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Received
2-6-06

BEFORE THE ARIZONA NAVIGABLE STREAM ADJUDICATION COMMISSION

In re Determination of Navigability of The Gila River	No. 04-008 NAV **STATE LAND DEPARTMENT'S OPENING POST-HEARING MEMORANDUM**

I. The Gila River's Historical Background.

The Gila River (the "River") rises in western New Mexico and crosses nearly the entire State of Arizona, flowing through the Duncan-Virden Valley, the Safford Valley, and on through the broad valley plain of central Arizona to the River's junction with the Colorado River near Yuma. The River and its tributaries, which include the Salt, Santa Cruz, San Pedro, San Carlos, San Simon, San Francisco Rivers, and numerous other smaller tributaries and subtributaries, drain approximately 60,000 square miles in southern Arizona, western New Mexico, and northern Sonora, Mexico.[1] ASLD Lower Gila at VII-2. As a major water source in the Sonoran Desert, the River has been the locus of cultural activity for at least 2,000 years. ASLD Lower Gila at VII-2.

[1]Arizona State Land Department's *Arizona Stream Navigability Study for the Gila River: Colorado River Confluence to the Town of Safford* (rev. June 2003 by JE Fuller/Hydrology & Geomorphology, Inc.) (Evidence Item ["E.I."] No. 2) ("ASLD Lower Gila"), Chapter VII, *Historical Geomorphology of the Gila River*, by Gary Huckleberry, Ph.D., Arizona Geological Survey, *A Report Submitted to the CH2MHill as part of Arizona River Navigability Project*, November 1993.

Early observers commented on the River's historical beauty and bounty when the River was a well-defined perennial stream framed by native cottonwoods and willows that formed a green ribbon that travelers could trace for hundreds of miles through the desert.[2] Gookin, 11/1/00, at 2-15. The presence along the banks of cottonwood, brush, and mesquite, indicates a normally stable river.[3] Hjalmar W. Hjalmarson, PE ("Hjalmarson"), Tr. 11/17/05 at 251. The valley bottoms and uplands were covered with a variety of tall grasses that restrained the floodwaters resulting from torrential storms by allowing the rainfall to soak into the ground. Gookin, 11/1/00 at 2-20 to 2-21. In places, beaver ponds along the creeks and rivers slowed floodwaters and precipitated sand and gravel that had been carried down-river by run-off waters, thereby regulating the River's flow. *Id.* at 3-4 to 3-5. Discharge from springs on the Upper Gila (upstream of Safford) provided a constant base flow, making the River a perennial gaining stream.[4] ASLD Upper Gila at 4-7.

Spanish exploration of the region began in the sixteenth century. Coronado referred to the River near the San Pedro Valley as a "deep and reedy stream."[5] *Arizona's Changing Rivers* at 98. Father Kino noted that Indians were growing crops by diverting irrigation water from the River and that the River supported an abundance of fish. *Id.* Members of the Juan Bautista de Escalante party of 1697 found the River so deep that they had to swim across to examine Hohokam buildings on the other side. Jack L. August, Jr., Ph.D. ("August"), Tr. 11/16/05 at 165.

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[2] *Hydrologic History of the Gila River Indian Reservation*, prepared for the Gila River Indian Community Office of Water Rights by Gookin Engineers, Ltd., November 1, 2000, (E.I. 15) ("Gookin, 11/1/00").

[3] ANSAC held its public hearing on the Gila River on November 16 and 17, 2005. References to testimony elicited at the hearings are designated by witness, "Tr.," date, and page number.

[4] Arizona State Land Department's *Arizona Stream Navigability Study for the Upper Gila River, Safford to the State Boundary* (rev. June 2003 by JE Fuller/Hydrology & Geomorphology, Inc.) (E.I. 2) ("ASLD Upper Gila").

[5] *Arizona's Changing Rivers: How People Have Affected the Rivers*, Barbara Tellman, Richard Yarde, Mary G. Wallace, University of Arizona, March 1997 (E.I. 1), ("*Arizona's Changing Rivers*").

Members of a Spanish expedition in 1775 traveling from the Casa Grande Ruin to the Colorado River described various reaches of the River as "dry," "half way up his legs," "reaching to the shoulder-blades of the horses," and "very deep and ran very slowly." ASLD Lower Gila at IV-1.

White trappers in 1825 found plenty of beaver on the River. ASLD Upper Gila at 3-1. The fur trapper, James Ohio Pattie, described the River as "beautiful, running between banks covered with tall cottonwoods and willows." *Arizona's Changing Rivers* at 98. The trappers used canoes on the River. Dave Weedman, fishery biologist for Arizona Game & Fish Department ("Weedman"), Tr. 11/16/05 at 211; *Arizona's Changing Rivers* at 99. During the Mexican War in 1846, Stephen Watts Kearny led a battalion of men to survey the area, and they mapped the entire River. Lieutenant Emory of that party estimated the River's flow at about one-half of the Colorado's flow, and he saw large fish—weighing between 25 and 30 pounds—in the River. *Arizona's Changing Rivers* at 99. Historically, a large body of native species of fish, weighing between five and ten pounds, occupied the River. Weedman, Tr. 11/16/05 at 210-18. Pikeminnows, which are usually found in more than three feet of water, could reach 100 pounds in the Lower Gila. Weedman, Tr. 11/16/05 at 211.

In 1846, Henry Smith Turner noted in his journal that the River about eighty miles west of Gila Bend had attained the width from 100-150 yards and was in average depth about 4 feet - "quite deep enough to float a steamboat."[6] 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.[7] Hjalmarson Confidential Notes at 47, citing a U.S. Corps of Engineers 1995 study of the

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[6]*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, Ph.D., November 3, 2005 (E.I. 12) ("Littlefield 11/3/05"), at 107.

[7]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* (E.I. 25), ("Hjalmarson Confidential Notes").

River from Gillespie Dam to Yuma (Reconnaissance Report, FCD 0000028). A mid-1850s photograph shows the River as about 300 feet wide with tree-lined banks and containing enough water for swimmers. *See* Hjalmarson Confidential Notes at 7. The photograph carries the following description: "From: U.S. Pacific Railroad Exploration & Surveys, Explorations for a railroad route from the Mississippi River to the Pacific Ocean—General Report (washington, D.D. 1983-6 [sic]), plate VI."

In 1848, the United States acquired from Mexico most of what is now the State of Arizona under the Treaty of Guadalupe Hidalgo ("Treaty"). Feb. 2, 1848, 9 Stat. 922. The middle of the River formed the southern international boundary. Treaty, at Art. V. The Treaty reflects both governments' concern with preserving navigability rights on the River for their citizens. That article reads, in part, as follows:

> The river Gila, . . . being, agreeably to the fifth article, divided in the middle between the two republics, the navigation of the Gila . . . shall be free and common to the vessels and citizens of both countries; and neither shall, without the consent of the other, construct any work that may impede or interrupt, in whole or in part, the exercise of this right; not even for the purpose of favoring new methods of navigation.

Treaty at Art. VII.[8] Although the River was navigable when the United States acquired it from Mexico, the federal government saw irrigation with waters appropriated from local rivers as the key to development of the United States' newly-acquired lands.[9]

Accordingly, settlers began diverting water from the River to irrigate their crops in the

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[8]The Territory of New Mexico was divided into the Territories of Arizona and New Mexico in 1863. Act Feb. 24, 1863, Ch. 56, 12 Stat. 664. The United States had by then acquired the land from the River to the current border with Mexico in 1853 under the Gadsden Purchase. Dec. 30, 1853, 10 Stat. 1031.

