commission office is located at 1700 West Washington Street, Room B-54, Phoenix, AZ 85007. Please call first to review evidence at (602) 542-9214.

Individuals with disabilities who need reasonable accommodation to communicate evidence to the commission or who require this information in an alternate format may contact the commission office at (602) 542-9214 to make their needs known.

George Mehnert,
Executive Director.
May 8, 2014

Req.: MK Consultants, Inc.
Published: May 17, 2014, in the Eastern Arizona Courier, Safford, Arizona 85546.

Affidavit of Publication

Payson Roundup

STATE OF ARIZONA 10071173

COUNTY OF GILA 7/15/2014

I, Paula VanBuskirk, do solemnly swear that I am Assistant Bookkeeper of the Payson Roundup, that the same is a newspaper printed, in whole or in part, and published in the COUNTY OF GILA, State of Arizona, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said COUNTY OF GILA for a period of more than fifty-two weeks prior to the first publication of the annexed legal notice or advertisement; that said newspaper has been admitted to the United States mails as second-class matter under the provisions of the Act of March 3, 1879, or any amendments thereof, and that said newspaper is a newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Arizona. That the annexed legal notice or advertisement was published in the regular and entire issue of every number of said daily newspaper for the period of 1.00 consecutive insertions; and that the first publication of said notice was in the issue of said newspaper dated July 15 A.D., 2014, and that the last publication of said notice was in the issue of said newspaper dated July 15 A.D., 2014. In witness whereof I have hereunto set my hand this July 15 A.D., 2014.

Paula VanBuskirk

Subscribed and sworn to before me, a Notary Public in and for the COUNTY OF GILA, State of Arizona July 15 A.D., 2014.

Julie Lynn Williams, Notary Public

OFFICIAL SEAL
JULIE LYNN WILLIAMS
Notary Public - State of Arizona
GILA COUNTY
My Comm. Expires March 29, 2015

15440: 7/15/2014
NOTICE OF PUBLIC HEARING
Hearing Dates: August 18-21, 2014 and August 29, 2014
State of Arizona
Navigable Stream Adjudication Commission

Pursuant to A.R.S. § 37-1126, notice is hereby given that the Navigable Stream Adjudication Commission ("Commission") will hold a public hearing to receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the time of the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in State v. Arizona Navigable Stream Adjudication Comm'n, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in PPL Montana, LLC v. Montana, 556 U.S. ___, 132 S.Ct. 1215 (2012).

The hearing on August 18-21, 2014 will begin at 9:00 a.m. at the Arizona State Senate Building, Hearing Room Number 1, 1700 West Washington St., Phoenix, AZ 85007. This is the continuation of a hearing that was held June 16, 2014 to June 20, 2014. The hearing on August 29, 2014 will begin at 11:00 a.m. at 31 North Pinal Street, Building A, Florence, Arizona 85132.

Interested parties may submit evidence to the commission office prior to the hearing. During the public hearing, the Commission will receive additional evidence including testimony. The Commission will conduct its hearing informally without adherence to judicial rules of procedure or evidence.

Evidence submitted in advance of the hearing will be available for public inspection during regular Commission hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except on holidays. The Commission office is located at 1700 West Washington Street, Room B-54, Phoenix, AZ 85007. Please call first to review evidence at (602) 542-9214.

Individuals with disabilities who need reasonable accommodation to communicate evidence to the Commission or who require this information in an alternate format may contact the Commission office at (602) 542-9214 to make their needs known.

George Mehnert, Executive Director.
July 8, 2014

AFFP
Gila River

Affidavit of Publication

STATE OF ARIZONA }
COUNTY OF YUMA } SS

Joni Brooks or Kathy White, being duly sworn, says:

That she is Publisher or Business Manager of the Yuma Sun, a daily newspaper of general circulation, printed and published in Yuma, Yuma County, Arizona; that the publication, a copy of which is attached hereto, was published in the said newspaper on the following dates:

July 16, 2014

That said newspaper was regularly issued and circulated on those dates.
SIGNED:

Publisher or Business Manager

Subscribed to and sworn to me this 16th day of July 2014.

Virgen P. Perez, Notary, Yuma County, Arizona

My commission expires: May 10, 2017

OFFICIAL SEAL
VIRGEN P. PEREZ
Commission # 1
Notary Public - State of Arizona
YUMA COUNTY
My Comm. Expires May 10, 2017

00005316 00035694

LEGAL PUBLICATIONS
MK CONSULTANTS, INC
ONE DEER VALLEY RD, STE# 103
PHOENIX, AZ 85027

NOTICE OF PUBLIC HEARING
Hearing Dates: August 18-21, 2014 and August 29, 2014
State of Arizona
Navigable Stream Adjudication Commission

Pursuant to A.R.S. § 37-1126, notice is hereby given that the Navigable Stream Adjudication Commission ("Commission") will hold a public hearing to receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the time of the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in State v. Arizona Navigable Stream Adjudication Comm'n, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in PPL Montana, LLC v. Montana, 556 U.S. ___, 132 S.Ct. 1215 (2012).

The hearing on August 18-21, 2014 will begin at 9:00 a.m. at the Arizona State Senate Building, Hearing Room Number 1, 1700 West Washington St., Phoenix, AZ 85007. This is the continuation of a hearing that was held June 16, 2014 to June 20, 2014. The hearing on August 29, 2014 will begin at 11:00 a.m. at 31 North Pinal Street, Building A, Florence, Arizona 85132.

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Individuals with disabilities who need reasonable accommodation to communicate evidence to the Commission or who require this information in an alternate format may contact the Commission office at (602) 542-9214 to make their needs known.

George Mehnert, Executive Director.
July 8, 2014
Daily July 16, 2014 - 00035694

Affidavit of Publication

STATE OF ARIZONA }
COUNTY OF PINAL } ss.

NOTICE OF PUBLIC HEARING
Hearing Dates: August 18-21, 2014
and August 29, 2014
State of Arizona
Navigable Stream Adjudication
Commission

Pursuant to A.R.S. § 37-1126, notice is hereby given that the Navigable Stream Adjudication Commission ("Commission") will hold a public hearing to receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the time of the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in State v. Arizona Navigable Stream Adjudication Comm'n, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in PPL Montana, LLC v. Montana, 556 U.S. ___ , 132 S.Ct. 1215 (2012).

The hearing on August 18-21, 2014 will begin at 9:00 a.m. at the Arizona State Senate Building, Hearing Room Number 1, 1700 West Washington St., Phoenix, AZ 85007. This is the continuation of a hearing that was held June 16, 2014 to June 20, 2014. The hearing on August 29, 2014 will begin at 11:00 a.m. at 31 North Pinal Street, Building A, Florence, Arizona 85132.

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Individuals with disabilities who need reasonable accommodation to communicate evidence to the Commission or who require this information in an alternate format may contact the Commission office at (602) 542-9214 to make their needs known.

George Mehnert, Executive Director.
July 8, 2014
7/16/14
CNS-2643666#
CASA GRANDE DISPATCH

RUTH A. KRAMER first being duly sworn deposes and says: That he/she is a native born citizen of the United States of America, over 21 years of age, that I am an agent and/or publisher of the Casa Grande Dispatch, a daily newspaper published at Casa Grande, Pinal County, Arizona, Tuesday through Sunday of each week; that a notice, a full, true and complete printed copy of which is hereunto attached, was printed in the regular edition of said newspaper, and not in a supplement thereto, for ONE issues the first publication thereof having been on the

16TH day of JULY A.D., 2014

Second publication _____

Third publication _____

Fourth publication _____

Fifth publication _____

Sixth publication _____

CASA GRANDE DISPATCH

By _____
agent and/or publisher of the Casa Grande Dispatch

Sworn to before me this 21st day of July A.D. 2014

Debbie L. Mumme

Notary Public in and for the County
of Pinal, State of Arizona

Official Seal
NOTARY PUBLIC, State of Arizona
County of Pinal
DEBBIE L. MUMME
My Comm. Expires 10-23-17

A000003491760

Affidavit of Publication

State of Arizona
County of Gila

Marc Marin, or his authorized representative being first duly sworn deposes and says: That he is the Publisher of the Arizona Silver Belt and the San Carlos Apache Moccasin newspapers, located at 298 North Pine Street, Globe, Arizona 85501, or mail: P.O. Box 31, Globe, Arizona 85502.