[9]*See Oury v. Goodwin*, 3 Ariz. 255, 270, 26 P.2d 376, 381 (1891) and *Maricopa County Municipal Water conservation District. No. 1 v. Southwest Cotton Co.*, 39 Ariz. 65, 76-77, 4 P.2d 369, 373-74 (1931) for discussion of the Territorial policy of prior appropriation as indispensable to the Territory's growth, development and prosperity. *See also* Desert Land Act of 1877, Ch. 107, 19 Stat. 377; 43 U.S.C. §§ 321 - 339 (1877); Reclamation Act of 1902, 32 Stat. 388, 43 U.S.C. § 371.

1860s. Donald C. Jackson, Ph.D. ("Jackson"), Tr. 11/17/05 at 206. After the American Civil War, as more settlers moved west seeking new lives, diversions from the Gila increased.[10] DWR/HSR at 5. By the end of the second half of the nineteenth century, white settlement and diversions had radically changed the River. In 1889 a rancher nevertheless described the River between Buckeye and Gillespie Dam as having a well-defined channel with hard, sloping banks lined with cottonwood and bushes. Jackson, *Powerpoint Presentation* (E.I. 21) at 9, citing a 1923 U.S. Geological Survey's Water Supply Paper. Late the following year—1890—a federal surveyor, James H. Martineau, recorded that in township 8 south, range 21 west (about twenty miles upriver from the River's confluence with the Colorado), the River was well over five chains wide[11] and so deep in places that he had to swim from one side to the other to perform his surveying duties.[12] August Report at 15. The end of the Apache wars of the 1880s removed the last disincentive for settlement, which led to further depletions of the River's flow. August, Tr. 11/16/05 at 169.

By 1899, it was not unusual for irrigation diversions to completely drain the Upper Gila during some months of low flow. ASLD Upper Gila at 5-8. Cattle grazing had depleted riparian vegetation, so that rainwater ran off the land rather than percolating into the ground to recharge the groundwater.[13] U.S. Court of Claims, FF 37, n. 11, p. 77 (describing Congressman Hayden's

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[10]Arizona Department of Water Resources' *Briefing Report on HSR (Hydrographic Survey Report) Investigations of Globe-Equity No. 59 Rights, In Re The General Adjudication of the Gila River System and Source*, ("DWR/HSR"), April 1993.

[11]A surveyor's chain is a unit of length equal to 66 feet. *See* Kissam, P., 1978, *Surveying Practice*, McGraw Hill Pub., New York, at 126. Five chains would therefore measure 330 feet.

[12]August, Historian and Executive Director, Arizona Historical Foundation, Hayden Library, Arizona State University, *Expert Witness Report, The Lower Gila River: A Non-Navigable Stream on February 14, 1912*, (E.I. 17) ("August Report").

[13]United States Court of Claims Opinion in Gila River Pima-Maricopa Indian Community, et al. v. United States, No: 236-C, Filed 1/7/81 ("U.S. Court of Claims"), Finding of Fact ("FF").

concerns with overgrazing and the relationship between adequate ground cover and the River's natural flow); Gookin, 11/1/00 at 4-6. Large-scale irrigation diversions on the Upper Gila often diverted all of the flow during peak irrigation seasons in the reaches with irrigated agriculture. ASLD Upper Gila at 5-14. Similarly, diversions on the Lower Gila—and diversions and impoundments on the Salt River—had almost depleted the entire flow by the time of statehood in 1912. ASLD Lower Gila at X-2; Jackson, Tr. 11/17/05 at 206. Groundwater pumping took a further toll on the River's flow. Hjalmarson, Tr. 11/17/05 at 256-58. Moreover, Roosevelt Dam on the Salt River, the Gila's main contributing tributary, was completed in 1911, but water was being impounded behind the incomplete dam as early as 1909, further depleting the River's flow below the Gila-Salt confluence. ASLD Lower Gila at IV-54. By the time that Arizona became a state in 1912, the River's waters were over appropriated. August, Tr. 11/16/05 at 194-95.

The question for ANSAC to answer is this: Should the State of Arizona be denied title to the bed of the Gila River simply because the waters of that river had been depleted during the 64-year interlude between 1848 and 1912? The answer to that question is an emphatic "No."

II. Title to the Beds of Navigable Watercourses in Arizona Automatically Passed to the State at Statehood Pursuant to the Public Trust and Equal Footing Doctrines.

Under the equal footing doctrine, each new state enters the Union "with all of the powers of sovereignty and jurisdiction which pertain to the original states, and . . . such powers may not be constitutionally diminished." *Coyle v. Smith*, 221 U.S. 559, 572-73 (1911); *Pollard's Lessee v. Hagan*, 44 U.S. (3 How.) 212, 228-29 (1845). One attribute of sovereignty enjoyed by the original thirteen states was their succession to the British Crown's sovereign interest in the beds of navigable waters under the common law of England, which interest was subject to the public right *(jus publicum)* of navigation and commerce. *Martin v. Waddell's Lessee*, 41 U.S. 367, 413-

14 (1842); *Idaho v. Coeur d'Alene Tribe of Idaho*, 521 U.S. 261, 283 (1997). Protection of the public's right of access to public waters by sovereign bed ownership is known as the public trust doctrine. To assure that each new state receives the bedlands of navigable waterways pursuant to this public trust doctrine, the federal government, as sovereign, holds title to the beds and banks of navigable waters in territorial lands in trust for future states. *Coeur d'Alene,* 521 U.S. at 284. The federal government may convey such bedlands in pursuing national interests, but any conveyance must be explicit. *See Id.* at 283-84.

Although in England only tidelands were considered navigable, in the United States the public trust interest extends to inland navigable waterways, in keeping with the trust's fundamental purpose of preventing private interests from interfering with the use of navigable waters for transportation. *Packer v. Bird*, 137 U.S. 661, 667 (1891); *Illinois Central R.R. v. Illinois*, 146 U.S. 387, 436 (1892). Thus, when each state enters the Union, the new state receives title to the beds of navigable waterways within its boundaries (except in a few cases where the United States either did not acquire title or had conveyed title to such lands). *Oregon v. Corvallis Sand & Gravel Co.*, 429 U.S. 363, 372 (1977) (citing *Pollard's Lessee,* 44 U.S. (3 How.) 212); *see also Defenders of Wildlife v. Hull,* 199 Ariz. 411, 415-416, 18 P.3d 722, 726-727 (App. 2001). Navigability is the key to determining a state's title to watercourses. Because title was acquired from the federal government, navigability for title purposes is determined by federal law. *Defenders,* 199 Ariz. at 419, 18 P.3d at 730; *Arizona Ctr. for Law in the Pub. Interest v. Hassell,* 172 Ariz. 356, 362, 837 P.2d 158, 164 (App. 1991). ANSAC's determination is thus governed by the federal test of navigability, which is derived from the United States Supreme Court's decision in *The Daniel Ball*, 77 U.S. (10 Wall.) 557 (1870). That test provides as follows:

> 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 also Defenders*, 199 Ariz. at 420, 18 P.3d at 731 (stating that the *Daniel Ball* test is correctly paraphrased in A.R.S. § 37-1101 (5)). The test is a flexible one that is "apt to uncover variations and refinements which require further elaboration." *United States v. Appalachian Elec. Power Co.*, 311 U.S. 377, 406 (1940). How the *Daniel Ball* test is to be applied in Arizona's unique geographical context is the source of much contention; because the River was not in its ordinary condition when Arizona was admitted to the Union in 1912.