The above stated newspapers are published weekly in Globe, in the State of Arizona, County of Gila and that the following described __√_legal, or ___ advertising was duly published.

NOTICE OF PUBLIC HEARING

Hearing Dates: August 18-21, 2014 and August 29, 2014
State of Arizona
Navigable Stream Adjudication Commission
Pursuant to A.R.S. § 37-1126, notice is hereby given that the Navigable Stream Adjudication Commission ("Commission") will hold a public hearing to receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the time of the State of Arizona's admission to the United States on February 14, 1912; consistent with the Arizona Court of Appeals decision in *State v. Arizona Navigable Stream Adjudication Comm'n*, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in *PPL Montana, LLC v. Montena*, 556 U.S. ___, 132 S.Ct. 1215 (2012).

A printed copy of said legal or advertising is attached hereto and was published in a regular weekly edition of said newspaper (and not a supplement thereof) for 1 consecutive weeks in the __√_ Arizona Silver Belt newspaper, and/or the __√__ San Carlos Apache Moccasin newspaper. The dates of publication being as follows, to wit:

July 16, 2014

(s) By: Sherri Davis for
Marc Marin
Publisher

State of Arizona)
) ss:
County of Gila)

The foregoing instrument was acknowledged before me **July 17, 2014,** by Marc Marin.

Notary Public

BETHEL JEAN BAKER
Notary Public - State of Arizona
GILA COUNTY
My Commission Expires
December 31, 2015

My Commission Expires:
December 31, 2015

NOTICE OF PUBLIC HEARING

Hearing Dates: August 18-21, 2014 and August 29, 2014
State of Arizona
Navigable Stream Adjudication Commission
Pursuant to A.R.S. § 37-1126, notice is hereby given that the Navigable Stream Adjudication Commission ("Commission") will hold a public hearing to receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the time of the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in *State v. Arizona Navigable Stream Adjudication Comm'n*, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in *PPL Montana, LLC v. Montana*, 556 U.S. ___, 132 S.Ct. 1215 (2012).

The hearing on August 18-21, 2014 will begin at 9:00 a.m. at the Arizona State Senate Building, Hearing Room Number 1, 1700 West Washington St., Phoenix, AZ 85007. This is the continuation of a hearing that was held June 16, 2014 to June 20, 2014. The hearing on August 29, 2014 will begin at 11:00 a.m. at 31 North Pinal Street, Building A, Florence, Arizona 85132.

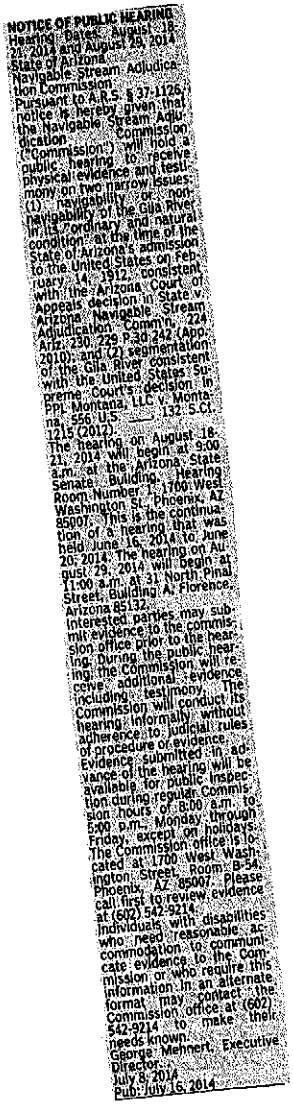
Interested parties may submit evidence to the commission office prior to the hearing. During the public hearing, the Commission will receive additional evidence including testimony. The Commission will conduct its hearing informally without adherence to judicial rules of procedure or evidence.

Evidence submitted in advance of the hearing will be available for public inspection during regular Commission hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except on holidays. The Commission office is located at 1700 West Washington Street, Room B-54, Phoenix, AZ 85007. Please call first to review evidence at (602) 542-9214.

Individuals with disabilities who need reasonable accommodation to communicate evidence to the Commission or who require this information in an alternate format may contact the Commission office at (602) 542-9214 to make their needs known.

George Mehnert,
Executive Director.
July 8, 2014
One Pub: 7-16-2014 Belt 9131

AFFIDAVIT OF PUBLICATION



NOTICE OF PUBLIC HEARING
Hearing Dates: August 18, 2014 and August 20, 2014
State of Arizona
Navigable Stream Adjudication Commission
Pursuant to A.R.S. § 37-1126, notice is hereby given that the Navigable Stream Adjudication Commission ("Commission") will hold a public hearing to receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the time of the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in State v. Arizona Navigable Stream Adjudication Comm'n, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in PPL Montana, LLC v. Montana, 566 U.S. ___, 132 S.Ct. 1215 (2012).
The hearing on August 18, 2014 will begin at 9:00 a.m. at the Arizona State Senate Building, Hearing Room Number 1, 1700 West Washington St. Phoenix, AZ 85007. This is the continuation of a hearing that was held June 16, 2014 to June 20, 2014. The hearing on August 29, 2014 will begin at 11:00 a.m. at 31 North Pinal Street, Building A, Florence, Arizona 85132.
Interested parties may submit evidence to the commission office prior to the hearing. During the public hearing the Commission will receive additional evidence including testimony. The Commission will conduct its hearing informally without adherence to judicial rules of procedure or evidence. Evidence submitted in advance of the hearing will be available for public inspection during regular Commission hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except on holidays. The Commission office is located at 1700 West Washington Street, Room B-54, Phoenix, AZ 85007. Please call first to review evidence at (602) 542-9214.
Individuals with disabilities who need reasonable accommodation to communicate evidence to the Commission or who require this information in an alternate format may contact the Commission office at (602) 542-9214 to make their needs known.
George Mehnert, Executive Director.
July 8, 2014
Pub: July 16, 2014

THE ARIZONA REPUBLIC

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

Brian Billings, being first duly sworn, upon oath deposes and says: That he is a legal advertising representative of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published in Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

The Arizona Republic

July 16, 2014

Sworn to before me this
16TH day of
July A.D. 2014

MANUEL VARGAS
Notary Public - State of Arizona
MARICOPA COUNTY
My Commission Expires
November 30, 2015

Notary Public

AFFIDAVIT OF PUBLICATION

STATE OF ARIZONA)
:ss.
COUNTY OF GREENLEE)

STEPHANIE JONES being first duly sworn, deposes and says: That (he) (she) is the Agent to the Publisher of the COPPER ERA newspaper printed and published weekly in the County of Greenlee, State of Arizona, and of general circulation in the city of Clifton, County of Greenlee, State of Arizona and elsewhere, and the hereto attached

MK CONSULTANTS
HEARING NOTICE
NAVIGABLE STREAM
ADJUDICATION
COMMISSION

was printed and published correctly in the regular and entire issue of said THE COPPER ERA for 1 issues, that the first was made on the 16th day of JULY 20 14 and the last publication thereof was made on the 16th day of JULY 20 14 that said publication was made on each of the following dates, to wit:

07/16/14

Request of MK CONSULTANTS INC

THE COPPER ERA

By Stephanie Jones

Subscribed sworn to before me this 16th day of JULY 20 14

Notary Public in and for the County of Graham, State of Arizona

My Commission Expires: Dec. 11, 2014

OFFICIAL SEAL
MONICA L. WATSON
NOTARY PUBLIC - State of Arizona
GRAHAM COUNTY
My Comm. Expires Dec 11, 2014

NOTICE OF PUBLIC HEARING
Hearing Dates: August 18-21, 2014 and August 29, 2014
State of Arizona
Navigable Stream Adjudication Commission

Pursuant to A.R.S. § 37-1126, notice is hereby given that the Navigable Stream Adjudication Commission ("Commission") will hold a public hearing to receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the time of the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in *State v. Arizona Navigable Stream Adjudication Comm'n*, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in *PPL Montana, LLC v. Montana*, 556 U.S. ___, 132 S.Ct. 1215 (2012).

The hearing on August 18-21, 2014 will begin at 9:00 a.m. at the Arizona State Senate Building, Hearing Room Number 1, 1700 West Washington St., Phoenix, AZ 85007. This is the continuation of a hearing that was held June 16, 2014 to June 20, 2014. The hearing on August 29, 2014 will begin at 11:00 a.m. at 31 North Final Street, Building A, Florence, Arizona 85132.

Interested parties may submit evidence to the commission office prior to the hearing. During the public hearing, the Commission will receive additional evidence including testimony. The Commission will conduct its hearing informally without adherence to judicial rules of procedure or evidence.

Evidence submitted in advance of the hearing will be available for public inspection during regular Commission hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except on holidays. The Commission office is located at 1700 West Washington Street, Room B-54, Phoenix, AZ 85007. Please call first to review evidence at (602) 542-9214.

Individuals with disabilities who need reasonable accommodation to communicate evidence to the Commission or who require this information in an alternate format may contact the Commission office at (602) 542-9214 to make their needs known.

George Mehnert, Executive Director, July 8, 2014.

Req. MK Consultants, Inc.
Published July 16, 2014, in the Copper Era, Clifton, AZ 85533

STATE OF ARIZONA)
:ss.
COUNTY OF GRAHAM)

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Req.: MK Consultants, Inc.
Published: July 16, 2014, in the Eastern Arizona Courier, Safford, Arizona 85546.

AFFIDAVIT OF PUBLICATION

STEPHANIE JONES being first duly sworn, deposes and says: That (he) (she) is the Agent to the Publisher of the EASTERN ARIZONA COURIER newspaper printed and published bi-weekly in the County of Graham, State of Arizona, and of general circulation in the city of Safford, County of Graham, State of Arizona and elsewhere, and the hereto attached

MK CONSULTANTS
HEARING NOTICE
NAVIGABLE STREAM
ADJUDICATION
COMMISSION

was printed and published correctly in the regular and entire issue of said EASTERN ARIZONA COURIER for 1 issues, that the first was made on the 16th day of JULY 2014 and the last publication thereof was made on the 16th day of JULY 2014 that said publication was made on each of the following dates, to wit:
07/16/14

Request of MK CONSULTANTS INC

EASTERN ARIZONA COURIER

By Stephanie Jones

Subscribed sworn to before me this 16th day of JULY 2014

OFFICIAL SEAL
MONICA L. WATSON
NOTARY PUBLIC - State of Arizona
GRAHAM COUNTY
My Comm. Expires Dec. 11, 2014

Monica L. Watson
Notary Public in and for the County of Graham, State of Arizona

My Commission Expires: Dec. 11, 2014

Exhibit C

Remand Case Evidence - Gila River

Item Number	Submitted By	Description	Link
X001	Freeport	Richard Burtell Curriculum Vitae	PDF
X002	SRP	Douglas R. Littlefield, Ph.D., Revised and Updated Report: Assessment of the Navigability of the Gila River Between the Mouth of the Salt River and the Confluence with the Colorado River Prior to and On the Date of Statehood, February 14, 1912 (Nov. 12, 2013)	PDF
X003	SRP	Robert A. Musetter, Ph.D., PE, Declaration Navigability of the Gila River Between the Arizona-New Mexico Stateline and the Confluence with the Colorado River (Jan. 8, 2014)	PDF
X004	ASLD	Kennebec Canoe Company, Dragonfly Canoe Works, http://dragonflycanoe.com/wood-canoe-identification-guide/kennebec-canoe-company/	PDF
X004	ASLD	Ariz. State Parks, Arizona Rivers & Streams Guide (1989) (excerpts)	PDF
X004	ASLD	Goode P. Davis, Man and Wildlife in Arizona: The American Exploration Period 1824-1865 (1982) (excerpts)	PDF
X004	ASLD	Tom Myers, Why James Whites Raft Trip Doesn't Float—At Least Through Grand Canyon, in Reflections of Grand Canyon Historians (Todd R. Berger ed. 2008)	PDF
X004	ASLD	Arizona's Riparian Wildlife Areas - Green Ribbons through the Desert, http://www.gorp.com/parksguide/gila-box-riparian-national-conservation-area-outdoor-pp2-guide-cid401719.html	PDF
X004	ASLD	Living Exposed, Paddling through the Gila Box National Conservation Area, Arizona, http://livingexposed.com/paddling-through-the-gila-box-national-conservation-area-arizona/	PDF
X004	ASLD	Herman Hoops, The History of Rubber Boats and How They Saved Rivers (2009)	PDF
X004	ASLD	Gaylord Staveley, 'Than The Man: The Life and Times of Nathaniel Galloway, in Reflections of Grand Canyon Historians (Todd R. Berger ed. 2008)	PDF
X004	ASLD	Brad Dimock, The Case for James White's Raft Trip Through Grand Canyon: The Story of White's Story, in Reflections of Grand Canyon Historians (Todd R. Berger ed. 2008)	PDF
X004	ASLD	Brad Dimock, The James White Debate, in Reflections of Grand Canyon Historians (Todd R. Berger ed. 2008)	PDF
X004	ASLD	Beef for Boys in Blue, Ariz. Republican (Feb. 12, 1905)	PDF
X004	ASLD	Territorial Topics, Ariz. Silver Belt (Apr. 3, 1886)	PDF
X004	ASLD	Local Intelligence, Ariz. Weekly Citizen (June 9, 1883)	PDF
X004	ASLD	S.F. Bulletin, The First Ferry Boat Used at Yuma, Ariz. Weekly Citizen (July 18, 1885)	PDF
X004	ASLD	Phoenix to Yuma by Water, Ariz. Sentinel (Jan. 25, 1879)	PDF

Remand Case Evidence - Gila River

Item Number	Submitted By	Description	Link
X004	ASLD	Ariz. Sentinel (June 12, 1901) (excerpt)	PDF
X004	ASLD	Early History, Ariz. Weekly Citizen (June 20, 1896)	PDF
X004	ASLD	A Model Prison, Los Angeles Herald (Mar. 28, 1897)	PDF
X004	ASLD	Letter from Camp Goodwin, 13 The Weekly Ariz. Miner (Apr. 10, 1869)	PDF
X004	ASLD	Down the Gila, Adventurous Trip of Two Men in a Boat, Tombstone Epitaph (Apr. 19, 1891)	PDF
X004	ASLD	From Thursday's Daily, Tombstone Epitaph (May 27, 1894) (excerpt)	PDF
X004	ASLD	Brad Dimock, If Boats Could Talk (2006) (excerpts)	PDF
X004	ASLD	B.W. Thomsen & J.J. Porcello, Predevelopment Hydrology of Salt River Indian Reservation (1991)	PDF
X004	ASLD	St. Nicholas, The Small Water Craft of the American's of Yesterday and Today, Nature and Science for Young Folks (May 1913)	PDF
X004	ASLD	Frank Donovan, Mountain Boats and Grasshoppers, in River Boats of America (Crowell ed. 1966) (excerpts)	PDF
X004	ASLD	W.G. Morrow, The "Mosquito Fleet", Overland Monthly (July 1892)	PDF
X004	ASLD	Scott Peters, Pouliot Boat Company	PDF
X004	ASLD	Richard A. Lingenfelter, Steamboats on the Colorado River 1852-1916 (1978) (excerpts)	PDF
X004	ASLD	A. William Masters, Outing With a Portable Equipment, American Homes & Garden (July 1911)	PDF
X004	ASLD	Brad Dimock, Sunk Without a Sound (2001) (excerpts)	PDF
X004	ASLD	Sears, Roebuck & Co. Catalogue No. 124 (1912) (excerpts)	PDF
X004	ASLD	Hunter Trader Trapper (excerpts from Dec. 1908-Mar. 1909)	PDF
X004	ASLD	Kay Muther, Paddle-wheelers appeared on the Colorado River in 1852, Wild West (Aug. 2004), reprinted in History Net (June 12, 2006)	PDF
X004	ASLD	Donal Hamilton Haines, A Back-Yard Wilderness, Outing (July 1915)	PDF
X004	ASLD	A.G. Holmes, Ducking Boats of Many Waters, Outing (Oct. 1901)	PDF
X004	ASLD	Dan Beard, How to Build a Cheap Boat, Outing (May 1905)	PDF
X004	ASLD	A Portable Folding Boat, 6 Manufacturer & Builder (July 1874)	PDF
X004	ASLD	How to Construct a Row-Boat, 7 Manufacturer & Builder (Aug. 1875)	PDF
X004	ASLD	William Draper Brinckle, Just a Boat, Country Life in America (July 1909)	PDF