The *Daniel Ball* test is applied to determine navigability in title, admiralty and maritime, and commerce clause cases. *Kaiser Aetna v. United States*, 444 U.S. 164, 171 (1979); *Defenders,* 199 Ariz. at 418-19, 18 P.3d at 729-30. Under the commerce clause, once a river is determined to be navigable, it is considered navigable in law forever whether or not it remains navigable in fact. *Appalachian,* 311 U.S. at 408 (citing *Economy Light & Power v. United States*, 256 U.S. 113 (1921)). The Ninth Circuit has held that the commerce clause test applies to riverbed title cases. *City of Centralia v. F.E.R.C.*, 851 F.2d 278, 281 (9th Cir. 1988). Thus, the concept of "indelible navigability" applies to navigability-for-title cases. *See* David M. Guinn, *An Analysis of Navigable Waters of the United States*, 18 Baylor L. Rev. 599, 564-565 (1966) (opining that a state should not lose title to a riverbed even if the river is presently nonnavigable, as long as river was navigable at some point in the past). Moreover, the State's title to the beds of all navigable streams within its borders may not be defeated merely because the bed was channeled, artificially controlled, dammed, or its waters diverted. *State v. Bonelli Cattle Co.*, 107 Ariz. 465, 468, 489 P.2d 699, 702 (1971), *rev.'d on other gr., Bonelli Cattle Co. v. Arizona*,

414 U.S. 313 (1973), *rev'd, Oregon ex rel State Land Bd. v. Corvallis Sand & Gravel Co.*, 429 U.S. 363 (1977).

The federal test is sufficiently flexible for ANSAC to determine that the River was navigable in law in 1912 although its waters had been diverted for irrigation and its main tributary dammed, destroying the River's actual navigability.

III. The River Was Navigable In Its Ordinary and Natural Condition; The River Was Used or Was Capable of Being Used As a Highway for Commerce.

A. To Determine the River's Navigability, ANSAC Must Determine the River's Ordinary and Natural Condition.

Although the River was actually used for navigation (*see* § III(B)(1) below), the *Daniel Ball* test does not require actual commercial use or navigation to prove navigability for title purposes; all that the test requires is proof that a river in its ordinary and natural condition could have been used as a highway for commerce at the time of statehood. *United States v. Holt Bank*, 270 U.S. 49, 56 (1926); *United States v. Utah*, 283 U.S. 64, 82-83 (1931); *The Montello*, 87 U.S. (20 Wall.) at 430, 441-442 (1874). Such proof permits a finding of navigability for remote watercourses that were capable of being used for trade or travel but were not so used because of lack of demand for such uses or for some other reason. *See United States v. Utah*, 283 U.S. at 82 (stating that the arid, western states would be disadvantaged if navigability could be established only by actual use).

"Ordinary" means "[r]egular; usual; normal; common; often recurring; according to established order; settled; customary; reasonable; not characterized by peculiar or unusual circumstances . . . ." Black's Law Dictionary, 758 (6th ed.1991); *cf. Holt State Bank*, 270 U.S. at 57 (stating that drought conditions on the Mud River were "exceptional" and not "the usual conditions"). Ordinary conditions necessarily exclude floods and other extraordinary high water

events, but include the average or normal reach of high water each year. "Natural" means "[u]ntouched by man or by influences of civilization; wild, untutored, and is the opposite of the word 'artificial.'" Black's Law Dictionary, 712 (6th ed. 1991). Dams or diversions that cause low flow or a dry bed in the River are man-made obstructions (*see* Black's at 712) and are therefore not natural parts of the River. *See Bonelli*, 107 Ariz. at 468, 489 P.2d at 702 (stating that "a watercourse [does not] lose its character as such because all the water has been diverted therefrom, no matter for how long a period . . . nor by reason of the fact that the water has all been dammed at a places far up the stream," *citing Smith v. City of Los Angeles*, 153 P.2d 69 (1944)); *Econ. Light & Power Co.*, 256 U.S. at 118 (stating that artificial obstructions that may be reduced by public authority do not preclude a finding of navigability if, assuming the obstruction is reduced, the waterway would be navigable in its natural and ordinary condition). To determine whether a watercourse could support navigation, triers of fact examine evidence of the watercourse's physical characteristics, that is the river's "volume of water, the gradients and the regularity of flow." *Appalachian*, 311 U.S. at 407-13. In undertaking such inquiries, courts are not limited to examining the watercourse's physical condition at statehood, but they may look back at the watercourse's historic physical condition. *United States v. Oregon,* 295 U.S. 1, 15-18 (1935).

Thus, to determine whether the River could have been used as a highway for commerce, ANSAC must assess the River's pre-statehood ordinary and natural condition, disregarding all man-made obstructions and diversions.

1. Hydrology.

Before Anglo settlement of Arizona, the River was perennial, with reliable flows sufficient for shallow draft boating throughout the year. ASLD Upper Gila Table 23, at 5-43;

Hjalmarson Report at 6; *see* August, Tr. 11/16/05 at 163-64 (stating that the River was a typical desert stream, at times sinking into its sandy bed). The River's naturally perennial flow has been adversely impacted by irrigation diversions (ASLD Lower Gila at IV-52 to IV-59; ASLD Upper Gila at 5-8), water supply impoundments behind dams (ASLD Lower Gila at IV-61) and groundwater withdrawal (ASLD Upper Gila at 5-14). Throughout the River's length in Arizona, the existing hydrologic condition, as well as the River's condition in 1912, is substantively different from the River's natural, pre-development condition. ASLD Lower Gila at VI-9; Hjalmarson Report at 8. Today, as at the time of statehood, the River can be completely dry during some months due to human diversion of its natural discharge. ASLD Upper Gila at 5-48. The best available hydrologic data are summarized in Table 1, attached hereto. These data demonstrate that the Gila River was perennial and that the ordinary and natural flow condition was neither drought nor flood. In fact, long-term flow records demonstrate that while large flash floods can occur on the River; flood conditions occur less than one percent of the time. ASLD Upper Gila Table 21, at 5-33. Therefore, descriptions of flood hazards and flood conditions are irrelevant for determining the River's "ordinary and natural" condition. The data in Table 1, which are derived from USGS records, do not account for natural runoff diverted for irrigation. Irrigation diversions reduced natural streamflow by an average of 16 percent at Duncan (ASLD Upper Gila Fig. 2, at 5-13), by 41 percent at Safford (ASLD Upper Gila Fig. 3 at 5-13), and by percentages approaching 100 percent downstream of Safford (ASLD Lower Gila at IV-57; ASLD Upper Gila at 5-8 to 5-14). Thus, the USGS data should be increased by at least 16 to 41 percent to accurately represent the River's ordinary and natural flow condition.

Geomorphology.

The Gila River flows through a series of bedrock canyons and intervening alluvial valleys. ASLD Lower Gila at VII-1; ASLD Upper Gila at 4-6; Fuller, Tr. 11/16/05 at 61. Bedrock canyons occur in the Gila Box upstream of Safford, between Coolidge Dam (San Carlos Reservoir) and Winkleman, and between Kelvin and the Hayden-Ashurst Dam. Bedrock narrows also occur near Gillespie Dam west of Phoenix, at Painted Rock Dam west of Gila Bend, and at the Gila Mountains east of Yuma. The remainder of the River flows in alluvial valleys. With respect to navigability, the primary difference between the bedrock canyons and alluvial valleys is flow depletion by irrigation diversions in the alluvial valleys.[14] Other differences include greater topographic confinement, channel stability, and number of rapids in the bedrock canyons. ASLD Upper Gila Tables 2-5, at 4-9 to 4-12, Fig. 3 at 4-11. Rating curves indicate similar flow depth, width and velocity at ordinary flow rates in bedrock canyons and alluvial reaches. ASLD Upper Gila Table 23, at 5-43. The dominant low flow channel at ordinary flow rates is a single channel with a pool and riffle pattern. ASLD Upper Gila at 4-8. The low flow channel on which boating could occur is inset within a wider, more braided flood channel. Huckleberry, Tr. 11/16/05 at 60.

Various studies have tried to compute the River's virgin flow. The most comprehensive study is reported in the United States Bureau of Reclamation's White Book (Nov. 1951 "Report on Water Supply of the Lower Colorado River Basin" and supplements). Gookin, 11/1/00, at 2-22 to 2-23. This study found that on the lower Gila, the average annual virgin flow at what is now Gillespie Dam was 1,792,800 acre feet, which is equivalent to about 2,480 cfs. *Id.*[15] The

[14]For example, compare channel characteristics at ASLD Upper Gila, Table 23, at 5-43.

[15]The Court of Claims relied on Gookin for its computed estimated average virgin flow of 468,100 a.f. above the River's confluence with the Salt. U.S. Court of Claims, FF 18, p. 51.

1935 Globe Equity Decree established water rights for numerous parties in the Gila River Valley area.[16] The rights that the Globe Equity Decree adjudicated totaled 510,718.48 acre feet per irrigation season through 1912. Decree, Art. V, pp. 14 - 61.[17] Collectively these hydrologic data show that in the River's ordinary and natural condition, it regularly had enough water and was deep enough to support navigation by a variety of boats. Substantial hydrologic data demonstrate that the minimum annual and seasonal flow rates are sufficient to support low-draft boating on both the Upper and Lower Gila.

In summary, when the River was in its ordinary and natural condition as of about 1860—that is, without significant diversions, groundwater pumping, or the Roosevelt Dam on the Salt—it was a single meandering channel, with some braiding. Hjalmarson, Tr. 11/17/05 at 266-67, 292, 305-06; Huckleberry, Tr. 11/16/05 at 57-58. Ferries operated on the River for many years (*see* discussion at § III(B)(1)(p) below). The existence of ferries suggests a single natural channel rather than the present braided-appearing channel. Hjalmarson, Confidential Notes, at 1. Photographs from 1867 show the River just downstream of its confluence with the Salt as flowing in a "relatively straight channel" (whereas by 1915, the channel is "considerably wider, braided"). Stanley A. Schumm, Ph.D., P.G. ("Schumm"), Tr. 11/17/05 at 16.

B. The River Was Historically Navigated, and the Upper River is Currently Navigated.

In evaluating a river's navigability, federal courts have adopted a liberal construction of

[16]United States v. Gila Valley Irrigation Dist., et al., Globe Equity Decree No. 59 (June 29, 1935) ("Decree").

[17]This number may not reflect the number of acre feet actually consumed, because some irrigation water returns to a river. On the other hand, the Decree also did not include all appropriative rights. *See* DWR/HSR, Ch. 1, ¶ 2., stating that only some of the rights established in prior decrees were adjudicated in the Decree. Additionally, the Decree excluded certain uses along the River's tributaries, such as the San Francisco River in New Mexico and Arizona and the San Pedro River in Arizona. *Id.* at Ch. 3, ¶ 3.1. Although these circumstances make it difficult to arrive at an accurate number of acre feet diverted and/or consumed, it is clear that the River was over-appropriated by 1912.

the *Daniel Ball* test that allows the consideration of evidence of the watercourse's historic navigability, even though the watercourse may not be currently navigable. *See, e.g., Utah v. United States*, 403 U.S. 9, 11 (1971) (finding the Great Salt Lake navigable for title purposes although most traffic on the Lake occurred in the 1880s before Utah achieved statehood in 1896); *Appalachian,* 311 U.S. at 409 (stating that a navigability determination is not affected by an absence of use over long periods of time due to changed conditions); *Econ. Light & Power,* 256 U.S. at 117-18 (affirming a finding of navigability in spite of events such as drainage, forest clearance, diminished rainfall, canal construction, and various dams, that caused the water level to be lower than formerly and in spite of no actual current navigation); *Puget Sound Power & Light Co. v. F.E.R.C.*, 644 F.2d 785, 788 (9th Cir. 1981) (finding the White River in Oregon navigable based on the river's historic use before construction of a hydroelectric project that diverted a substantial portion of the river's flow); *Defenders*, 199 Ariz. at 423, 18 P.3d at 734 (noting that the "ordinary modes of trade or travel" of the *Daniel Ball* test are not restricted to those in existence at the time of statehood).

The United States Supreme Court also adopted a liberal test for determining what is a highway for commerce. In *Utah v. United States,* the Court found that nine boats which ranchers used occasionally to haul their livestock from the mainland to one of the islands or vice-versa was sufficient evidence to show that the Great Salt Lake was used as a highway for commerce, concluding that "[t]he Lake was used as a highway and that is the gist of the federal test." 403 U.S. at 11. A watercourse is a highway for commerce if it was utilized as a path between two points. *Alaska v. United States,* 754 F.2d 851, 854 (9th Cir. 1985) (stating that the "central theme remains the movement of people or goods from point to point on the water"). The fact that a river is dry in places does not mean that the river is not navigable. *Bonelli*, 107 Ariz. at 468, 489

P.2d at 702.

It is not necessary that a river actually have been used for commerce so long as the river was capable of commercial use. *United States v. Utah*, 283 U.S. at 82. Incidents of modern boating can demonstrate historic navigability. *See Alaska v. Ahtna, Inc.*, 891 F.2d 1401, 1405 (9th Cir. 1989) (finding that present recreational guided fishing and sightseeing trips are "commercial activity" under the *Daniel Ball* test and can prove a river's susceptibility for commercial use at the time of statehood); *Adirondack League Club, Inc. v. Sierra Club*, 706 N.E.2d 1192, 1194 (1998) (holding that evidence of a river's capacity for recreative use is in line with the traditional test of navigability).

(1) The River Was Navigated Historically.

a. Native Americans, principally the Apache, historically used the River. ASLD Upper Gila at 3-3. The Chiricahua Apaches were known to construct boats made of bull hides stretched over wooden frames for crossing streams. *Id.* at 3-5 The Spanish named the River "Rio de Las Balsas" (River of Rafts), either because the explorers were forced to cross the River on rafts or because the Indians used wicker baskets to cross the River. *Id.* at 3-6.

b. In 1825, American beaver trappers, including the Patties, came to the area and trapped the entire length of the River. *Arizona's Changing Rivers* at 98-99. Below the Salt-Gila confluence, the party had to build a canoe to finish a trip because the River was too deep to cross by horseback. *Id.* at 99. The trappers made rafts for their equipment at one point to escape an Indian attack. *Id.* In 1828, the same trapping party made eight canoes and comfortably descended the River at about four miles an hour. *Id.* According to Goode P. Davis's ASU master's thesis, James Ohio Pattie canoed the River from around Safford, trying to get skins to Yuma. Weedman, Tr. 11/16/05 at 211, 216. Pattie made the trip from Safford to

Yuma on several occasions. Weedman, Tr. 11/16/05 at 216.