Remand Case Evidence - Gila River

Item Number	Submitted By	Description	Link
X004	ASLD	W.E. Partridge, Rowboats and Boating, Country Life in America (June 1910)	PDF
X004	ASLD	W.P. Stephens, Sport in All Kinds of Water Craft, Country Life in America (Aug. 1908)	PDF
X004	ASLD	The Layman Pneumatic Sporting and Outing Boat, 72 Scientific American (May 1895)	PDF
X004	ASLD	Drawing of Colorado and Gila River Intersection, Huntington Library, Item No. V104/0017 (June 1854)	PDF
X004	ASLD	1897 Sears Roebuck & Co. Catalog 1895 Montgomery Ward & Co. Catalog	PDF
X004	ASLD	Boats in the Grand Canyon Collection	PDF
X004	ASLD	Arizona Wildlife: The Territorial Years 1863-1912 (David E. Brown ed. 2009) (excerpts)	PDF
X004	ASLD	A Quaker Forty-Niner: The Adventures of Charles Edward Pancoast on the American Frontier (Anna Paschall Hannum ed. 1930) (excerpts)	PDF
X004	ASLD	William K. Hartmann & Gayle Harrison Hartmann, Juan de la Asuncion, 1538: First Spanish Explorer of Arizona?, Ariz. State Museum (1970)	PDF
X004	ASLD	Hunter Trader Trapper (July 1912) (excerpts)	PDF
X004	ASLD	Hunter Trader Trapper (Oct. 1912) (excerpts)	PDF
X004	ASLD	King Folding Boat Company (May 16, 2013)	PDF
X004	ASLD	USGS, Largest Rivers in the US, Water Fact Sheet	PDF
X004	ASLD	Photo, Ferrying Gila River at Dome (Apr. 1, 1913)	PDF
X004	ASLD	David A. Weedman, Ariz. Game & Fish Dept., Salt & Verde River Fisheries Survey Trips & Related River Flows	PDF
X004	ASLD	Photos, Dry Creek Takeout on the Gila Box by Walt Carr (Don Farmer); Photos, Gila Box - River fences are back in place above and below Subia Ranch by Walt Carr (Don Farmer)	PDF
X004	ASLD	Fishing Now, Ariz. Republican (Apr. 10, 1908)	PDF
X004	ASLD	Fishing Now, Ariz. Republican (Apr. 12, 1908)	PDF
X004	ASLD	Fishing Now, Ariz. Republican (Apr. 11, 1908)	PDF
X004	ASLD	We Are Going Fishing Today--Are You?, Ariz. Republican (Apr. 28, 1906)	PDF
X004	ASLD	Whitewing Season is Setting in Early, Ariz. Republican (May 2, 1908)	PDF
X004	ASLD	Going Hunting or Fishing Today?, Ariz. Republican (Apr. 8, 1905)	PDF
X004	ASLD	Story of Boating Trip Across Desert Told by Local Oldtimer, Coconino Sun (Sept. 7, 1945)	PDF
X005	GRIC	GRIC Sources List	PDF

Remand Case Evidence - Gila River

Item Number	Submitted By	Description	Link
X006	Maricopa	Frank D. Robertson, A History of Yuma, Arizona, 1540-1920 (1942) (excerpt)	PDF
X006	Maricopa	US Dep't of Interior, The Colorado River (Mar. 1946) (excerpts)	PDF
X006	Maricopa	US Dep't of Interior, Report on Water Supply of the Lower Colorado River Basin (Nov.1952) (excerpts)	PDF
X006	Maricopa	Early American Occupation, Books of the Southwest (excerpts)	PDF
X006	Maricopa	N.H. Darton, Guidebook of Western United States (1933) (excerpts)	PDF
X006	Maricopa	Gordon A. Mueller & Paul C. Marsh, Lost, A Desert River and its Native Fishes: A Historical Perspective of the Lower Colorado River, 2 Information & Tech. Report (2002)	PDF
X006	Maricopa	Randolph B. Marcy, The Prairie Traveler (1859) (excerpt)	PDF
X006	Maricopa	The Personal Narrative of James O. Pattie of Kentucky (Timothy Flint ed. 1831)	PDF
X006	Maricopa	Win Hjalmarson, Various Citations to Boating, Channel Conditions, Channel Segmentation and Assessment of Navigability	PDF
X007	ASLD	A Long Journey, Ariz. Sentinel (Apr. 2, 1892)	PDF
X007	ASLD	Grand Canyon Historical Boat Drawings May 2013, including: Edith, Glen, and Stone	PDF
X007	ASLD	W.L. Minckley, Ph.D., Fishes and Aquatic Habitats of the Upper San Pedro River System, Arizona and Sonora (Mar. 1987)	PDF
X007	ASLD	Keith C. Wilbur, Dugout Canoes, Indian Handcrafts (Jan. 2001)	PDF
X007	ASLD	Jerry MacMullen, Paddle-Wheel Days in California (1944) (excerpts)	PDF
X008	Freeport	Declaration of Rich Burtell on the Non-Navigability of the Upper Gila River At and Prior to Statehood (May 2014)	PDF
X008	Freeport	Affidavit of Richard S. Lingenfelter (May 16, 2014)	PDF
X009	GRIC	T. Allen J. Gookin, Report on the Navigability of the Gila River	PDF
X010	San Carlos	F.M. Irish, Arizona (1907) (excerpts); ADOT, Ariz. Transportation History, Final Report 660 (Dec. 2011); W.H. Emory, Notes of a Military Reconnaissance from Fort Leavenworth, in Missouri to San Diego, in California, Including Part of the Arkansas, Del Norte, and Gila Rivers (1848) (excerpts)	PDF
X011	San Carlos	Collection of Historical Articles (Replaced by X014)	PDF
X012	ASLD	R.H. Forbes, Irrigation & Agricultural Practice in Arizona (June 30, 1911)	PDF
X012	ASLD	Howard Roberts Lamar, The Far Southwest 1846-1912, A Territorial History (1970) (excerpts)	PDF
X012	ASLD	ASLD, Map of Gila Salt and Verde Rivers	PDF

Remand Case Evidence - Gila River

Item Number	Submitted By	Description	Link
X012	ASLD	ASLD, Map of Gila River Segment 1 - New Mexico to Gila Box	PDF
X012	ASLD	ASLD, Map of Gila River Segment 2 - Gila Box	PDF
X012	ASLD	ASLD, Map of Gila River Segment 3 - Gila Box to San Carlos Reservoir	PDF
X012	ASLD	ASLD, Map of Gila River Segment 4 - San Carlos Canyon	PDF
X012	ASLD	ASLD, Map of Gila River Segment 5 - San Carlos Canyon to Ashurst-Hayden Dam	PDF
X012	ASLD	ASLD, Map of Gila River Segment 6 - Ashurst-Hayden Dam to Salt River Confluence	PDF
X012	ASLD	ASLD, Map of Gila River Segment 7 - Salt River Confluence to Dome	PDF
X012	ASLD	ASLD, Map of Gila River Segment 8 - Dome to Colorado	PDF
X012	ASLD	Declaration of David A. Weedman Regarding the Gila River (May 30, 2014)	PDF
X012	ASLD	Jon E. Fuller, Gila River Video	
X013	ASLD	Jonathan E. Fuller, Boating in Arizona ca. 1912 (2014)	PDF
X013	ASLD	Jonathan E. Fuller, Presentation to ANSAC: Gila River Navigability (2014)	PDF