c. When the Mormon Battalion wagon train, which originated in Iowa and headed west, reached the Gila in January 1847, its Colonel Cooke attempted to lighten his wagons' loads by fashioning a boat out of two wagons and floating them down the River.[18] Corle at 152-54. The party began about seventy miles upstream of Yuma. Dennis Gilpin, Archeologist, SWCA Environmental Consultants ("Gilpin"), Tr. 11/16/05 at 38-39. The Battalion reached Yuma within several days after lightening the wagon-boats because they had been overloaded and the River was shallow in places. Gilpin, Tr. 11/16/05 at 81; Jackson, Tr. 11/17/05 at 208; ASLD Lower Gila at IV-2. The River at that time was reported to be four or five feet deep and 150 yards wide. Corle at 152.

d. William H. Emory noted in 1848 that at certain stages, the River could be navigated up to the Pima Villages and possibly with small boats at all stages of the water.[19] Jackson Depo at 52-53. (Emory later surveyed the Gila as the U.S. Commissioner for the U.S./Mexico Boundary Commission Survey in 1855. *Id.* at 53.)

e. In the fall of 1849, Mr. and Mrs. Howard, their newborn baby (named "Gila"), a doctor and a clergyman, floated down the River from the Indian villages. ASLD Lower Gila, at IV-2. The party reached Yuma six days ahead of the rest of their wagon train. Jackson, Tr. 11/17/05 at 208-09.

f. Forty-niners traveling the Gila Trail to California during the Gold Rush lightened their wagon loads by building small boats and floating them down the River to the Colorado. ASLD Lower Gila at IV-3;. Gilpin, Tr. 11/16/05 at 39; Jackson, Tr. 11/17/05 at

[18]*The Gila: River of the Southwest*, by Edwin Corle, Bison Book and Holt, Rinehart & Winston, Inc., 1964 as cited by Clyde L. Gould in his May 14, 1998 statement (E.I. 1) ("Corle").

[19]Deposition of Donald C. Jackson, Ph.D., January 15, 2003, taken in Tumbling-T v. Paloma Investment, No. CV 95-00253 (E.I. 22) ("Jackson Depo").

209-10.

g. By 1857, steamboats were being used on the River.[20] Littlefield, 4/24/98, at 118-19, citing an article written by D.K. Allen entitled "The Colorado River," as published in the August 1, 1893 edition of *Arizona Magazine II.* The article relates that steamers were run on the Colorado and Gila rivers until 1864 when the stern wheel iron steamer *Explorer* "became unmanageable, as she came out of the Gila river, up which she had been after a load of wood."

h. A February 1881 river trip by Cotton and Bingham from Phoenix to Yuma was announced in the *Arizona Gazette* for the next day, the trip to be made in an 18-foot long skiff. Jackson, Tr. 11/17/05 at 210-11.

i. In November-December 1881 the famous Bucky O'Neil "Yuma or Bust" party took a 20 feet long, 5 feet wide boat down the Gila starting in Phoenix. ASLD Lower Gila at IV-7. At times, the boat had to be pushed by men wading in water up to their knees. It is unclear whether the journey ended in Gila Bend or if the party reached its intended destination at Yuma. Jackson, Tr. 11/17/05 at 211.

j. Gustavus Streitz testified in a case before the General Land Office in 1911 that, in carrying out his duties as county surveyor in 1893, he used "Dougherty's skiff" to cross the river near present-day Gillespie Dam. Dougherty was a local rancher/farmer, who apparently kept the skiff as part of his ranching equipment. Jackson, Tr. 11/17/05 at 216-20.

k. In 1895, Amos Adams' and J.W. Evans' trip down the Gila in a boat "of the flat bottomed type" measuring 3 ½ feet by 18 feet was described in the *Arizona Sentinel*

[20] *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, Ph.D., April 24, 1998 (E.I. 1) ("Littlefield 4/24/98").

and the *Phoenix Herald* in February and March 1895. The *Graham County Bulletin* of 2/22/1895 also carried the story, relating that Evans and Adams left Clifton in a boat, had some adventures in the canyon, needed to haul the boat overland to Phoenix, but then successfully boated from Phoenix to Yuma. *See* ASLD Upper Gila at 3-28, for text of *Bulletin* article; ASLD Lower Gila at IV-8 to IV-9; Jackson, Tr. 11/17/05 at 212-15.

l. The *Arizona Republican* reported in April 1905 that Jack Shibley boated from Phoenix to Gila Bend, capsizing once but successfully completing the journey. ASLD Lower Gila IV-13.

m. In 1905, Jack Henness of Florence rigged up a suspended cable and cage to transport passengers and cargo over the River. The *Arizona Blade Tribune* of March 4, 1905 reported that the cage passed over the *Gila Queen* ferry. ASLD Lower Gila at IV-12. *The Blade* reported on March 11, 1905, that Henness transported burros and prospecting equipment in addition to passengers. ASLD Lower Gila at IV-12.

n. Stanley Sykes of Flagstaff reportedly canoed the entire Gila River in Arizona in 1909. ASLD Upper Gila at 3-29, 6-3. His small canvas boat could hold only one person at a time, and Sykes concluded that he and his friend should have waited until after the snowmelt. Tellman, Tr. 11/16/05 at 106.

o. Ferry boats operated on the River for many years in at least four locations: Dome, Gila Bend, Lawrence, Maricopa Wells. Gilpin, Tr. 11/16/05 at 40. The ferry boats' sizes varied drastically. Tellman, 11/16/05 at 107. Beginning in 1867, Henry Morgan began a 25-year-long ferry operation near Maricopa Wells. ASLD Lower Gila at IV-5. Other ferries also operated on the River. In 1884, the *Phoenix Herald* of April 8 reported that A.J. McDonald was building a large ferry boat (16 by 18 feet) for the Gila and Salt River Ferry

Company, which was to be used on the Salt and was of the same dimensions as one that had been sent to the Gila. *Id.* at IV-7. *The Arizona Sentinel* reported on March 28, 1891, that Straus, Dallman & Co. had put a large new ferryboat in service. *Id.* at IV-8. By 1905, two new ferry boats - the *Mayflower* and the *Rey del Gila* (20 feet long, 6 feet wide, and capable of carrying a 3000 pound load) - were introduced into service, but a hand-driven side propeller boat proved unable to negotiate the River. *Id.* IV-13. The 1905 flood disrupted railroad service, creating an unprecedented demand for ferry service at the Maricopa and Kelvin Crossings, and a brisk competition developed for freight and passenger transportation until the River's waters abated. *Id.* at 16 - 17. Apparently, ferries also operated on the River after statehood: the *Arizona Blade Tribune* of February 9, 1916, reported that an automobile had slipped off a ferry boat into five feet of water. *Id.* at IV-19. Mrs. Hazel Shepard, Mr. Juan Gutierrez, and Ms. Violet White, all of Florence, remembered small ferry boats being used to transport passengers, lumber, and other supplies. *Id.* at V-4.

Other general comments imply that boats were in common use on the River during the nineteenth and early twentieth centuries. For example, a federal surveyor in 1871 indicated in his notes that at times of high water, the River "becomes almost impassable for boats." Littlefield Report, 11/3/05, at 44. The comment implies that boats were otherwise regularly used. In fact, there was a great variety of homemade boats in use in Arizona around the time of statehood. Tellman, Tr. 11/16/05 at 106. Boats were common and not newsworthy. Tellman, 11/16/05 at 114, 116-17. Except for the steamboats, which were used at the River's lower end, the historical accounts are limited to low-draft boats, canoes, and skiffs. Fuller, Tr. 11/16/05 at 79, 85. Generally, the described trips occurred during most of the year, with a waning toward wintertime. Fuller, Tr. 11/16/05 at 44. Although boat use declined as diversions diminished the

River's natural flow, the mere presence of so many boats in an arid region like Arizona during the early settlement period suggests that they were commonly used on the river and that the River was navigable.