Remand Case Evidence - Gila River

Item Number	Submitted By	Description	Link
X014	San Carlos	(Replaces X011) - Collection of 92 Historical News Paper Articles, including: 1,000 on Gila River Flee Flood Waters, New York Times (Oct. 22, 1972); A City Destroyed: The City of Yuma Wiped Out by Flood, The Manning Times (Mar. 11, 1891); A Storm Comparison: The Wet Season of 1884 and This Year's "Spell of Weather", Ariz. Silver Belt (Mar. 23, 1905); Ariz. Silver Belt (Jan. 11, 1890) (excerpt); Advertisements in Ariz. Weekly Citizen (Sept. 19, 1874); Affairs in Arizona - Terrible Times in the Territory Experience in Crossing the Deserts, New York Times (Oct. 5, 1861); An Arizona Cloud-Burst: Six Immense Rivers Come Down the Hills Under a Cloudless Sky, New York Times (Oct. 5, 1861); Annual Report of Gov. Sloan Shows Splendid Progress in Year: Mining Output in Arizona Continues Large, El Paso Herald (Dec. 9, 1911); Arizona Again Flood Victim, Heavy Rains Damage Bridges and Delay Trains: High Water Cuts Off the Capital Building; State Prison Directors Meet Counterfeiters Caught, Los Angeles Times (Feb. 5, 1905); Arizona Copper Company, Bisbee Daily Review (Apr. 14, 1907); Arizona Flood Swept Three Persons Drowned and Many Houses Wrecked, Washington Post (Dec. 24, 1914); Arizona Mining Region, Influences That Help and Retard Development, New York Times (June 6, 1880); Arizona, San Francisco Chronicle (Sept. 13, 1902); Arizona, How to Get There By Way of Sonora, Correspondence of the New York Times (Sept. 23, 1865); Arizona's Claims for Statehood, San Francisco Chronicle (Feb. 10, 1893); Big Stream Runs Riot, Washington Post (Feb. 27, 1891) *For full list, click on PDF link	PDF
X015	GRIC	Collection of Reference Materials, including: H.H. Barnes, Jr., Programs & Plans - Estimating Flow Characteristics from Channel Size (1975); E. Corle, The Gila River of the Southwest (1951); Geoffrey W. Freethey & T.W. Anderson, Map, Predevelopment Hydrologic Conditions in the Alluvial Basins of Arizona and Adjacent Parts of California & New Mexico (1986); Gookin Engineers, Ltd., Hydrologic History of the Gila River Indian Reservation (2000); Ronald Hyra, Methods of Assessing Instream Flows for Recreation (June 1978) (excerpts); Luna B. Leopold & M. Gordon Wolman, River Channel Patterns: Braided, Meandering & Straight (1957); R.J. Omang, Mean annual runoff and peak flow estimates based on channel geometry of streams in southeastern Montana (1983) (excerpts)	PDF

Remand Case Evidence - Gila River

Item Number	Submitted By	Description	Link
		*For full list, click on PDF link	
X016	Freeport	Freeport Supplemental Documents (charts showing streamflows at USGS Gages)	PDF
X016	Freeport	Richard J. Hinton, The Hand-Book to Arizona: Its Resources, History, Towns, Mines, Ruins and Scenery (1878) (excerpts)	PDF
X016	Freeport	Hiram C. Hodge, Arizona As It Is or The Coming Country (1877) (excerpts)	PDF
X016	Freeport	Leland J. Hanchett, Gila Trail, Crossing Arizona (2002) (excerpts)	PDF
X016	Freeport	JE Fuller/Hydrology & Geomorphology, Inc., Final Report, Criteria For Assessing Characteristics of Navigability for Small Watercourses in Arizona (Sept. 1998)	PDF
X016	Freeport	United States v. Utah, Report of the Special Master (1930)	PDF
X016	Freeport	San Pedro River Hearing Tape, Transcript of Hearing held in Bisbee, Arizona on June 7, 2013	PDF
X017	ASLD	Jonathan E. Fuller, P.E., R.G., Ph.D. Resume	PDF
X017	ASLD	Jonathan E. Fuller Publications List	PDF
X017	ASLD	Barbara Tellman, Highlights of Boating in Arizona to about 1920 (from Verde River hearing, Nov. 16, 2005)	PDF
X018	SRP	Bob Mussetter, Ph.D., P.E. Resume	PDF
X018	SRP	Douglas R. Littlefield, Ph.D., Assessment of the Gila River's Navigability on February 14, 1912 (June 2014)	PDF
X019	Maricopa	Supporting Information with Boat History	PDF
X020	ASLD-Fuller	Jonathan E. Fuller, Presentation to ANSAC: Gila River Navigability (June 12, 2014)	PDF
X020	ASLD-Fuller	Jonathan E. Fuller, Boating in Arizona ca. 1912 (June 17, 2014)	PDF
X020	ASLD-Fuller	Photos of Segment 1-2 (Apr. 7, 2014)	List
X020	ASLD-Fuller	Photos of Segment 2 (June 6, 2014)	List
X020	ASLD-Fuller	Photos of Segment 4-5 (Feb. 21, 2014)	List
X020	ASLD-Fuller	Photos of Segment 5 (May 16, 2014)	List
X020	ASLD-Fuller	Photos of Segment 7 (2003)	List
X021	San Carlos	Excerpts from: Annual Reports of the Governor of Arizona to the Secretary of the Interior 1878, 1879, 1881, 1883 - 1886, 1890, 1894 - 1896, 1899, 1900	PDF

Remand Case Evidence - Gila River

Item Number	Submitted By	Description	Link
X021	San Carlos	Photograph of Co. B. 10th Infantry crossing Gila River in buckboard wagons near San Carlos, Arizona Territory c.1885; Photograph of Irrigation ditch under construction at San Carlos Indian Agency, Arizona 1886; Photograph of Ore teams on a dusty road in Pina County, Arizona Territory c.1897; Photograph of Ox train used to transport supplies in Arizona Territory 1883; Photograph of Apache Indians delivery hay in Fort Apache, Arizona, 1893	PDF
X022	SRP	Bob Mussetter, Ph.D., P.E., Gila River Navigability: Presentation to ANSAC	PDF
X023	San Carlos	River Information Digest (3d ed. 1985) (excerpts)	PDF
X024	Freeport	Elizabeth L. Ramenofsky, From Charcoal to Banking: The I.E. Solomons of Arizona (1984) (excerpts)	PDF
X025	ASLD	C.A. White, Instructions to the Surveyor General of Oregon; Being a Manual for Field Operations (1851), A History of the Rectangular Survey System, U.S. Department of the Interior, Bureau of Land Management	PDF
X025	ASLD	C.A. White, Instructions to the Surveyors General of Public Lands of the United States, for Those Surveying Districts Established In and Since the Year 1850; Containing, Also, a Manual of Instructions to Regulate the Field Operations of Deputy Surveyors (1855), A History of the Rectangular Survey System, U.S. Department of the Interior, Bureau of Land Management	PDF
X025	ASLD	C.A. White, Instructions to the Surveyors General of the United States, Relating to Their Duties and to the Field Operations of Deputy Surveyors (1856), A History of the Rectangular Survey System, U.S. Department of the Interior, Bureau of Land Management	PDF
X025	ASLD	C.A. White, Instructions of the Commissioner of the General Land Office to the Surveyors General of the United States Relative to the Survey of the Public Lands and Private Land Claims (May 3, 1881), A History of the Rectangular Survey System, U.S. Department of the Interior, Bureau of Land Management	PDF
X025	ASLD	C.A. White, Manual of Surveying Instructions for the Survey of the Public Lands of the United States and Private Land Claims (Jan. 1, 1890), A History of the Rectangular Survey System, U.S. Department of the Interior, Bureau of Land Management	PDF

Remand Case Evidence - Gila River

Item Number	Submitted By	Description	Link
X025	ASLD	C.A. White, 1894 Manual of Surveying Instructions for the Survey of the Public Lands of the United States and Private Land Claims (June 30, 1894), A History of the Rectangular Survey System, U.S. Department of the Interior, Bureau of Land Management	PDF
X025	ASLD	C.A. White, Manual of Surveying Instructions for the Survey of the Public Lands of the United States and Private Land Claims (Jan. 1, 1902), A History of the Rectangular Survey System, U.S. Department of the Interior, Bureau of Land Management	PDF
X025	ASLD	C.A. White, Office of the Surveyor General of Arizona 1863-1924, A History of the Rectangular Survey System, U.S. Department of the Interior, Bureau of Land Management (1926)	PDF
X025	ASLD	James A. Simpson, The Rectangular Survey System, River & Lake Boundaries: Surveying Water Boundaries - A Manual (2d. ed. 2005)	PDF
X025	ASLD	James A. Simpson, Meanders—What They Do, River & Lake Boundaries: Surveying Water Boundaries - A Manual (2d. ed. 2005)	PDF
X025	ASLD	James A. Simpson, Navigability, River & Lake Boundaries: Surveying Water Boundaries - A Manual (2d. ed. 2005)	PDF
X025	ASLD	C.A. White, The Direct System to End of the General Land Office, A History of the Rectangular Survey System, Bureau of Land Management (1926)	PDF
X025	ASLD	C.A. White, The General Land Office Within the Department of the Interior, A History of the Rectangular Survey System, Bureau of Land Management (1926)	PDF
X025	ASLD	Susan M. DuBois & Ann W. Smith, The 1887 Earthquake in San Bernardino Valley, Sonora (Dec. 1980)	PDF
X025	ASLD	Thomas G. McGarvin, The 1887 Sonoran Earthquake: It Wasn't Our Fault, 17 Ariz. Bureau of Geology & Min. Tech. 2 (Summer 1987)	PDF
X025	ASLD	Paul Strong, Where Waters Run Beavers (1997)	PDF
X025	ASLD	Gila River Google Earth Photos	PDF
X025	ASLD	Harbors and Navigation Code §§ 100-107	PDF
X025	ASLD	Arizona Population of Counties by Decennial Census 1900-1990	PDF
X025	ASLD	Utah Population of Counties by Decennial Census 1900-1990	PDF
X025	ASLD	Jeanne E. Klawon, U.S. Bureau of Reclamation, Upper Gila River Fluvial Geomorphology Study (June 8, 2001)	PDF

Remand Case Evidence - Gila River

Item Number	Submitted By	Description	Link
X025	ASLD	Photograph, Wagon train hauling ore from a mine in Metcalf to nearby train (1890s), William Ryder Ridgway Photograph Collection, ca. 1864 - ca. 1925, ASU Libraries, CP_RR_144.jpg	PDF
X025	ASLD	Marshall Trimble, In Old Arizona: True Tales of the Wild Frontier!, 2 Ariz. Trilogy (1896) (excerpts)	PDF
X025	ASLD	1912 Arizona railroad map	PDF
X025	ASLD	Byrd Howell Granger, Arizona's Names (X Marks the Place) (1983) (excerpts)	PDF
X025	ASLD	USGS, Feature Detail Report for Gila River, Geographic Names Phase I data compilation (1976-1981)	PDF
X025	ASLD	ADWR, Design Manual for Engineering Analysis of Fluvial Systems (Mar. 1985)	PDF
X025	ASLD	P. Kearey, Dictionary of Geology (1996) (excerpts)	PDF
X025	ASLD	Rhodes W. Fairbridge, Encyclopedia of Geomorphology (1968) (excerpts)	PDF
X025	ASLD	Good Paschall Davis, Jr., Man and Wildlife in Arizona: The Pre-Settlement Era, 1823-1864 (1973) (excerpts)	PDF
X025	ASLD	Clyde P. Ross, USGS, The Lower Gila Region, Arizona: A Geographic, Geologic, and Hydrologic Reconnaissance With a Guide to Desert Water Places, Water Supply Paper 498 (1923)	PDF
X026	SRP	Bob Mussetter, Ph.D., P.E., Gila River Navigability: Presentation to ANSAC (Aug. 21, 2014) (revision of X022)	PDF
X027	Freeport	Photo of Safford Valley Segment	PDF
X027	Freeport	Photo of Safford Valley Segment	PDF
X027	Freeport	Photo of Safford Valley Segment	PDF
X027	Freeport	Photo of Safford Valley Segment	PDF
X027	Freeport	Photo of Gila Box Segment	PDF
X027	Freeport	Photo of Duncan Valley Segment	PDF
X027	Freeport	Photo of Duncan Valley Segment	PDF
X027	Freeport	Photo of Duncan Valley Segment	PDF
X027	Freeport	Soil Conservation Photos Index Map	PDF
X028	Freeport	Richard A. Lingenfelter, Steamboats on the Colorado River 1852-1916 (1978) (excerpts)	PDF

Remand Case Evidence - Gila River

Item Number	Submitted By	Description	Link
X029	GRIC	T. Allen J. Gookin, Supplemental Information concerning Navigability of the Gila River; U.S. Dep't of the Interior, Gila River Survey (1920) (excerpts); David H. DeJong, Stealing the Gila: The Pima Agricultural Economy and Water Deprivation, 1848-1921 (excerpts); United States v. Utah, No. C-137-59, Findings of Fact and Conclusions of Law & Judgment and Decree (D. Utah Dec. 15, 1960); Utah v. United States, 304 F.2d 23 (10th Cir. 1962); Utah v. United States, 371 U.S. 826 (1962); Aluminum Leader, Aluminum in Ship Building, http://www.alumnimumleader.com/en/around/transport/ship (8/12/14); Buying the Right Canoe, OutdoorPlaces.com, http://www.outdoorplaces.com/Features/Paddle/pickcanoe/newcanoe1.htm (8/12/14); Lawrence Striegel, Paddling a Canoe to Success; Wooden Canoe Heritage Ass'n, Canvas Filler Formulas, http://www.wcha.org/build_restore/filler.html (7/18/14); John Winters, Choosing Your Canoe	PDF
X030	ASLD	Elizabeth L. Ramenofsky, From Charcoal to Banking: The I.E. Solomons of Arizona (1984) (excerpts)	PDF
X030	ASLD	Godfrey Sykes, A Westerly Trend (1944) (excerpt)	PDF
X030	ASLD	Henry L. Giclas, Stanley Sykes, 26 J. Ariz. Hist. 2 (Summer 1985)	PDF
X030	ASLD	Robert L. Blomstrom, Fur Trading: Forerunner of Industry in Arizona (Dec. 1963)	PDF
X030	ASLD	Good Paschall Davis, Jr., Man and Wildlife in Arizona: The Pre-Settlement Era, 1823-1864 (1973) (excerpts)	PDF
X030	ASLD	Photograph of Army Wagon at Yuma Quartermaster Depot State Historic Park	PDF
X031	San Carlos	ADOT, Arizona State Rail Plan (2011) (excerpts); W.H. Emory, Notes of a Military Reconnaissance from Fort Leavenworth, in Missouri to San Diego, in California, Including Part of the Arkansas, Del Norte, and Gila Rivers (1848) (excerpts); Richard J. Hinton, The Hand-Book to Arizona: Its Resources, History, Towns, Mines, Ruins and Scenery (1878) (excerpts); Robert Raymer, Early Copper Mining in Arizona, 4 Pacific Hist. Rev. 123-130 (June 1935); Henry Turner, The Original Journals of Henry Smith Turner, with Stephen Watts Kearney to New Mexico and California in 1846-1847 (1966) (excerpts); and Eldred D. Wilson, Early Mining in Arizona, 11 Kiva 4 (May 1946)	PDF
X032	ASLD	Robert A. Mussetter et al., Sediment and Erosion Design Guide (Nov. 1994)	PDF