(2) Modern Boating.

Modern boating occurs in some reaches of the Gila River. ASLD Upper Gila at 6-4 to 6-6; Fuller, Tr. 11/16/05 at 64. Although some boating occurs downstream of Phoenix between 91st Avenue and Granite Reef Dam, most modern boating takes place above Safford in canoes, rafts, and kayaks, which are similar in draft to the boats used at statehood. Fuller, Tr. 11/16/05 at 64. The upper River's natural flow and channel conditions at statehood were not significantly different from current natural flow and channel conditions. ASLD Upper Gila at 6-4 through 6-10.

Members of the Central Arizona Paddlers Club have boated the Upper River; Arizona State Parks features the Upper River in its outdoor recreation and boating guide; a boating guide to the Southwest lists the Upper Gila as a boatable stream; several books and magazines describe boating trips on the Upper River; and numerous websites describe recommended boating conditions for raft, canoe, and kayak use in the Gila Box reach. At least one claims that the reach can be floated all year long, by different types of boats according to the flow rate and season, and states that the Gila Box can be canoed between flow rates of 150 cfs and 1,500 cfs. ASLD Upper Gila at 6-4 to 6-7.

The Bureau of Reclamation permits boating in the Gila Box National Riparian Conservation area located upstream of Safford. ASLD Upper Gila at 6-5; Fuller, Tr. 11/16/05 at 64. Jon Colby, a co-owner and managing partner of Cimarron Adventures & River Co., has conducted commercial tours on the Gila (and Salt and Verde) for 17 years in flows ranging from

about 170-180 cubic feet per second ("cfs") to about 3,000 cfs. Colby, Tr. 11/17/05 at 331-33. The company's tours run from the Gila Box National Riparian Conservation Area downstream of Duncan to just outside Safford. *Id.* The boats range from 18-foot rafts to inflatable kayaks and canoes. *Id.* at 338. Boats used in the Gila Box include canoes (150 to 1,500 cfs), kayaks (150 to 6,000 cfs), and rafts (500 to 10,000 cfs). ASLD Upper Gila at 6-6; A-1 to A-2. Other companies have conducted commercial floats below Coolidge Dam. Colby, Tr. 11/17/05 at 332-334. A second modern boating reach is located between Coolidge Dam and the Town of Winkleman, and is boated by canoes, kayaks, and rafts at flows exceeding 70 cfs. Weedman, Tr. 11/16/05 at 64; Colby, Tr. 11/17/05 at 332. Some commercial recreational boating and boating by environmental regulatory agencies (Weedman, Tr. 11/16/05 at 219-20) occurs in the Gila Box and Winkleman reaches at flows exceeding 170 cfs (Colby, Tr. 11/17/05 at 332). Mr. Weedman of the Arizona Game & Fish Department has boated below the San Carlos reservoir to Winkelman when performing his fishery surveys and knows of others who recently boated from below Painted Rock Dam all the way to the Colorado River. Weedman, Tr. 11/16/05 at 211. In a narrow channel, 70 to 80 cfs are enough. *Id.* at 220. Private boating takes place downstream of Coolidge Dam near Winkelman, Kearney, and Riverside. Colby, Tr. 11/17/05 at 332. Figure 1, attached hereto, shows the flow duration data provided in the ASLD Upper Gila Report (Table 21 at 5-33; Table 17 at 5-30) plotted relative to the boating criteria for the River. Figure 1 shows that boatable conditions exist 80 percent of the time, even today when low flow is depleted by irrigation diversions. Figure 2, attached hereto, shows the variability of the average monthly, average minimum monthly, and average maximum monthly flow rate relative to known boating levels, and demonstrates that boatable conditions exist during every month of the year, except during unusual drought conditions. M.H. Salmon wrote *Gila Descending*, in which he describes

his May 1983 boat trip down the Upper River at a flow rate ranging from more than 1,000 cfs to about 260 cfs. He summed up his trip as "a piece of cake . . . most anyone could have done it, had he or she the interest and the time." ASLD Upper Gila at 6-5. Friends of Arizona Rivers' members have rafted and kayaked reaches of the Upper River. (*See* E.I. 1.)

Thus there is substantial evidence that when the River was in its ordinary and natural condition, it was actually used as a highway for commerce within the meaning of the *Daniel Ball* test. By the time of the Spanish explorations, if not before, rafts were in use; trappers used the River commercially from Safford to Yuma; and steamboats plied the Gila upstream and downstream for several years on a commercial basis, only one meeting with misfortune on the tumultuous Colorado, not due to any problem on the Gila.[21] Nineteenth century travelers used the River to transport their belongings, thereby lightening their wagons, on their way to California; ranchers along the River routinely owned boats; several boating trips were made down the River; and ferries operated commercially for decades at various points. Some of the historical boating trips were more successful than others, but navigability is not destroyed because a watercourse is interrupted by occasional natural obstructions or portages, or because navigation is not possible during all seasons of the year or at all stages of the river's flow. *Econ. Light & Power,* 256 U.S. at 122; *United States v. Utah,* 283 U.S. at 84-86; *United States v. Holt Bank*, 270 U.S. at 56-57. Moreover, "[e]ven absence of use over long periods of years, because of changed conditions, the coming of the railroad or improved highways does not affect the navigability of rivers in the constitutional sense." *Appalachian*, 311 U.S. at 409-10; *see also United States v. Utah,* 283 U.S. at 82 (stating that actual use may be most persuasive, but where conditions of exploration and settlement explain the infrequency or limited nature of use,

[21] Although the Colorado River was known to be tumultuous, the United States Supreme Court nevertheless found it navigable. *Arizona v. California*, 283 U.S. 423, 526 (1931).

susceptibility may be proven). The River was a highway for commerce. *See Alaska v. United States*, 754 F.2d at 854; *Utah v. United States*, 403 U.S. at 11; *United States v. Utah*, 283 U.S. at 82-83. The upper River is currently boated commercially, demonstrating susceptibility to navigation for title purposes. *See Ahtna*, 891 F.2d at 1405.

In Arizona, the River's waters were being diverted during the nineteenth century in accordance with federal settlement policy, and by 1912 the Lower Gila was depleted. The once-navigable River, however, remained navigable for title purposes. *See Bonelli*, 107 Ariz. at 468, 489 P.2d at 702 (stating that a watercourse does not lose its character as such merely because its waters are diverted). None of the federal policies or settlement acts expressed or implied any intent to dispose of the bedlands of navigable rivers pre-statehood, and, in these circumstances, a presumption exists against finding a disposition of bedlands. *United States v. Alaska*, 521 U.S. 1, 34 (1997). The equal footing doctrine is coexistent with a strong presumption of state ownership. *Coeur d'Alene*, 521 U.S. at 284; *Defenders*, 199 Ariz. at 426, 18 P.3d at 737. The special circumstances inherent in Arizona's climate and history–the changes and complexities in the River's circumstances–should not deny the State's title to the River's bed. *See Puget Sound*, 644 F.2d at 790 (stating that navigability determinations must take into consideration variations in settlement and geography).