Remand Case Evidence - Gila River

Item Number	Submitted By	Description	Link
X032	ASLD	D.E. Burkham, Channel Changes of the Gila River in Safford Valley, Arizona 1846-1970 (1972)	PDF
X032	ASLD	William L. Graf, Channel Instability in a Braided Sand Bed River, 17 Water Resources Research 1087-1094 (1981)	PDF
X032	ASLD	Gary Huckleberry, Historical Geomorphology of the Gila River, Arizona (June 1996)	PDF
X033	ASLD	Additional Requested Citations for Jon Fuller Powerpoint Presentation (X020-79)	PDF
X033	ASLD	Amended Slides from Jon Fuller's June 11, 2014 PowerPoint Presentation (X020-79)	PDF
X034	Maricopa	Gary Huckleberry, Contrasting Channel Response to Floods on the Middle, 22 Geology 1083-1086 (Dec. 1994)	PDF
X035	ASLD	Declaration of Gary Huckleberry Regarding the Gila River (Sept. 4, 2014)	PDF
X035	ASLD	Mussetter Engineering, Inc., Geomorphology of the Upper Gila River Within the State of New Mexico (June 23, 2006)	PDF
X036	San Carlos	Appendices to 1st Edition of The Pattie Narrative; Editors Preface and Introduction by Timothy Flint from the 1st Edition of The Pattie Narrative (1831); Reuben Gold Thwaites, Preface to Pattie's Personal Narrative of a Voyage to the Pacific and in Mexico (1905); Milton Milo Quaife, Introduction, The Personal Narrative of James O. Pattie of Kentucky (1930); William M. Goetzmann, Introduction, The Personal Narrative of James O. Pattie of Kentucky (1962); James Batman, Introduction, The Personal Narrative of James O. Pattie of Kentucky (1988); Zephyrin Engelhardt, Appendix E to James Ohio Pattie's Vaccination Series, in Francisco or Mission Dolores (1924); Hubert Howe Bancroft, History of California, Vol. 3 (1886) (excerpts); J.M. Guinn, History of the State of California: A Biographical Record of the Sierras (1906)	PDF
X037	SRP	Photos Canoeing on the Gila, Lower Salt, Verde, and San Juan Rivers, taken by Jon E. Fuller	PDF
X038	ASLD	Verde-Salt-Gila USGS Peak Flow Data Period of Record Through 2013, USGS National Water Information System	PDF
X039	San Carlos	City of Safford, History of Safford: A Few Facts About the Establishment of the City of Safford; Joseph Miller, Arizona the Grand Canyon State: A State Guide (1956) (excerpts); Ariz. Comm. Auth'y, 2013 Community Profile for the City of Safford (last updated Mar. 20, 2014); Ariz. Comm. Auth'y, 2010 Community Profile for the City of Safford	PDF

Exhibit D

STATE OF ARIZONA
NAVIGABLE STREAM ADJUDICATION COMMISSION
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JANICE K. BREWER
Governor

GEORGE MEHNERT
Executive Director

COMBINED MEETING MINUTES
Phoenix, Arizona, June 16, 2014, June 17, 2014, June 18, 2014, June 19, 2014, and June 20, 2014

DAY ONE
June 16, 2013, Phoenix, Arizona

COMMISSION MEMBERS PRESENT
Bill Allen, Jim Henness, Jim Horton, Wade Noble
COMMISSION MEMBERS ABSENT
None
STAFF PRESENT
Fred Breedlove Attorney, George Mehnert Director

1. **CALL TO ORDER**
   By Chairman Wade Noble at approximately 9:01 a.m.
2. **Roll Call**
   See above for members present and absent.
3. **Approval of Minutes for May 1, 2014 (discussion and action).**
   Minutes approved without objection.
4. **Hearing regarding the Gila River.** The Commission will receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in State v. Arizona Navigable Stream Adjudication Comm'n, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in PPL Montana, LLC v. Montana, 556 U.S. ___, 132 S.Ct. 1215 (2012). The Commission received evidence. The Commission heard testimony from the following witnesses: John Fuller.

The hearing regarding the Gila River recessed for the day at approximately 4:40 p.m. with an announcement by the Chair that the hearing would continue the following day, June 17, 2014 at 9:00 a.m.

DAY TWO
June 17, 2014
Gila River hearing continuation June 17, 2014,9:00 a.m., 1700 W. Washington St., Senate Hearing Room 1, 85007.

COMMISSION MEMBERS PRESENT
Bill Allen, Jim Henness, Jim Horton, Wade Noble
COMMISSION MEMBERS ABSENT
None
STAFF PRESENT
Fred Breedlove Attorney, George Mehnert Director

1. **CALL TO ORDER**
   By Chairman Wade Noble at approximately 9:00 a.m.
2. **Roll Call**
   See above for members present and absent.
3. **Approval of Minutes.** No Minutes to consider.
4. **Continuation of the Hearing regarding the Gila River.**
   The Commission received evidence. The Commission heard testimony from the following witnesses: John Fuller.

The hearing regarding the Gila River recessed for the day at approximately 4:55 p.m. with an announcement by the Chair that the hearing would continue the following day, June 18, 2014 at 9:00 a.m.

DAY THREE
June 18, 2014
Gila River hearing continuation June 18, 2014,9:00 a.m., 1700 W. Washington St., Senate Hearing Room 1, 85007.

COMMISSION MEMBERS PRESENT
Bill Allen, Jim Henness, Jim Horton, Wade Noble
Commissioner Henness left at approximately 3:15 p.m.
COMMISSION MEMBERS ABSENT
None
STAFF PRESENT
Fred Breedlove Attorney, George Mehnert Director

1. **CALL TO ORDER**

By Chairman Wade Noble at approximately 9:00 a.m.

2. **Roll Call**
   See above for members present and absent.
3. **Approval of Minutes.** No Minutes to consider.
4. **Continuation of the Hearing regarding the Gila River.**
   The Commission received evidence. The Commission heard testimony from the following witnesses: Donald Farmer, John Fuller, and Allen Gookin.

The hearing regarding the Gila River recessed for the day at approximately 5:22 p.m. with an announcement by the Chair that the hearing would commence the following day, June 19, 2014 at 9:00 a.m.

DAY FOUR
June 19, 2014
Gila River hearing continuation June 18, 2014,9:00 a.m., 1700 W. Washington St., Senate Hearing Room 1, 85007.

COMMISSION MEMBERS PRESENT
Bill Allen, Jim Henness, Jim Horton, Wade Noble
Commissioner Henness left at approximately 3:15 p.m.
COMMISSION MEMBERS ABSENT
None
STAFF PRESENT
Fred Breedlove Attorney, George Mehnert Director

1. **CALL TO ORDER**
   By Chairman Wade Noble at approximately 9:00 a.m.
2. **Roll Call**
   See above for members present and absent.
3. **Approval of Minutes.** No Minutes to consider.
4. **Continuation of the Hearing regarding the Gila River.**
   The Commission received evidence. The Commission heard testimony from the following witnesses: Allen Gookin.

The hearing regarding the Gila River recessed for the day at approximately 5:22 p.m. with an announcement by the Chair that the hearing would commence the following day, June 20, 2014 at 9:00 a.m.

DAY FIVE
June 20, 2014
Gila River hearing continuation June 19, 2014,9:00 a.m., 1700 W. Washington St., Senate Hearing Room 1, 85007.

COMMISSION MEMBERS PRESENT
Bill Allen, Jim Henness, Jim Horton, Wade Noble
Commissioner Henness left at approximately 3:35 p.m.
COMMISSION MEMBERS ABSENT
None
STAFF PRESENT
Fred Breedlove Attorney, George Mehnert Director

1. **CALL TO ORDER**
   By Chairman Wade Noble at approximately 9:03 a.m.
2. **Roll Call**
   See above for members present and absent.
3. **Approval of Minutes.** No Minutes to consider.
4. **Continuation of the Hearing regarding the Gila River.**
   The Commission received evidence. The Commission heard testimony from the following witnesses: Allen Gookin, and Rich Burtell.

5. Call for Public Comment (comment sheets). *(Pursuant to Attorney General Opinion No. I99-006 [R99-002]. Public Comment: Consideration and discussion of comments and complaints from the public. Those wishing to address the Commission need not request permission in advance. Action taken at this meeting as a result of public comment will be limited to directing staff to study the matter or rescheduling the matter for further consideration and decision at a later date.)*
No Public Comment.
6. Future meeting dates and future agenda items.
Continuation of Gila River and beginning of Upper Salt River hearing on August 18, 2014 at 9:00 a.m. in Senate Hearing Room 1, 1700 W. Washington,

Phoenix, AZ 85007. Pinal County Gila River hearing on August 29, 2014 at 11:00 a.m., 31 North Pinal Street, Building A Florence, Arizona 85132 .

7. ADJOURNMENT.

The hearing regarding the Gila River recessed for the day at approximately 4:20 p.m. with an announcement by the Chair that the hearing would be continued on August 18, 2014 at 9:00 a.m. in Senate Hearing Room 1, 1700 W. Washington St., Phoenix, AZ 85007, that the conclusion of the Gila River would be followed by the hearing on the Upper Salt River, and that on August 29, 2014 the Gila River hearing would be continued in Pinal County at 11:00 a.m., 31 North Pinal Street, Building A Florence, Arizona 85132 .

Meeting Adjourned at approximately 5:15 p.m.

Respectfully submitted,

George Mehnert, Director
June 23, 2014

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JANICE K. BREWER
Governor

GEORGE MEHNERT
Executive Director

COMBINED MEETING MINUTES
Phoenix, August 18, 19, 20, 2014

DAY ONE
August 18, 2014, Phoenix, Arizona

COMMISSION MEMBERS PRESENT
Bill Allen, Jim Henness, Jim Horton, Wade Noble.
Commissioner Henness left at approximately 2:00 p.m.
COMMISSION MEMBERS ABSENT
None
STAFF PRESENT
Fred Breedlove Attorney, George Mehnert Director

1. **CALL TO ORDER**
   By Chairman Wade Noble at approximately 9:09 a.m.
2. **Roll Call**
   See above for members present and absent.
3. **Approval of Minutes for June 16, 2014 (discussion and action).**
   Motion by: Jim Henness to approve minutes as submitted.
   Second by: Jim Horton.
   Vote: Unanimous to approve minutes as submitted.
4. **Scheduling Conference regarding Upper Salt River and Lower Salt River hearings that may be need to be continued to 2015, following five days of hearings scheduled from December 15, 2014 to December 19, 2014.**
   Hearing continuation dates selected if necessary and depending on availablity of a hearing room: February 18, 19, 20, 2015
5. **Continuation of Hearing regarding the Gila River:** The Commission will receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in State v. Arizona Navigable Stream Adjudication Comm'n, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's

decision in PPL Montana, LLC v. Montana, 556 U.S. ___, 132 S.Ct. 1215 (2012).
Witnesses who appeared: Doctor Douglas Littlefield.

The hearing regarding the Gila River recessed for the day at approximately 4:12 p.m. with an announcement by the Chair that the hearing would continue the following day, August 19, 2014 at 9:00 a.m.

DAY TWO
August 19, 2014, Phoenix, Arizona

COMMISSION MEMBERS PRESENT
Bill Allen, Jim Horton, Wade Noble
Jim Henness arrived at approximately 9:05 a.m.
Commissioner Henness left at approximately 2:40 p.m.
COMMISSION MEMBERS ABSENT
None
STAFF PRESENT
Fred Breedlove Attorney, George Mehnert Director

1. **CALL TO ORDER**

Chairman Noble called the meeting to order at approximately 9:02 a.m.

2. **Roll Call**

See above for members present and absent.

3. **Approval of Minutes.**

No minutes to approve.

4. **No agenda item.**
5. **Continuation of Gila River Hearing.**
   Witnesses who appeared: Doctor Douglas Littlefield, and Dr. Robert Mussetter.

The hearing regarding the Gila River recessed for the day at approximately 5:02 p.m. with an announcement by the Chair that the hearing would continue the following day, August 20, 2014 at 9:00 a.m.

DAY THREE
August 20, 2014, Phoenix, Arizona

COMMISSION MEMBERS PRESENT
Bill Allen, Jim Horton, Wade Noble

COMMISSION MEMBERS ABSENT

Jim Henness

STAFF PRESENT

Fred Breedlove Attorney, George Mehnert Director

1. CALL TO ORDER

Chairman Noble called the meeting to order at approximately 9:03 a.m.

2. Roll Call

See above for members present and absent.

3. Approval of Minutes.

No minutes to approve.

4. No agenda item.

5. Continuation of Gila River Hearing.

Witnesses who appeared: Dr. Robert Mussetter.

6. Call for Public Comment (comment sheets). *(Pursuant to Attorney General Opinion No. I99-006 [R99-002]. Public Comment: Consideration and discussion of comments and complaints from the public. Those wishing to address the Commission need not request permission in advance. Action taken at this meeting as a result of public comment will be limited to directing staff to study the matter or rescheduling the matter for further consideration and decision at a later date.)*

No Public Comment.

7. Future meeting dates and future agenda items.

Continuation of Gila River – Pinal County, August 29, 2014 at 11:00 a.m., 31 North Pinal Street, Building A Florence, Arizona 85132 .

8. ADJOURNMENT.

Meeting Adjourned at approximately 2:40 p.m.

Respectfully submitted,

George Mehnert, Director

August 21, 2014

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JANICE K. BREWER
Governor

GEORGE MEHNERT
Executive Director

REGULAR SESSION MEETING MINUTES
Florence, Pinal County, Arizona, August 29, 2014

Commission Members Present
Wade Noble, Jim Henness, Bill Allen, Jim Horton.
Commission Members Absent
None.
Staff Present
George Mehnert, Director.

1. **Call To Order**
   The Chair called the meeting to order at approximately 11:00 a.m.
2. **Roll Call**
   See above for members present and absent
3. **Approval of Minutes for August 18, 2014 (discussion and action).**
   The minutes were approved without objection.
4. **Continuation of Hearing regarding the Gila River:** The Commission will receive physical evidence and testimony on two narrow issues: (1) navigability or non-navigability of the Gila River in its "ordinary and natural condition" at the State of Arizona's admission to the United States on February 14, 1912, consistent with the Arizona Court of Appeals decision in State v. Arizona Navigable Stream Adjudication Comm'n, 224 Ariz. 230, 229 P.3d 242 (App. 2010); and (2) segmentation of the Gila River consistent with the United States Supreme Court's decision in PPL Montana, LLC v. Montana, 556 U.S. ___, 132 S.Ct. 1215 (2012).
   No witnesses appeared regarding the continuation of the hearing on the Gila River.
5. **Call for Public Comment.** *(Pursuant to Attorney General Opinion No. I99-006 [R99-002]. Public Comment: Consideration and discussion of comments and complaints from the public. Those wishing to address the Commission need not request permission in advance. Action taken at this meeting as a result of public comment will ordinarily be limited to directing staff to study the matter or rescheduling the matter for further consideration and decision at a later date.)*
   No one appeared offering public comment.
6. **Future meeting dates and future agenda items.**
   None established.
7. **ADJOURNMENT.**

Meeting was adjourned at approximately 11:05 a.m.

Respectfully submitted,

George Mehnert
Director, Navigable Stream Adjudication Commission
August 29, 2014