III. Conclusion.

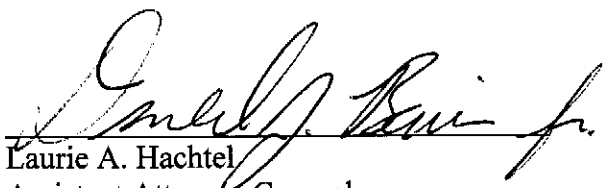
The Gila River is a major American river that from time immemorial has provided the means for human habitation and navigation. The River was navigable when the United States acquired it in 1848 from the Republic of Mexico. If Arizona had entered the Union soon thereafter, no question would have existed regarding the State's ownership of the bedlands. Arizona should not lose title to the bedlands because of an accident of history - the fact that

diversions made in the implementation of federal policy drastically altered the River's ordinary and natural condition in the 64 years that elapsed between 1848 and 1912.

The *Daniel Ball* test for determining title to the beds of navigable rivers is sufficiently flexible to take into account the vast differences that exist among the Nation's regions. In determining the River's navigability, the unique circumstances of Arizona's settlement, statehood, development, industry, and its climatic, geologic, and hydrologic conditions warrant different considerations than navigability determinations of other States' watercourses. This once-navigable River is navigable under the *Daniel Ball* test, and ANSAC should declare it so.

DATED: February 6, 2006.

TERRY GODDARD



Laurie A. Hachtel
Assistant Attorney General

ORIGINAL and SEVEN COPIES
of the foregoing hand-delivered for
filing this 6th day of February, 2006

Arizona Navigable Stream Adjudication Commission
1700 West Washington, Suite #404
Phoenix, AZ 85007

And COPY sent by U.S. mail this
6th day of February, 2006 to:

Curtis A. Jennings
Jennings, Haug & Cunningham
2800 North Central Avenue, Suite #1800
Phoenix, AZ 85004-1049

COPY of the foregoing sent by U.S. mail
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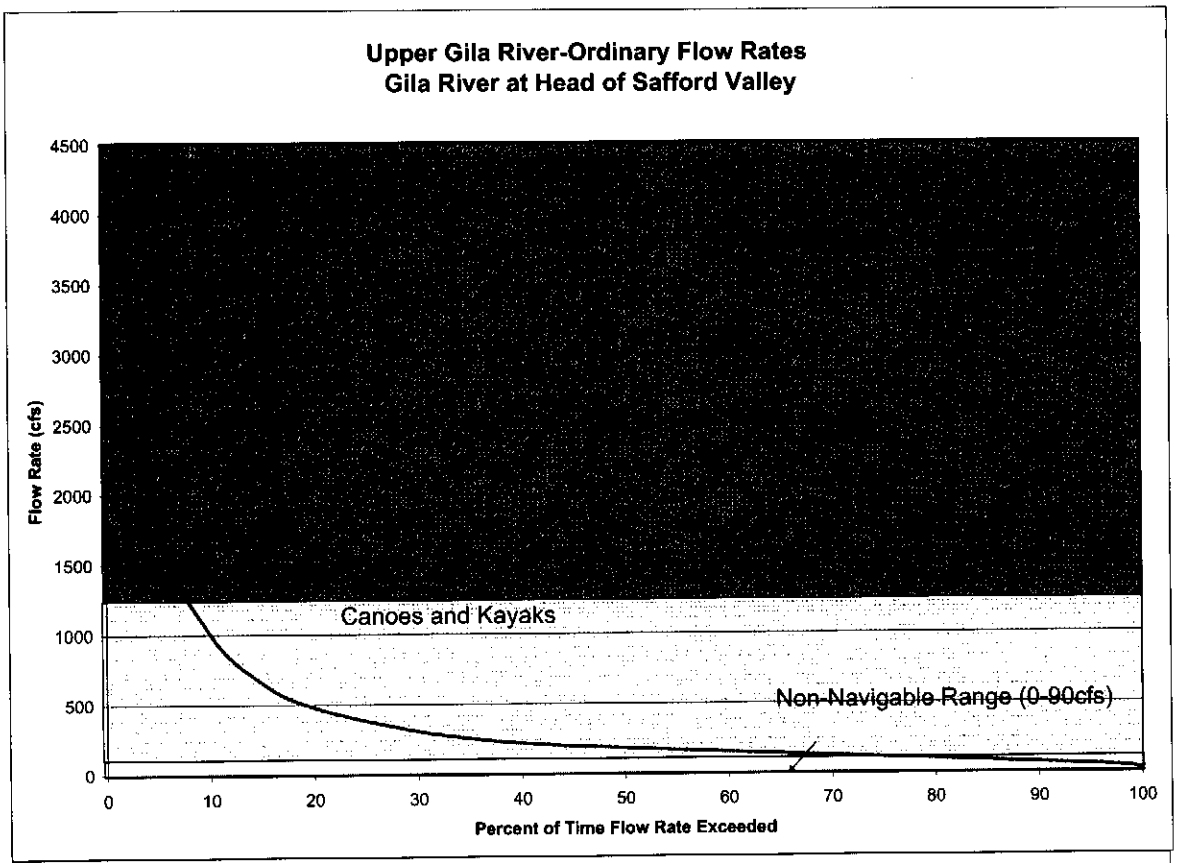
Secretary to Laurie Hachtel

Table 1

Table 1. Streamflow Data for the Gila River, Arizona.										
Location	**Description**	**USGS Gage**	**Gage Period**	**D.A. (mi2)**	**Average Annual Flow (cfs)**	**Median Flow 50% (cfs)**	**High Flow 10% (cfs)**	**Base Flow 90% (cfs)**	**Major Tributaries Above Location**	**Citation**
AZ/NM Border	Upstream of Duncan Valley Diversions	Virden NM	1914-1989	3203	190	91	404	21		ASLD Upper Gila Report Table 15 (p. 5-28) Table 21 (p. 5-33) Table 23 (p. 5-43)
Clifton	Downstream of Duncan Valley Upstream of Gila Box	Clifton	1910-1989	4010	206	80	455	18		ASLD Upper Gila Report Table 16 (p. 5-29) Table 21 (p. 5-33) Table 23 (p. 5-43)
Safford	Downstream of Gila Box Upstream of Safford Valley	Head of Safford Valley	1914-1989	7896	433	174	932	62	San Francisco River Eagle Creek Bonita Creek	ASLD Upper Gila Report Table 17 (p. 5-30) Table 21 (p. 5-33) Table 23 (p. 5-43)
Kelvin	Upstream of Florence Valley	Kelvin	1911-1989	18011	426	282	965	30	San Carlos River San Pedro River	Gookin Report p. 2-29 citing BOR White Book, reports an estimated average flow of 755 cfs.
Gila River Indian Community	Upstream end of GRIC	Predevelopment Discharge		-	647	-	-	-		ASLD Gila River Report, p. VI-8
Phoenix	Downstream of Salt River Confluence	Predevelopment Discharge		-	2330	1750	-	290	Salt River Santa Cruz River	Hjalmarson Report p. 12
Yuma	At Colorado River confluence	Predevelopment Discharge		-	2330	1750	-	290	Agua Fria River Hassayampa River Centennial Wash	Hjalmarson Report p. 12

Figure 1

Figure 1


Upper Gila River-Ordinary Flow Rates
Gila River at Head of Safford Valley
Flow Rate (cfs)
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Canoes and Kayaks
Non-Navigable Range (0-90cfs)
0
10
20
30
40
50
60
70
80
90
100
Percent of Time Flow Rate Exceeded

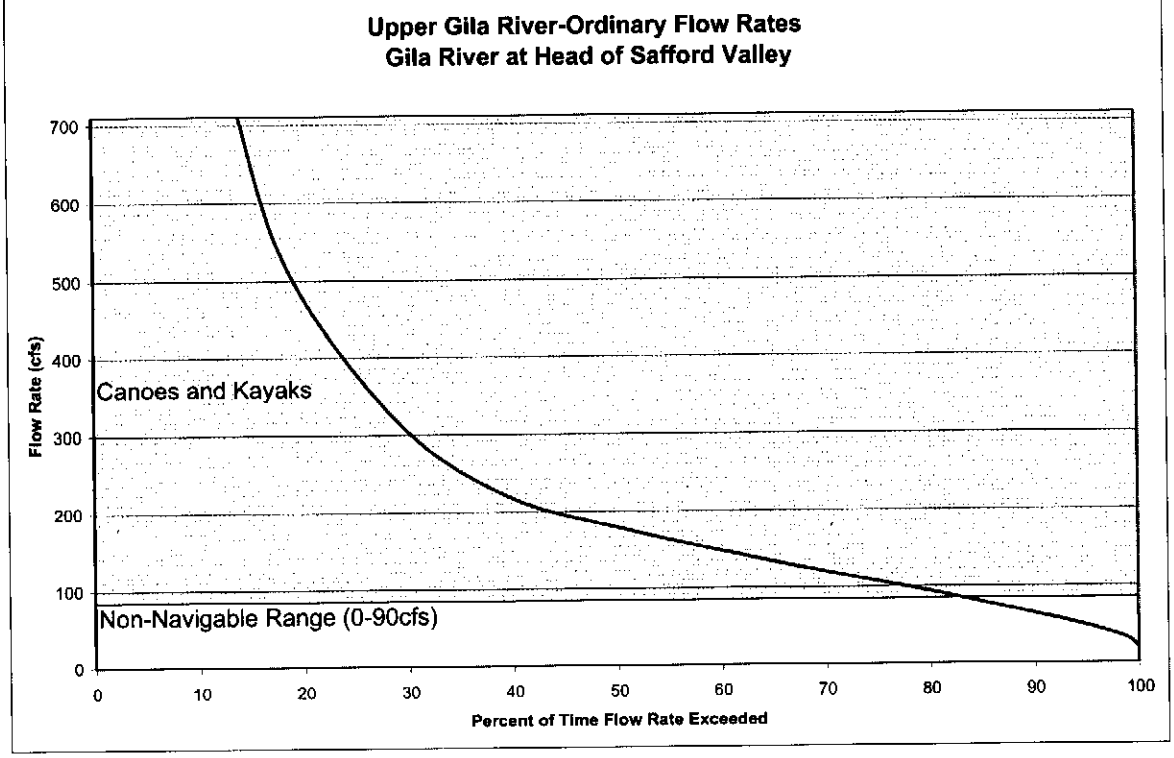
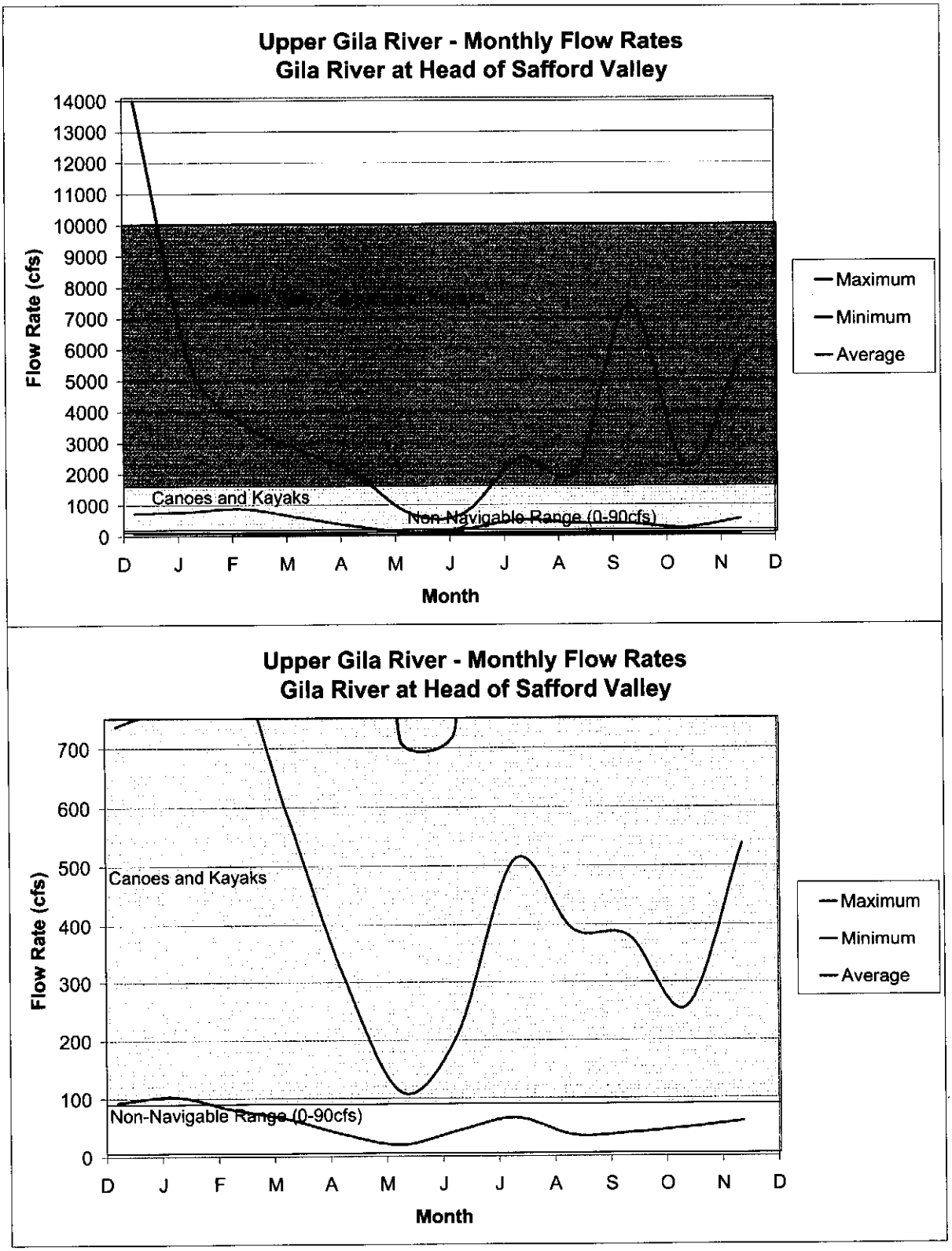

Upper Gila River-Ordinary Flow Rates
Gila River at Head of Safford Valley
Flow Rate (cfs)
700
600
500
400
300
200
100
0
Canoes and Kayaks
Non-Navigable Range (0-90cfs)
0
10
20
30
40
50
60
70
80
90
100
Percent of Time Flow Rate Exceeded

Figure 2

Figure 2.


Upper Gila River - Monthly Flow Rates
Gila River at Head of Safford Valley
Flow Rate (cfs)
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Canoes and Kayaks
Non-Navigable Range (0-90cfs)
D J F M A M J J A S O N D
Month
Maximum
Minimum
Average
Upper Gila River - Monthly Flow Rates
Gila River at Head of Safford Valley
Flow Rate (cfs)
700
600
500
400
300
200
100
0
Canoes and Kayaks
Non-Navigable Range (0-90cfs)
D J F M A M J J A S O N D
Month
Maximum
Minimum
Average